# the Mineralogical Record

Volume 18, Number Two
March–April 1987 $7.50

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The Mineralogical Record Inc.
is a non-profit organization
The Mineralogical Record
magazine is published by the
Mineralogical Record Inc.,
7413 N. Mowry Place
Tucson, Arizona 85741

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P.O. Box 35565
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602-297-6709

**Editing, advertising**
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**Promotions and Book Sales**
Gale Thomssen
P.O. Box 1656
Carson City, NV 89702

**Design**
Wendell E. Wilson

**Subscriptions**
- **Individuals (U.S.):** $27 for one year, $52 for two years, $750 lifetime. (First-class mailing available; write to circulation manager for rates.)
- **Individuals (outside the U.S.):** $30 for 1 year, $58 for two years, $850 lifetime. (Airmail mailing available; write to circulation manager for rates.)
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# Departments



COVER: QUARTZ (rose, smoky and colorless) from the Sapucaia mine, Minas Gerais, Brazil. The specimen measures 8 cm tall. Martin Zinn collection; photo by Harold and Erica Van Pelt.

# EDITORIAL

## QUALITY MINERAL LECTURES

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Mineral clubs and societies have a recurring problem: obtaining high-quality lectures for their shows and regular meetings. Just ask any lecture chairman . . . it's a difficult and often unrewarding job to search out well qualified speakers and obtain commitments. Many societies fall into a boring series of old reruns and dull, stale lectures on obsolete topics. Perhaps this lack of program vigor, quality and freshness accounts in part for the nationwide decline in club memberships.

The causes of the problem are many, commonly including geographic remoteness and a lack of interest in mineralogy on the part of a majority of society members. However, we wish to address only one cause here: insufficient funding.

For some societies funding limitations are a very real problem, and we sympathize with them. A low number of dues-paying members (many of whom are on a fixed income) combined with a lack of opportunities for fund-raising events and activities leads to an impoverished club treasury which cannot support any expensive programs.

On the other hand, there are many healthy societies which could, if they chose, offer far more generous inducements to talented speakers, and thereby establish a new precedent.* Unfortunately, too many societies choose instead to acquire all their programs as cheaply as possible. They try to find speakers, usually locally, who will speak for free or for a token few dollars. Local speakers are already well known to local society members who may have seen the slides and heard the stories many times before; the boredom is often tolerated because no large honoraria or travel expenses are involved. We do not mean to say that such programs are always bad; indeed, they are occasionally great. But over the years, on the average, a club gets what it pays for and should not complain about lackluster low-cost programs and apathetic attendance.

Nor do we mean to say that *all* lectures should be given by expensive and prominent personages. There will always be speakers available who are young or just starting out and who need the recognition and the practice; making use of them benefits the whole mineralogical community. The entire year's program, however, will be far less satisfactory if no attempt is made to mix in some outstanding speakers.

We suggest that some societies *experiment* with offering financially attractive arrangements for outstanding speakers and programs. It should go without saying that *all* expenses for the speaker will be paid, including plane fare, rental car, motel (*not* a bed in a club member's spare room), and food. Even with this much paid, the speaker still only breaks even and has, in effect, been paid nothing for his time and the preparation of the program. Societies should not feel that they are doing the speaker a favor by merely covering his expenses; many, however, give exactly this impression, and it is insulting to the speaker.

The real question is what to offer as an "honorarium" . . . the sum paid *in addition* to expenses. The honorarium should, we suggest, be significant enough to cause a substantial change in the whole atmosphere of lecturing. It should draw out excellent lecturers who previously did not feel it was worth their time, but who would now change their mind and make themselves available. Furthermore, the honorarium would encourage lecturers to prepare much better presentations; if they are going to take the club's generous fee they will not want to leave themselves open to criticism for not having given the club its money's worth. Nor will they want to develop a poor reputation among societies who might then stop inviting them to speak. The societies' lecture chairmen will become buyers rather than beggars, and competition for their attention will develop among speakers wishing to be known as "among the best" and to be offered well-funded invitations to lecture. In fact, a whole new breed of professional mineralogical speaker may develop, drawn perhaps in part from the ranks of retired mineralogists.

We know we'll get letters if we don't suggest specific dollar amounts here . . . and probably even if we do. But a frank dialogue requires that the subject be raised. We don't know exactly how high fees would have to be in order to have the desired effect, but a range of $300–500 for the honorarium alone (not counting expenses) would be a reasonable starting point. Prominent speakers in other fields commonly receive thousands of dollars, and we know of cases where fees *ten times* as high as we suggest were paid *by mineral shows* . . . but not for mineralogical speakers, unfortunately.

Some club and society members are still going to ask "why?" when it comes to offering substantial honoraria. Shouldn't prominent mineralogists and other experts *want* to come and talk about their favorite subject? Of course the best speakers enjoy speaking, but the hitch is that people who are talented and knowledgeable are *always busy.* Their skills and their work are in heavy demand and, by virtue of having active minds, they always have a great many projects and ideas of their own which they would very much like to spend time on. Creative high-achievers always have more irons in the fire than they can easily deal with at any given time, and many *more* irons ready to go into the fire as soon as time permits. But some of these people are fascinating speakers if they can be induced to give it some priority. It's not necessarily that they don't want to share their knowledge with all fellow mineral enthusiasts and wouldn't relish an evening on the podium . . . it's just that

*Lest this suggestion sound self-serving, the authors wish to point out that for a number of years they have generally not accepted such speaking engagements, nor do they intend to do so in the near future.

they are busy with even *more* interesting and pressing matters, and their time is at a premium. Quite a large amount of time is required to travel and give a presentation; usually 24–48 hours is "lost" in order to provide a one-hour lecture, and this is just logistics, not counting the actual preparation time. To busy people, this time (especially on the weekends and evenings when lecturers are most often needed) is valuable personal time and family time too precious to give away. Furthermore, some speakers actively dislike the hassles involved in traveling significant distances, and will refuse routine engagements on that basis alone.

How might the speaker fees be at least partially offset? Dues of many societies have long been "frozen" at mid-1960s levels and could be raised. An admission fee could be charged to non-members who heard about a prominent lecture and traveled in from other areas to hear it. (Speaker programs should be circulated in advance to members of societies in neighboring areas.) A larger portion of the proceeds from shows and other fund-raising events could be allotted, and show admission prices could be raised. Perhaps neighboring societies could co-sponsor a speaker and share the costs.

Even if a "distinguished speaker program" could be held only once or twice a year it could have a major positive effect. New dues-paying society members might be attracted as a result, and inactive members might return to the fold, thereby further reducing each member's share of the cost. The occasion for such lectures could become an event, a high-point of the year, where members treat themselves to something special. And yet, on an individual basis, it would cost less than taking the family to the movies or buying a chocolate cream pie. (Although we wouldn't want to be the speaker whose performance is weighed against the pleasures of a chocolate cream pie!)

Naturally those readers who are satisfied with the level of local society programs need not consider our suggestion. But we have found that most mineral collectors are eager for more and better presentations and would probably not mind paying a few extra dues dollars per year to obtain them.

There will be some grumbling wherever this experiment is tried, but if people of enthusiasm can sustain it for a few years, and if it works, our mineral society meetings may become crowded and exciting again. The net effect could be a shot in the arm for faltering mineral organizations and a renaissance of high-quality public speaking in mineralogy.

# notes from the EDITOR

## RECORD PHOTOS

Most readers of the *Mineralogical Record* have become familiar by now with the editor's photographic style: a rather straightforward documentary approach characterized by a gradational gray background which is light at the bottom and dark at the top.

I keep detailed photo records, and a quick check shows that I photographed 1056 specimens during the years 1980–1985; roughly three-fourths of these have already been published. Out of curiosity, I went back through these photos and assigned an approximate retail value to each specimen.

The total value for the 1056 specimens turned out to be roughly $1.5 million. Not only was this interesting by itself, but the data permitted the construction of a graph (Fig. 1). Note that a fair number of specimens photographed are worth less than $200, and a surprising number are under $50. The peak range of $200–500 is also something to think about.

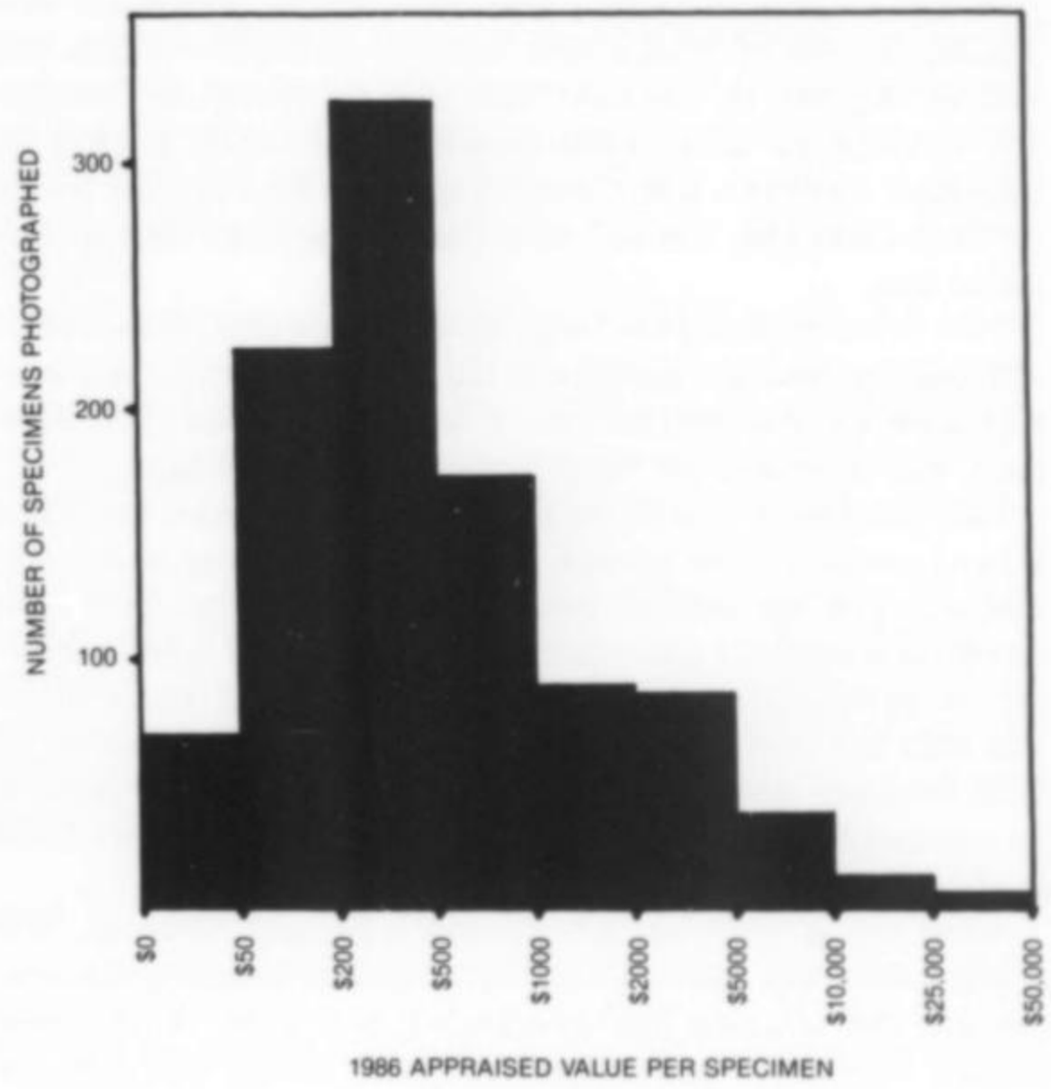



***Figure 1.*** **Approximate current retail values of 1056 specimens photographed by the editor during the years 1980–1985.**

The data must be carefully qualified before any conclusions are drawn. For example, almost none of the specimens are small enough to be considered micromounts or large enough to be considered more than small cabinet in size, because these are inconvenient or impossible to photograph with my equipment. A significant percentage of the specimens are from relatively recent discoveries. And of course the selection is unavoidably biased by my own taste in well-crystallized minerals and by what is technically photogenic. Nevertheless, the size range (thumbnails to small cabinets) is that most commonly sought by collectors, and I do try to find the highest quality specimens according to basic criteria which are in general use by most collectors. So these specimens can confidently be referred to as "fine" and generally desirable pieces.

I am not sure what conclusions can specifically be drawn from this, but it must say something about today's mineralculture mindset, insofar as your editor is able to interpret and report it through his photographic work. Perhaps it will be encouraging for collectors on a tight budget to learn that *Mineralogical Record*-level quality, so to speak, can quite often be achieved for well under $200. It also demonstrates, I think, how very rare the high-value specimens (say, over $5000) are, compared to the top pieces generally. Finally, I think it shows that if you can afford to pay $200–500 per specimen, you can do very well indeed.

## VIDEO MINERALS

Many dealers sell minerals by mail order these days. The technique of describing specimens via a printed list has remained virtu-

ally unchanged since well before the turn of the century. The problem is that esthetic, display-quality specimens are exceedingly difficult to sell by this method. Whereas a species collector will know automatically if he needs a particular rare species on a list, the collector of display specimens needs information which even the proverbial thousand words could probably not supply. Consequently most display-quality pieces must be presented in person at shows and shops, where the collector can examine potential purchases in excruciating detail, or mailed out blind on approval.

A few times in the past I have seen dealers experiment with sending out sets of 35-mm color slides or collections of little pen and ink sketches. By and large these have not proven very successful, although on some occasions a slide has helped to close an important mail-order sale. Generally speaking these approaches are too time-consuming and still do not supply the buyer with enough visual data.

Now at last someone has come up with a new and effective idea. Art Graeber (who is, incidentally, the brother of well-known mineral dealer Cal Graeber) has formed a company called *Video Minerals,* and is sending out "lists" in the form of video tapes.

Each specimen is first shown next to a ruler for precise size. Then a hand comes into the picture, picks up the specimen and slowly manipulates it into different positions before your eyes, just as you would do in person. Light reflects from various faces in turn, showing the perfection (or lack of) of faces, edges and terminations. The sides and even the back can be shown, allowing the viewer to build up a full three-dimensional image in his mind. The result is an uncanny feeling of being there, as if it really *is* your own hand holding the specimen!

While this is going on Art provides a running monolog, first listing species, size and locality, then discussing interesting features, pointing out twinning and associations, etc. Color is described verbally as a cross-check of the video color fidelity, and indeed a few specimens (mostly fluorites) fail to register with proper color.

Accompanying the tape is a computer-printed list showing prices.

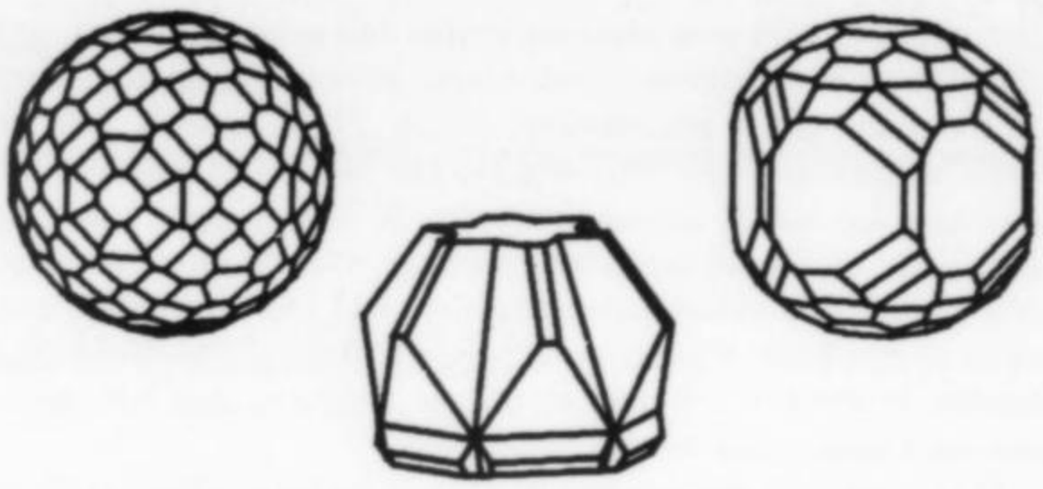
After having studied this tape I am convinced that a major marketing breakthrough has been made. For selling, the technique is vastly superior to still-camera photography and, of course, to typed descriptions as well. My personal objections to buying high-quality specimens by mail-order from a list evaporated instantly. I certainly hope the technique catches on, and I only wish it had been around in the days of A. E. Foote . . . what a treasure those old tapes would be today!

Graeber's specimens are very fine and range in price from $25 to $600. A total of 67 specimens are shown on the first tape, which is available on VHS or Beta format. A $25 deposit is required, which is refundable upon return of the tape or completion of a purchase from the list. Order from *Video Minerals,* P.O. Box 252, Yucaipa, CA 92399.

The commercial motivation is what makes mineral videotaping worth doing at present, but the idea could certainly be carried further. Imagine, for example, the curator of a fine institutional collection showing off his best treasures in this way, and providing a chatty background on each piece as the viewer looks on. With more and more people owning video cassette decks these days, the audience is ready and waiting.

## COMPUTER CRYSTAL DRAWING

A new and greatly improved edition of Eric Dowty's well-known SHAPE program for computer crystal drawing is now available on copyable diskette for Apple-II (64 K RAM) and IBM-PC (200 K RAM) computers. From a simple keyboard input, the program will draw any crystal or twin on the screen, usually within a few seconds. The image can easily be rotated and rescaled. Instructions with examples and tutorials are included. Hard copy can be made using a pen plotter or a dot-matrix printer. A printed listing in FORTRAN is also available for user adaptation to other computer systems. Price for any of the three versions is $95 postpaid (check or money order in U.S. funds). Send orders to SHAPE, 196 Beechwood Avenue, Bogota, NJ 07603.



## HISTORICAL PROJECT

Larry Conklin (author of the recent book on George F. Kunz) is currently gathering historical material for a book on the history of American mineral dealing. He would like to hear from readers who were personally acquainted with any of the old-time mineral dealers, or who have documents or other information that might prove useful. People to be covered in the book must have earned at least a portion of their income from minerals for a long period of time, or all of their income for at least a few years, or had a formal letterhead proclaiming themselves to be mineral dealers. No currently active dealers will be included, but those permanently retired and still living may be considered. Personal data (birth and death dates, residences, etc.), photographs, letters and catalogs or price lists would be most welcome. All such contributions will be gratefully acknowledged in print. Write to Lawrence H. Conklin, 17 St. John Place, New Canaan, CT 06840.


## "AUSTRALIAN NUGGETS"

So you'd like to own some real Australian gold? The Australian government is now issuing what may be the first coins ever to depict actual mineral specimens. The coins come in 1, 1/2, 1/4 and 1/10-ounce sizes and depict the "Welcome Stranger," "Hand of Faith," "Golden Eagle" and "Little Hero" nuggets. Coinage of these gold bullion pieces began in September of last year. The coins are available through A-Mark Precious Metals in Los Angeles and probably other dealers as well.

## BOOK DEPARTMENT NOTES

It was beginning to seriously get us down, having to see so many disappointed faces belonging to people who wanted a set of the reprint of Goldschmidt's *Atlas der Krystallformen* after it sold out. So we went back to the Rochester Academy of Sciences and asked if they couldn't possibly go back to press for 100 more copies, just

for us. After some negotiations we finally made a deal. So take note: This is your **LAST CHANCE ON GOLDSCHMIDT.** European readers also take note: we had refrained previously from accepting orders for Goldschmidt from anywhere in Europe due to possible copyright restrictions, but our attorney has now advised us that the copyright has expired. So if you were refused before, please order again. At this point, only orders for the complete set are being accepted, at $350 postpaid.

In response to numerous requests, the 1987 *Glossary of Mineral Species* can now be purchased unbound and unpunched. Users may then punch their own holes in the margin for use in a loose-leaf ring binder, or send the book out for hardcover binding on their own. The price is the same; simply request your "Glossary Unbound."

We know that it's sometimes difficult to make the decision to order books sight-unseen. So readers might be interested to know which of our many titles are best sellers at mineral shows where visitors can inspect the books in person. According to Book Department Manager Gale Thomssen, people are most impressed by *Magic of Minerals,* because of the exquisite Olaf Medenbach photography, and many end up buying it after paging through it.

It is perhaps indicative of the state of American mineral book publishing to note that another of our best-sellers is *Mineral Museums of Europe,* another German-produced book. Some people seem to hold off for a while, thinking they'll never visit Europe anyway and therefore won't "need" a museums guidebook. But once they have a chance to page through it and see the excellent Rainer Bode photography of fine European specimens, and the fascinating historical material, they tend to decide they "need" it after all.

Another one that people are taking a shine to is the Van Pelts' beautiful *Birthday Book of Gems.* Perhaps the title puts mineral collectors off a bit, but when they get down to actually looking through it they love it. (Incidentally, this is not a typical calendar book because it is undated as to year . . . it is therefore perpetually useful for noting recurrent occasions.) A great many crystal specimens are pictured, and also many deliciously beautiful gemstones. This book has the highest quality of color separations and color printing that I have seen in my 11 years in this business, and I'm tempted to say it helps salvage from the Germans some pride in American publishing . . . except that it was printed in Japan. Well at least the Van Pelts are American!

## NOTICES

Announcements regarding the deaths of people *prominent* in mineralogy, mineral collecting, curating and dealing are accepted from readers. We regret that, due to space limitations, we cannot publish death notices for fellow mineral collectors who were known and loved locally but generally unknown nationally. Nor can we acknowledge the deaths of spouses or family members of prominent individuals unless the deceased were also prominent in their own right.

Information supplied for publication should include full name, age at time of death, cause of death, occupational data, important discoveries, publications or other contributions to mineralogy, mineralogical awards and honors received (particularly the naming of a mineral for), and any other data of interest to mineral collectors.

• • •

**Died, John P. Fuller, 49,** Mineral Collections Manager at the British Museum (Natural History). Fuller joined the BM(NH) staff in 1960 and, although he had no formal background in mineralogy, soon became a valuable and personable member of the Mineralogy Department. He was co-author of the article on Hope's Nose gold in the previous issue of the *Mineralogical Record.*

**Died, R. Theodore "Ted" Hurr, 51,** owner of *Resource Enterprises,* in Wheatridge, Colorado; of cancer. Ted was a long-time mineral collector and dealer, and was also employed for 24 years as a hydrologist for the U.S. Geological Survey. His mineral activities were worldwide but he was particularly known for his work in Colorado.

Keith Williams

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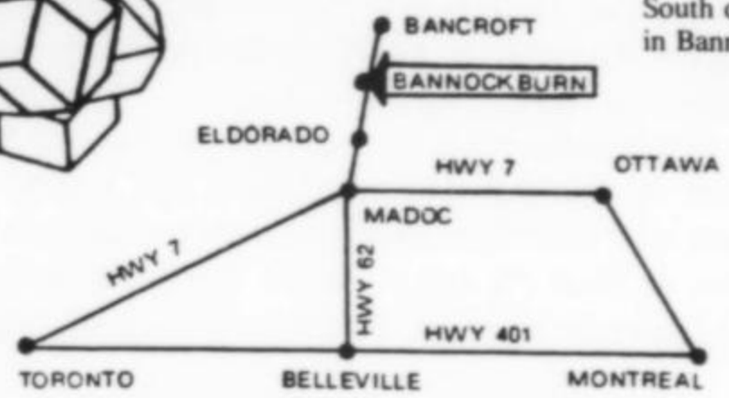


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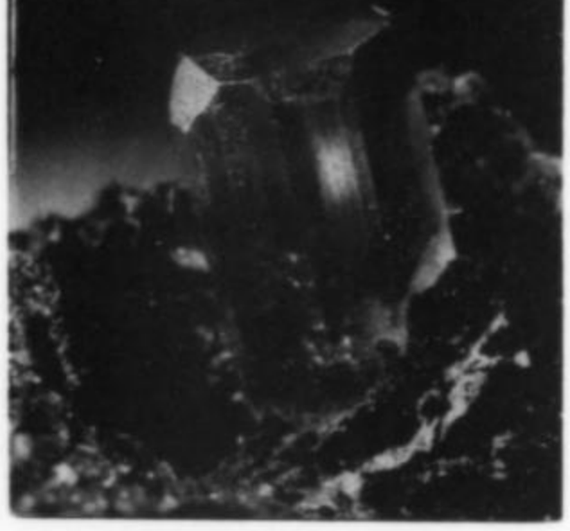

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# The Perry Letters

**Richard Hauck**
8 Rowe Place
Bloomfield, New Jersey 07003

Nathan H. Perry was not an arctic explorer, although many people might comment that living in Maine in the 1880s was close. Perry was a mineral dealer who operated in a time and in an area very important in the development of American mineralogy. It was in Maine, for example, where the first American Mineralogy was written by Parker Cleaveland in 1816. And South Paris, where Perry lived, was in the center of early Maine pegmatite mining. However, over the course of a century, almost all record of him was lost and, but for a chance discovery in the early 1960s, he might have remained a forgotten chapter in the history of science.

About 30 years ago B. M. Shaub, a geologist, first became interested in researching the early history of mineralogy in Maine. He traveled throughout the state in a camper, interviewing residents and locating descendants of early mineralogists, collectors and dealers. One afternoon he met an elderly gentleman who was happy to sit and reminisce about the old days. During the course of their discussion the man brought out a shoe box filled with 250 old letters. Shaub began to go through them, and found that they had been written to a mineral dealer named Nathan Perry between the years 1878 and 1889. Shaub bought the letters then and there, and later wrote:

> That was the first time I had heard the name of Nathan H. Perry. Once I had the opportunity to read through some of the many letters I at once realized that Perry had played a very important part in the story of the minerals of Maine.

These letters from Perry's many customers and contacts give important insights into the nature of mineral dealing and collecting 100 years ago. But for these, only a few advertisements in early newspapers and magazines would have remained to tell that Perry had even existed. Much history that never made the history books can sometimes be found on the faded pages of old letters written by people of the time.

Communication was difficult and transportation was limited in the 1870s and 1880s, but Nathan Perry had a customer list that included Bement, Kunz, Roebling, English and Foote. The letters came from Maine, New Hampshire, Massachusetts, New York, Pennsylvania, Tennessee and even California. Many letters were in answer to Perry's ads in newspapers and journals offering specimens for 2¢ each. There were letters of compliment and a share of complaints.

Some interesting background information is found in a letter from W. S. Bayley of Colby University in Waterville, Maine. Bayley mentioned having seen Perry's name mentioned in U.S.G.S. Bulletins written on the mineral locations of the Paris, Maine area. J. B. Ham, commissioner for Maine for the 1885–86 New Orleans Exposition, wrote to Perry thanking him for the loan of an exhibit of minerals.

Important mineral events are represented by letters from A. C. Hamlin. In 1881 Hamlin stated that he would commence work at Mt. Mica as soon as he could get the workmen. He wished to form a "depot" at Paris for the collection and sale of minerals. A large correspondence (10 letters) from Samuel R. Carter, Superintendent of the National Tin and Mining Company of the U.S., in Paris Hill, Maine, covers an interesting history of an effort to buy some land that shows some promise of tin ore. One letter complains that 75¢ an acre is too much to pay.

A very interesting group of letters came from the Philadelphia area. Thomas L. Ash was asking for a 25-ton lot of spodumene in 1887. In 1889, George L. English was trying to get Perry to sell exclusively to his company the total production of spodumene at from $60 to $75 per ton. In 1888 A. E. Foote was ordering spodumene for 3¢ a pound. (There is an interesting question to ask here. Why did the Foote Mineral Company grow to the size that it did on lithium while the others never succeeded in commercial mineral processing?)

Money seems always to be short in the mineral business. There are letters from English, Southwick, Foote and even Kunz asking for patience on their payments or possible exchanges in lieu of cash. James M. Southwick of Providence, Rhode Island, a dealer in items of natural history, wrote: "I regret that you were obliged to call on me the second time. . . . I've been busy and money has not been over flush." Kunz wrote in August of 1886, "I will send you the balance within a month if you can wait so long. I have some trouble with some book bills." (Here a question could be asked: was Kunz, the author, paying the publishers of his books, or was it Kunz, the avid book collector, owing the used booksellers?)

A long (1873–1881) run of 14 letters came from L. Stadtmueller of Yale's Sheffield Scientific School in New Haven, Connecticut. The letters deal mostly with helping to identify specimens, suggesting what minerals would be saleable, and offering to sell material for Perry. It's interesting to note this commercial activity at the Sheffield Scientific School!

There was a strong desire among many of the collectors who corresponded with Perry to be first and receive the best. Clarence S. Bement wrote in 1887 that he wanted "the best available." His efforts to get the best included a three week trip to Maine in 1887, and buying the new herderites in lots, spending $45 at a time. Kunz also visited the area with Perry and arranged a trip there for his friend La Croix at a later date.

Henry A. Holden of Boston wrote in 1886 that "I only want *fine* specimens and don't care to buy any other at *any* price. I had rather give $10 for one fine thing than 10¢ for something ordinary." He went on to complain about Perry's prices and claimed he could buy cheaper from Knowlton and others. He then went on to say: "Now don't think I'm reading you a lecture . . . I say this more for

your good than mine." After a long and detailed letter, Holden concluded by ordering more material!

William F. York of Nashua, New Hampshire, wrote of his mineral activities in his area. He had been buying for himself and a group of collector friends. Perhaps in 1880 he made a judgment error when he wrote to Perry: "The chrysoberyl on aquamarine is good and worth all you ask but I do not think I could sell it here and so I return it by mail."

George F. Kunz of New York City wrote on September 10th, 1887: "If you should get some other fine minerals, I mean the fines, and if they have not been seen elsewhere, I may buy a good box a little later." On September 30th another letter stated: "At this moment I am not buying much with the exception of good things." It seems that even 100 years ago the good stuff always had a ready market.

The market of the 1880s was an interesting area in which to make a living. A dollar a day for the average working man was the norm. When an order came in from Arthur W. P. Kinney of Los Angeles, California, for 1 specimen of rose quartz for 5¢, a green tourmaline for 3¢ and an amblygonite for 2¢ (a total of 10¢), this was a worthwhile sale. A sale to the Smithsonian Institution ordered by W. S. Yeates for 300 pounds each of cancrinite, lepidolite, spodumene, rose quartz, garnet, topaz, lepidomelane, vesuvianite, pink tourmaline and elacolite plus 200 pounds of triphylite and 150 pounds of triplite must have been a better sale than Rock Currier does at Tucson!

An interesting letter from Gibbs Benson of Russell Gulch, Colorado, answers Perry's request for some Colorado specimens. Benson writes that he will send some gold specimens and silver by express and asks: "Let me know how times are. . . . I have made $71 this month. This is better than a man can do in Maine!" Perhaps one other letter can give an indication of the times. Included in the lot is a bill from Tiffany and Company of New York for cutting two aquamarines in 1884. The amount due is $8.

A number of observations can be made from the information contained in the Perry letters. A letter from Charles Pennypacker of West Chester, Pennsylvania, in 1886 offering garnets from Salida, Colorado, is typical of many such letters which illustrate the high level of specimen commerce between many sections of the country. A letter from T. Egleston of the School of Mines in Columbia College states that he is sorry that Perry was not pleased with the exchange and that he would endeavor to make the exchange more satisfactory. This letter is typical of many comments in letters giving examples of transactions kept friendly, fair and favorable. I can state with confidence that today, 100 years later, the vast majority of mineral people conduct themselves with similar courtesy and care.

As in today's competitive market, business had its needs for keeping certain information confidential. In 1888 Kunz wrote: "I'm anxious to get some of the new material after Professor Dana has what he wants. I want all I can get and the best but do not want in any way to interfere with him." In another letter in 1888, Kunz wrote: "Confidential—the unknown mineral in very small delicate acute crystals I recently suspected was bertrandite and it has proved so. A note will soon appear by Penfield. So kindly do not state anything." Today a wise dealer will also keep his sources very quiet.

A letter from W. A. Roebling, the bridge builder and collection builder, simply asks Perry if anything new or extra fine was found this season. Perry was obviously an important source of good minerals to be worthy of the attention of Roebling and men of Roebling's level such as Bement, Kunz and others. The scope of the geographic area covered included a request from a Jacob M. Shelton, M.D., of Monroe, Tennessee, for a price list and a question of possible exchange. The doctor's letterhead lists: "Mineralogist, Archeologist, Naturalist, Relics and Coins." It also states that "Calls are promptly attended to at any hour, Day or Night. Extracting teeth a specialty, Surgery executed scientifically." (A question might be considered here: when did the doctor find time to collect?)

The main point of observation from all these letters is that Nathan H. Perry was a mineral dealer well known far beyond the boundaries of Maine by a broad spectrum of collectors, in a time and in a place very important in the development of American mineralogy.

# The Mineralogical Cabinet of

# Teyler's Museum

## Haarlem, Netherlands

**Ulrich Burchard***
Schlosstrasse 6
D-8050 Freising, West Germany

***Teyler's Museum in Haarlem is the oldest museum in the Netherlands. The small mineral display has not been changed since 1802, thus beautifully preserving the encyclopedic character of this late 18th-century museum.***

### INTRODUCTION

The town of Haarlem, located 20 km west of Amsterdam, is easily reached by expressway from the Schipol airport. Teyler's Museum is situated on the bank of the Spaarne River some 250 meters east of the church of St. Bavo.

The mineralogical cabinet is curated by Dr. Lydie Touret (mailing address: Teyler's Museum, Spaarne 16, NL-2011 CH Haarlem, Netherlands). The museum is open from 10 a.m. to 5 p.m. Tuesdays through Saturdays and from 1 to 5 p.m. on Sundays. Admission is 2.5 Dutch Guilders (fl.) (about $1) for adults and 1.25 fl. for children.

### HISTORY

The museum was founded in 1778 by P. Teyler van der Hulst (1702–1778), a rich silk and cloth merchant who left his entire estate for the sole purpose of bringing the arts and sciences closer to the public. Construction of the building commenced in 1780.

The mineral collection is housed in the magnificent Oval Hall, rich with wood paneling and decorated plasterwork, which forms the core of the museum building. Various extensions were added later, but the original ambiance seems to have changed little over the years. What is most impressive about Teyler's Museum is the harmonious manner in which exhibits of natural history and the arts, displayed side by side, complement each other.

The mineral collection was assembled almost entirely by M. van Marum (1750–1837), the museum's first director, between the years 1782 and 1826. Van Marum traveled extensively throughout Europe and acquired many valuable mineral and fossil specimens. He kept in touch with prominent scientists of his day, including H. C. Escher von der Lindt (1767–1823) in Zürich, J. G. Lenz (1748–1832) in Jena, D. B. Rätzer in Bern and H. B. de Saussure (1749–1799) in Geneva.

Altogether, about 10,000 mineral specimens are cataloged at Teyler's Museum; nearly all are from localities in France, Britain, and the German Erzgebirge and Harz Mountains.

A collection of clay and wooden crystal models is of great historical significance. In 1785, 398 crystal models belonging to Romé de l'Isle (1736–1790) were acquired, and between 1802 and 1804 another 597 wooden models were purchased directly from René Just Haüy (1743–1822), author of the monumental *Traité de Minéralogie* (1801). Haüy's original, handwritten invoices are still on file. Only a few of these models are on exhibit, but the others can be seen by appointment with the curator.

### EXHIBITS

Teyler's Museum is internationally renowned for its drawings by Rembrandt, Raphael, Michelangelo and Claude Lorrain. Many of

*This article is taken, with minor modifications, from the book *Mineral Museums of Europe* (1986) by U. Burchard with photos by R. Bode.

*Figure 1.* **Exterior view of Teyler's Museum in Haarlem, Netherlands.**

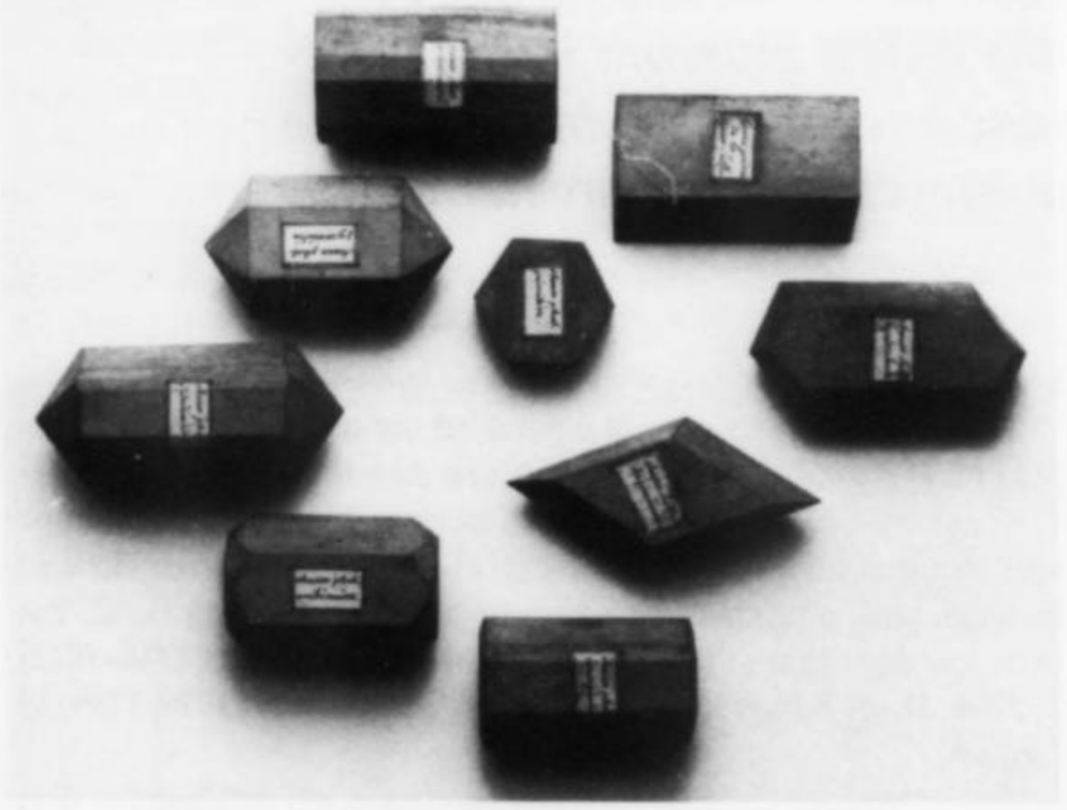


*Figure 2.* **A few of the many early crystal models in the collection which were made for R. J. Haüy. The labels are in Haüy's handwriting.**

these drawings came from the collection of Queen Christina of Sweden (1626–1689). The "Historical Natural Science Instruments" exhibit contains various pieces of physical apparatus including items owned by Lavoisier, Volta, Fresnel and Atwood. An enormous electrostatic generator, custom-built to van Marum's specifications in 1784, is particularly striking.

The numismatic section contains many coins and medals, mainly from the Netherlands.

Prominent in the paleontological collection are fossils from the famous Solenhofen quarry in Bavaria (including an *Archaeopteryx*), from Oehningen and from Bolca (the giant salamander *Andrias scheuchzeri,* which Scheuchzer originally thought to be an antediluvian Man).

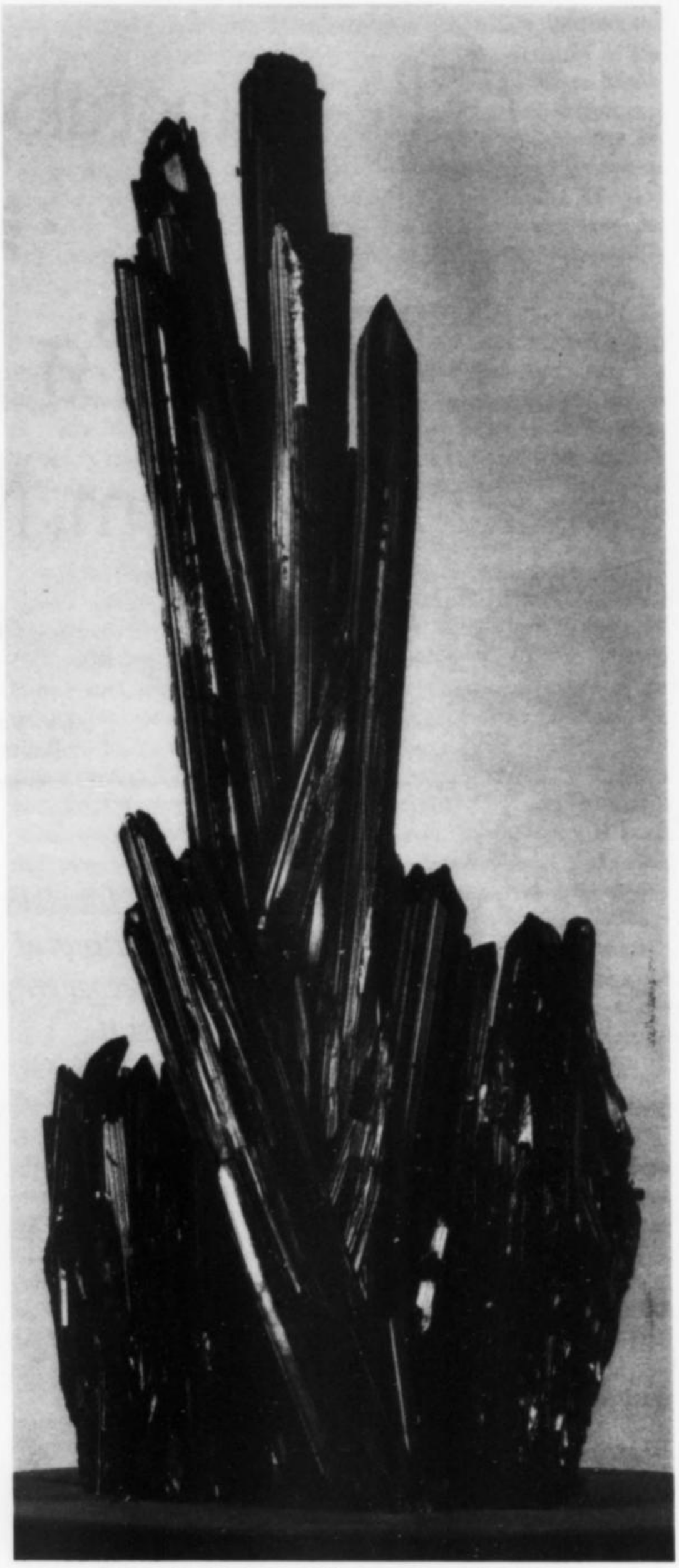


*Figure 3.* **Stibnite crystal group measuring 71 cm (28 inches), mined in 1886 at Ichinokawa, Shikoku, Japan. This is supposedly the longest single stibnite crystal in the world.**

Here too are the infamous "Beringer Lügensteine," the earliest known fossil fakes. They were made as a prank by the students of Professor A. J. B. Beringer of Würzburg. In spite of Hebrew lettering on some of them, Beringer published a work describing them as genuine fossils, and later spent years trying unsuccessfully to recover and destroy all copies of the book.

| BEST SPECIMENS | Good to very good |
|---|---|
| Axinite | Bourg d'Oisans, France |
| Harmotome | St. Andreasberg, Harz, FRG |
| Silver | Kongsberg, Norway |
| Cassiterite | Billiton, Indonesia |
| Mimetite | Zellerfeld, Harz, FGR |
| Pyromorphite | Huelgoat, Brittany, France |
| Quartz | La Gardette, France |
| Stibnite | Shikoku, Japan |
| Quartz (gwindel) | St. Gotthard, Switzerland |

The minerals are displayed in the Oval Hall (about 130 square meters) in a large, centrally positioned table-case having 62 subdivisions. The showcase was built in 1782. The specimens and their arrangement, according to Haüy's classification, have hardly been changed since 1802; consequently they are a fine illustration of the "state of the art," of the ideas, progress and attitudes of scientists at the beginning of the nineteenth century.

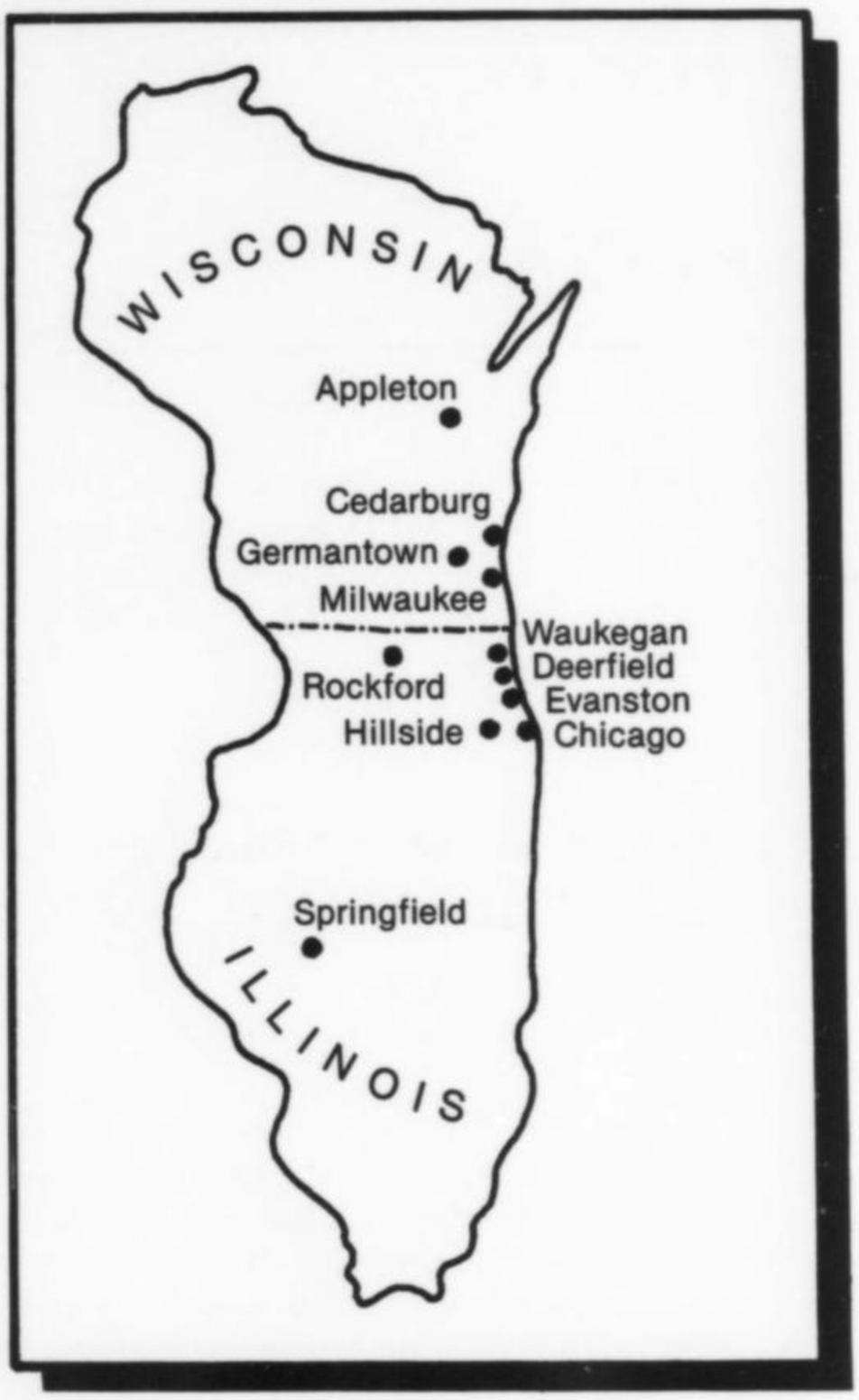
The special character and unique flavor of the mineral collection is enhanced by the old hand-finished brass instruments and globes displayed in the surrounding wall-cases. Upon entering the Oval Hall at Teyler's, one feels transported back in time to an age when the sciences of mineralogy and crystallography were just being born.

**ACKNOWLEDGMENTS**

The author is grateful to Teyler's Museum for providing all of the photographs used here, and particularly to Dr. L. Touret for providing much historical information.

# *Illinois-Wisconsin*

## *mineral dealers*

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# Elk Creek
## South Dakota

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***Elk Creek, South Dakota, has long been famous for producing some of the most beautiful, lustrous, gemmy golden barite in the world.***

### INTRODUCTION

There are two notable occurrences of golden barite in western South Dakota: Elk Creek in Meade County, and the area around Hoover in Butte County. One specimen from each of these localities was examined optically and chemically in the course of this study. The Elk Creek locality is well known for the fabulous specimens it has produced over the years, and the Hoover occurrence has also yielded some fine specimens, which have a different habit and mode of aggregation. Specimens of golden barite from South Dakota are much sought after by collectors and are represented in most major museums as well as many private collections.

### HISTORY

Barite has been known from South Dakota at least since Ulke reported it from the Black Hills in 1891. Dana (1892) described "wine-yellow crystals occupying cavities" in the Badlands. Specimens almost immediately seem to have found their way into important collections; the Clarence S. Bement collection, for example (which was acquired by the American Museum of Natural History in 1900) contained two Badlands barites (Gratacap, 1912; Conklin, 1986). Specimens are also mentioned by Ziegler (1914) in his *Minerals of the Black Hills*.

One of the authors (WLR) first collected South Dakota golden barite in 1950 and exhibited specimens at the 1951 California Federation of Mineralogical Societies Show in Oakland, California. He continued to collect in the Elk Creek, Hoover and other areas (chiefly along tributaries of the Belle Fourche and Cheyenne Rivers) for nearly 25 years, and prepared a thorough documentation of all barite occurrences in the Black Hills (Roberts and Rapp, 1965).

Since the mid-1970s, local ranchers have been reluctant to grant permission to collectors. Nevertheless, very fine lots of specimens continue to appear on the market occasionally, and collectors willing to persevere will eventually come across fine specimens for sale.

### OCCURRENCE OF BARITE

Golden barite occurs at several localities in western South Dakota and is almost entirely restricted to calcareous concretions within the Cretaceous Pierre Shale. Barite-bearing concretions are found in an arcuate belt around the Black Hills, extending from Buffalo Gap on the southern edge of the hills through Owanka up to and around Hoover (Fig. 9). However, less than 10% of the concretions found within the "barite zone" prove to contain barite when broken open.

At the Elk Creek and Hoover localities barite occurs in fossiliferous, septarian, calcareous concretions. Concretions are found in several units of the Pierre shale, but at the Elk Creek locality the barite-bearing concretions are found within the Gregory Member. This stratigraphic unit is characterized by the presence of *Baculites gregoriensis*. It is not known with certainty whether the unit hosting the barite-bearing concretions at Hoover is the Gregory Member or not.

#### Elk Creek

Along Elk Creek, limestone concretions are found in at least four distinct horizons. Generally, the best horizon is the lowermost one that occurs at or near the creek bottom. Since the bedding is essentially horizontal, this lower horizon can be traced for some

*Figure 1.* **Exposure of Pierre shale along Elk Creek in Meade County showing some concretion-bearing horizons.**

*Figure 2.* **Fine, large single crystal of golden barite, 5 cm, on pale yellow botryoidal calcite from Elk Creek. Lee Burnett collection.**

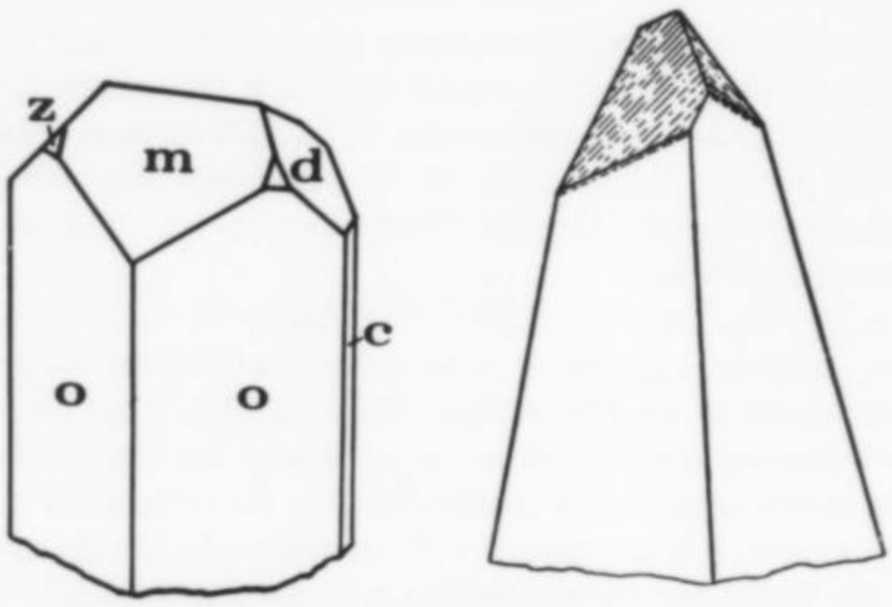


*Figure 3.* **Crystal drawings depicting (left) one habit of barite from Elk Creek (Roberts and Rapp, 1965) and (right) the more typical, tapered, chisel-point habit from Elk Creek (Sinkankas, 1959). (*b* axes vertical)**

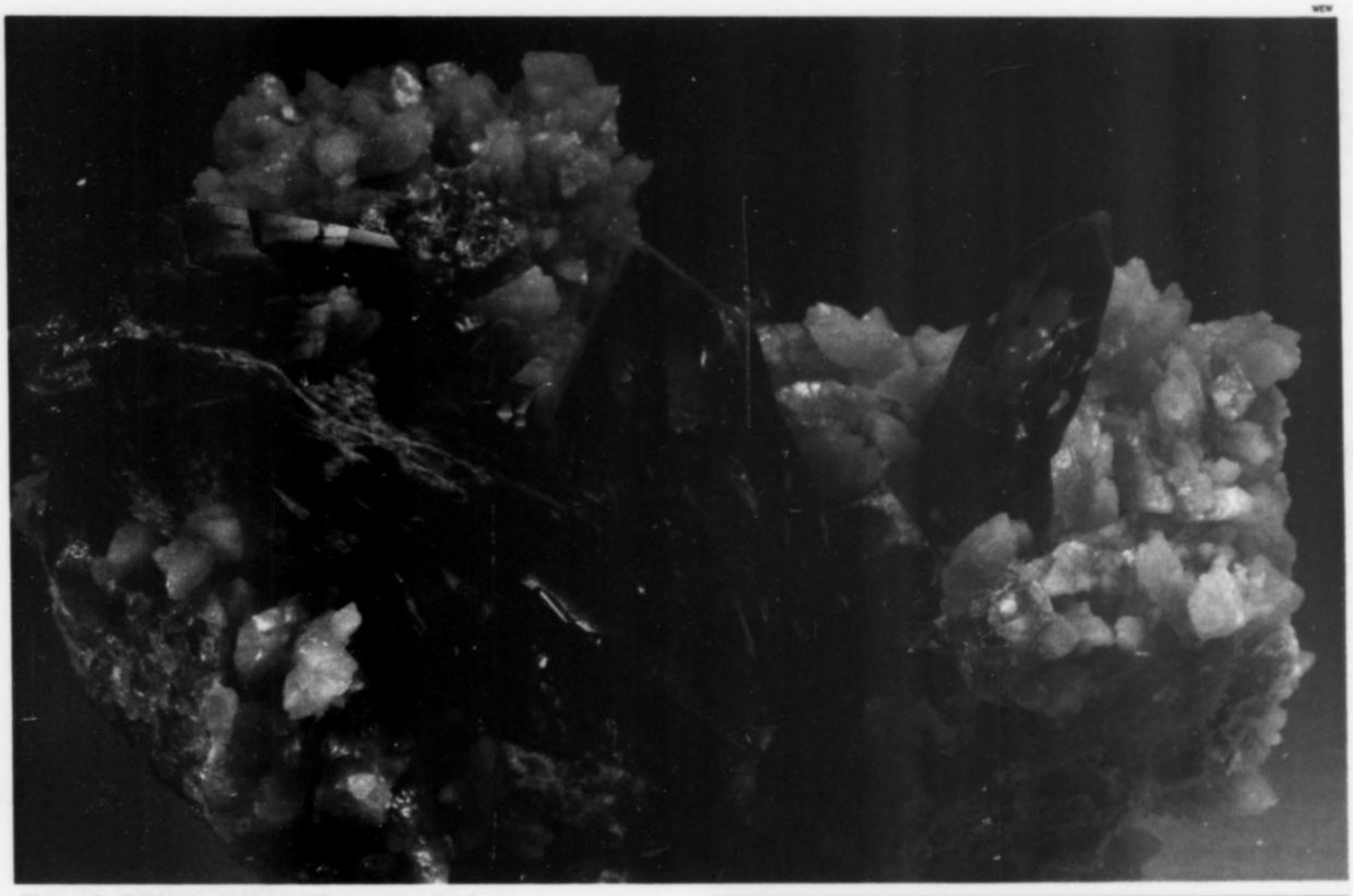

*Figure 4.* **Cabinet specimen (10 cm across) of richly colored golden barite on yellow calcite from Elk Creek. University of Arizona collection.**

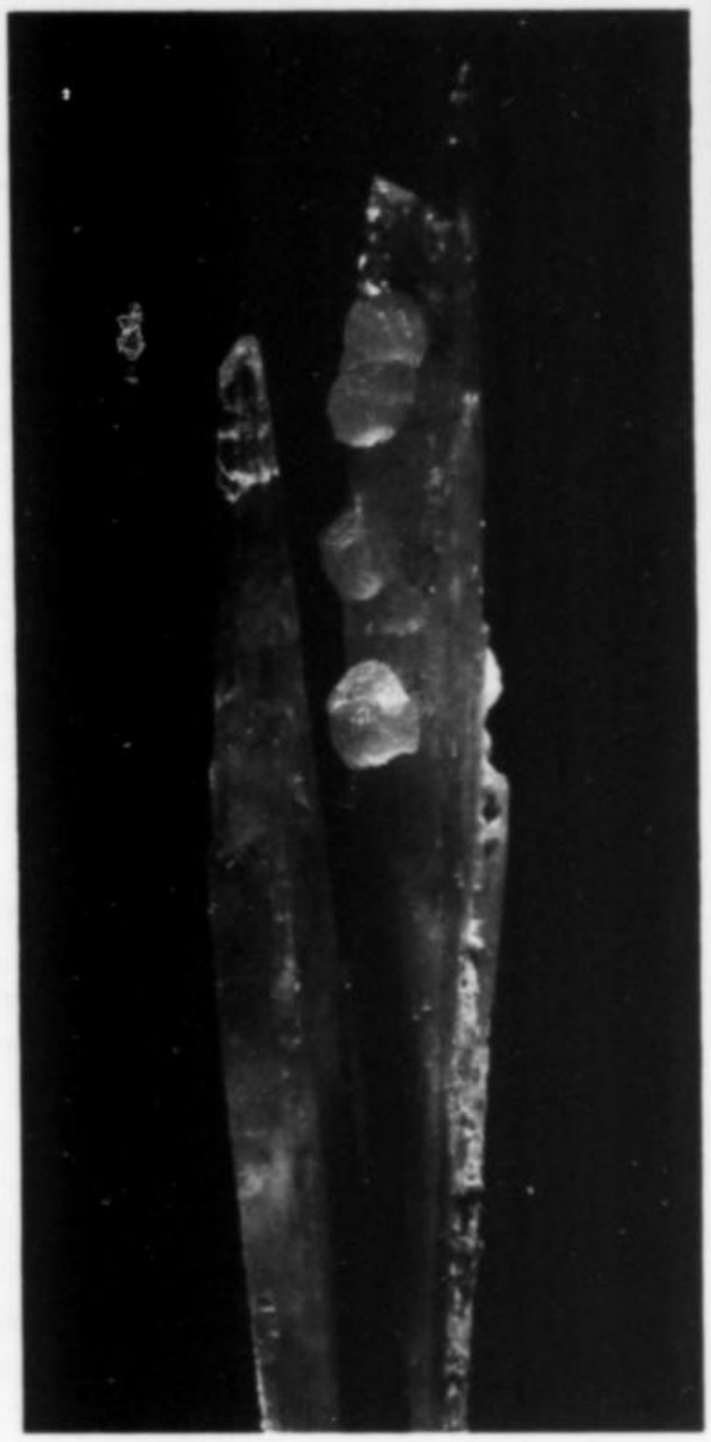

*Figure 5.* **Prismatic golden barite crystals up to 7 cm in length, with spherical calcite aggregates, from Hoover. D. J. Parsons collection; Tom Campbell photo.**

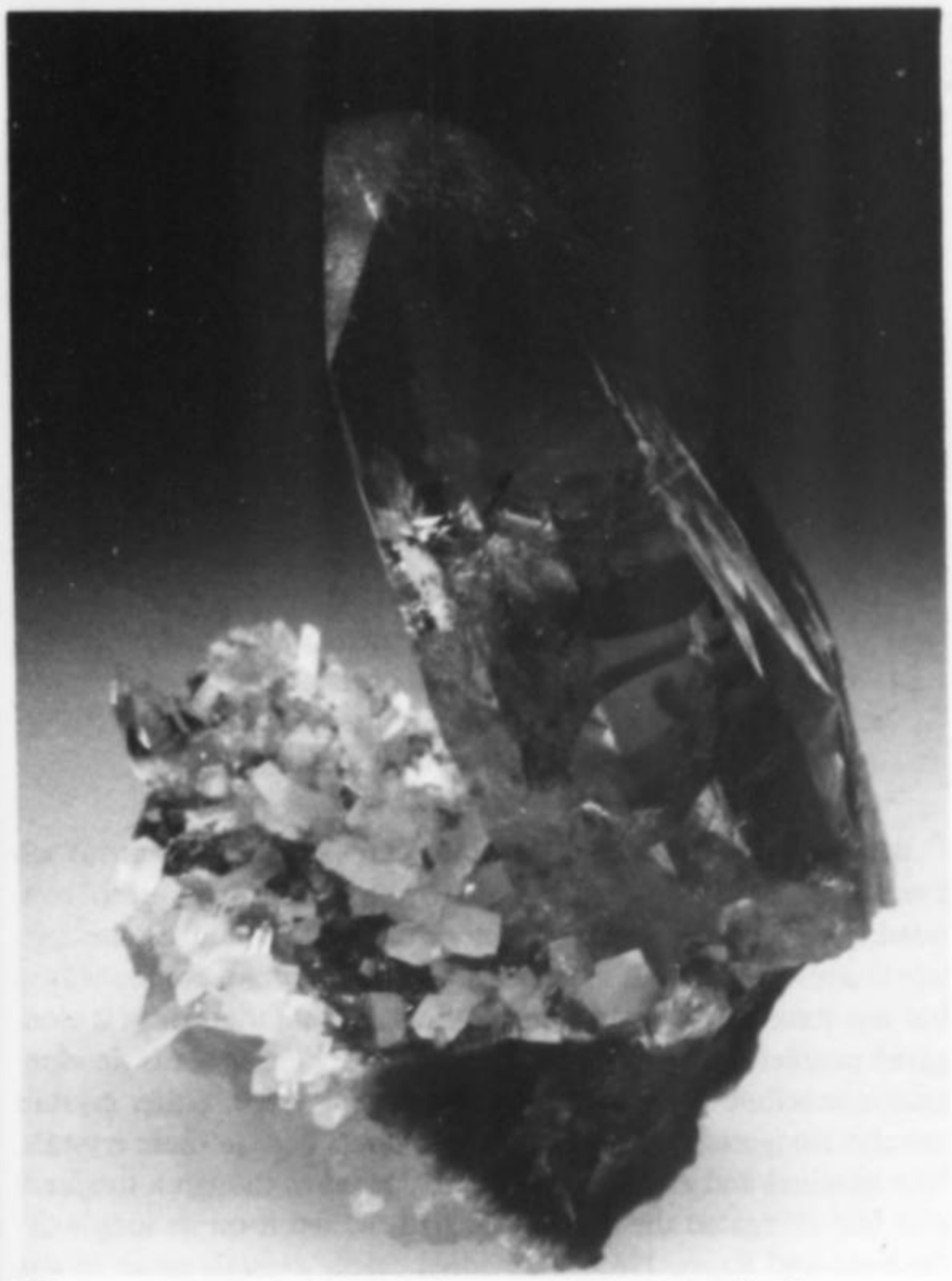

*Figure 6.* **Fine single crystal of golden barite, 3.6 cm, on yellow calcite from Elk Creek. Barbara Cureton collection.**

distance within the draws. Potential barite-bearing concretions can be characterized as oblate spheroids 1 to 3 meters in maximum dimension; they are septarian, fossiliferous and partially hollow. Septa are composed of yellow calcite. Invertebrate fossils found in the concretions include the cephalopods *Baculites gregoriensis, Eutrephoceras dekayi, Placenticeras meeki* and the bivalve *Inoceramus labiatus*. Other invertebrate fossils have also been found.

Barite occurs as colorless, yellow, amber or deep golden brown, transparent crystals that are elongate parallel to [010] (Roberts and Rapp, 1965). Length to width ratios vary between 2 to 1 and 7 to 1, resulting in stubby to elongate prismatic crystals. Dominant forms are those of the unit prism and dome as shown in the crystal drawing in Figure 3. Roberts and Rapp also noted that the dome faces on some crystals are curved right, left, backwards and forwards. These faces may also be rather bumpy and upon close inspection these "bumps" actually represent numerous growth hillocks which may indicate stress within the crystal structure. This is supported by the extreme sensitivity these crystal have to abrupt temperature changes (e.g., handling a cool crystal with warm fingers); the crystal will immediately fracture internally. Nevertheless, Sinkankas (1959) reports that Elk Creek barite has been more successfully cut and faceted than barite from other localities because the crystals are far less inclined to split.

Both dome and prism faces may be slightly striated or etched, resulting in a very dull luster. Despite these irregularities, faces on the majority of crystals are very lustrous and mirror-like. Crystals are commonly 2 to 8 cm in length, 1 to 2 cm in width, and tapered toward their terminations. The largest crystal reported from Elk Creek measures 30.5 cm in length and 17.5 cm in circumference. Barite from this locality fluoresces and phosphoresces bright yellow-white under shortwave ultraviolet radiation (Roberts and Rapp, 1965).

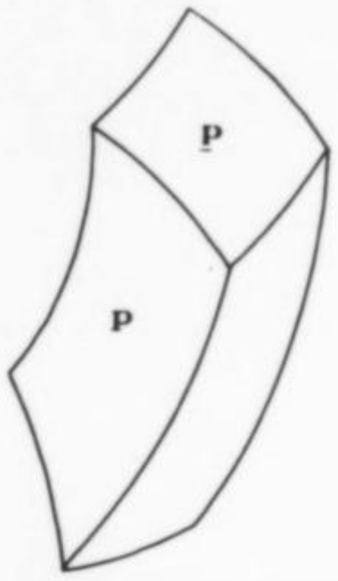


***Figure 7.*** **Crystal drawing depicting a typically twisted and distorted rhombohedral crystal of yellow calcite as is commonly associated with barite at Elk Creek (Roberts and Rapp, 1965).**

Barite crystals are commonly found implanted on beautiful yellow to yellow-orange calcite. Aside from providing a nicely contrasting background, the morphology of the individual calcite crystals is unusual. Crystals are composed of the simple rhombohedron but are quite distorted. In some crystals the rhombohedron is elongated parallel to a rhombohedral face "so that it suggests an elongate monoclinic prism" (Roberts and Rapp, 1965). Other crystals are also elongated but distorted in two directions. In these crystals, "the terminal and elongated faces are curved as though a torsional pull had elongated the crystal and had twisted it on its long axis" (Roberts and Rapp, 1965). Individual calcite crystals range in size from 3 mm to 2.5 cm. In addition to calcite, barite at Elk Creek may also be associated with gypsum which occurs as very slender, 1 cm, white, prismatic, twinned crystals, and less commonly as well-formed, colorless, prismatic crystals. Barite is rarely associated with whewellite.

***Figure 8.*** **Ram's horn gypsum curl, 3 cm, from Hoover. South Dakota School of Mines Museum of Geology collection; Tom Campbell photo.**

**Hoover**

Near Hoover, along the South Fork of the Moreau River, barite occurs in concretions very similar to the ones described above from the Elk Creek locality. It is not known, however, if the species of cephalopods within the concretions are the same. Barite occurs as colorless, white, yellow or golden yellow-brown, transparent, slender, prismatic crystals composed of the unit prism and dome. The majority of crystals are different from those found at the Elk Creek locality in that they are markedly elongated parallel to [010] with a length to width ratio of approximately 10 to 1. In addition, crystals from Hoover tend to occur in divergent sprays and radial aggregates up to 25 cm across. Individual crystals range from $<1$ mm up to a maximum of about 15 cm. Some, however, are very similar to the stubby, prismatic crystals from Elk Creek but rarely exceed 2 cm in length. Barite crystals are either perched on yellowish, 1 to 4 mm, calcite crystals, on a brown to gray-black, smooth to somewhat bubbly surface of calcite that forms a thin rind on the limestone surfaces within the vugs of the concretions, or on stalactitic to finger-like growths of calcite. A second generation of calcite is occasionally found in some concretions as colorless to very pale yellow, flattened rhombs or as spherical aggregates.

Gypsum is sometimes found with barite and calcite; it occurs as very slender, prismatic crystals and blocky individuals similar to those from Elk Creek. Very rarely gypsum is found as small "ramshorn" curls.

## OPTICAL PROPERTIES OF BARITE

Optical properties of golden barite from the Elk Creek and Hoover localities are very similar. Fragments of the same crystals used for the chemical analysis were used for the determination of the various optical parameters. Barite from both occurrences is biaxial positive with $2V = 39°$ (meas). Refractive indices for both localities are identical: $\alpha = 1.635$, $\beta = 1.637$ and $\gamma = 1.648$ (all $\pm 0.0002$) measured in sodium light; this matches well with the values reported by Sinkankas (1959). There is some difference in pleochroism between the two localities. For Elk Creek X = very pale yellow-brown, Y = pale yellow-brown, Z = pale brown-yellow with the absorption formula $Z > Y > X$. For Hoover X and Y are

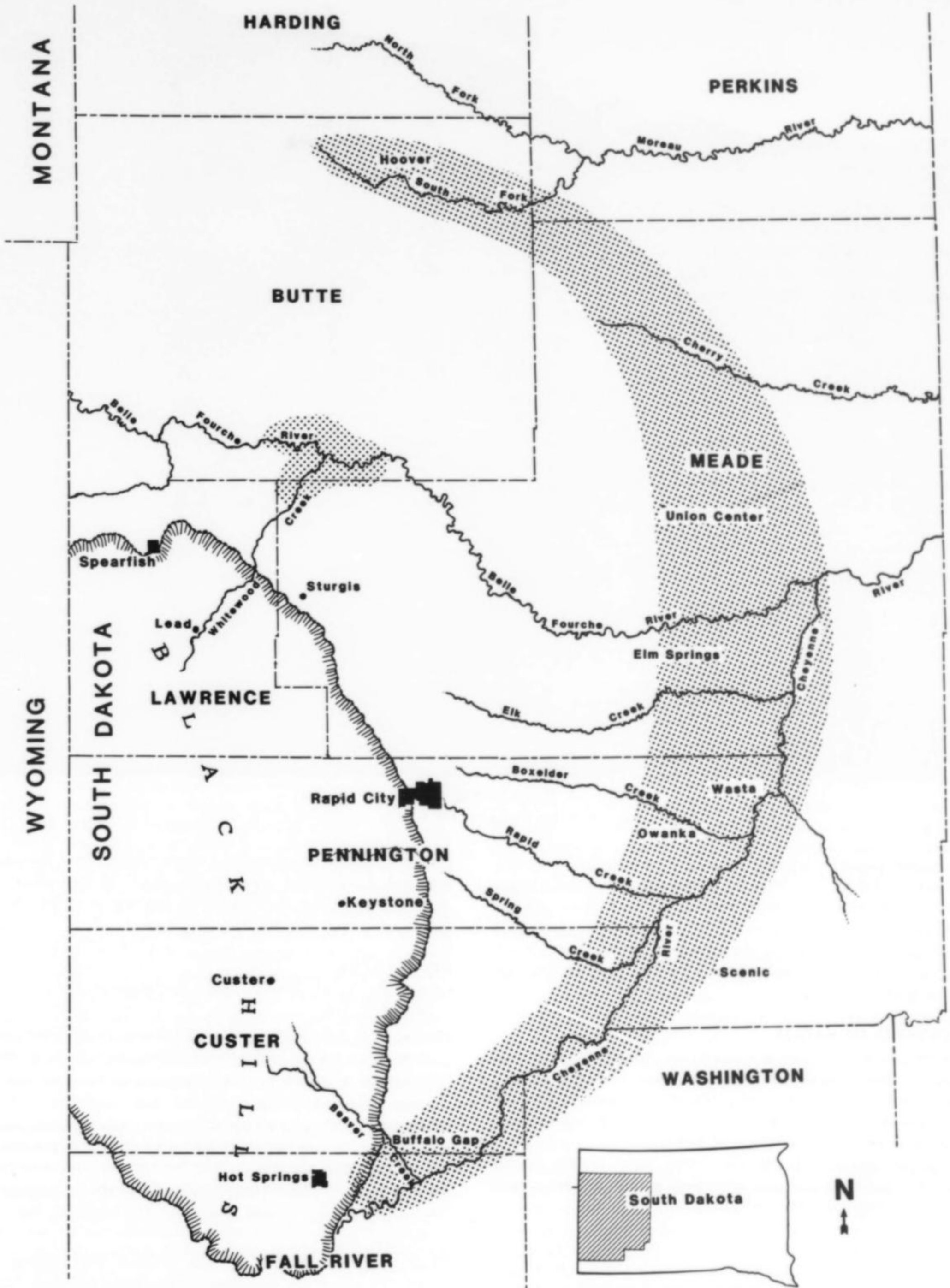


*Figure 9.* **Map showing the distribution of golden barite occurrences around the Black Hills, South Dakota.**

*Figure 10.* **Barite-bearing concretions weathering out of the banks on Elk Creek.**

nearly colorless, Z = very pale yellow-brown with the absorption formula Z > Y = X. This difference in pleochroism is undoubtedly related to the intensity of color in the respective crystals; the Elk Creek specimen is golden brown and the Hoover sample is pale yellow-brown. Orientation for both barite crystals is X = c, Y = b and Z = a. The optic plane lies parallel to {010}. Dispersion was not discernible.

## CHEMISTRY OF BARITE

Golden barite from the Elk Creek and Hoover localities was examined chemically by atomic absorption methods using a Perkin-Elmer model 3030 atomic absorption spectrophotometer utilizing a nitrous oxide-acetylene flame. One representative sample for analysis was procured from each locality.

A partial analysis of the Elk Creek barite sample yielded BaO = 63.71, CaO = 0.07 and SrO = 0.08%. The Hoover sample yielded BaO = 61.70, CaO = 0.06 and SrO = 0.45%.

## CONCLUSIONS

The geological extent of golden barite-bearing rock is great, and only those areas exposed by stream erosion have been worked to any extent by collectors. This is therefore not an occurrence in any conceivable danger of ever being worked out. However, much labor is involved in finding and cracking open the hard concretions, and it is very difficult to salvage the fragile and sensitive crystals undamaged. Furthermore, all collectors should be meticulous about obtaining permission from the local ranchers to collect on their land; they do not take kindly to trespassers!

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# Ramsbeckite
# an American occurrence
# at the Ecton Mine, Pennsylvania

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## INTRODUCTION

Recently, Hodenberg *et al.* (1985) have described a new copper zinc sulfate mineral, ramsbeckite, from five localities in Germany. We had been preparing a description of this new mineral simultaneously, based on specimens found at the Ecton mine in Pennsylvania; that description is presented here.

## PHYSICAL and OPTICAL PROPERTIES

Ramsbeckite from the Ecton mine occurs as subhedral, slightly rounded crystals. They are blue-green in color, similar in hue to spangolite. The streak is pale green and there is no discernible fluorescence under ultraviolet light. We observed a perfect {001} cleavage, and a vitreous luster on cleavage surfaces. The density is 3.40 g/cm³, measured using heavy liquid techniques. Optically, the Ecton mine ramsbeckite is biaxial negative, with $2V = 36(2)°$ (meas.), and indices of refraction $\alpha = 1.624(2)$, $\beta = 1.674(2)$, and $\gamma = 1.678(2)$. Pleochroism is weak: $X$ = pale blue-green, $Y$ and $Z$ = blue-green. Absorption $X < Y = Z$. The orientation of the indicatrix of Ecton mine ramsbeckite is different from that given by Hodenberg *et al.* (1985) as $X \Lambda c$, $Y = a$, $Z \Lambda b$. For ramsbeckite from the Ecton mine, we have observed the following orientation: $X \Lambda c = 5°$, $Z \Lambda a = 5°$, and $Y$ almost parallel to $b$. The principal vibration direction $Y$ is very close to the orientation of the $b$-axis, but deviates from it by an angle of 2–5°. This was observed on several crystals studied with spindle-stage methods and which were previously oriented using single-crystal X-ray diffraction methods. Therefore, the orientation of the indicatrix for the studied Ecton mine material is consistent with triclinic symmetry, even though X-ray diffraction studies show that it is monoclinic. However, apparent optical symmetries that are less symmetrical than those of the structure are commonly observed in phases with strained and/or lineage structures, as observed by X-ray diffraction for ramsbeckite (see below). In Table 1, we compare the data of Hodenberg *et al.* (1985) with those for the Ecton mine material. We have no ready explanation for the differences in the optical data; resolution of such conflicting data would require comparison of samples from both occurrences.

## CRYSTALLOGRAPHY

Crystals of ramsbeckite were examined using precession and Weissenberg techniques, and found to be monoclinic. Care was taken to attempt to discern any deviations from monoclinic symmetry (which the optical data suggested were possible) but none was observed. However, single-crystal reflections were broad, asymmetric and split, due to the presence of a pervasive lineage structure, so that very subtle deviations from monoclinic symmetry might not be detectable. However, extinctions are consistent only with space group $P2_1/a$. The unit cell parameters were refined from X-ray powder diffraction data obtained using a 114.6-mm diameter Gandolfi camera, Cu$K\alpha$ X-radiation, NBS silicon as an internal standard, and a polycrystalline sample. The unit cell parameters determined are $a = 16.02(4)$, $b = 15.62(2)$, $c = 7.09(1)$Å, $\beta = 90.0(1)°$, with $Z = 4$. Because the value of $\beta$ was observed to be 90°, within error, on Weissenberg films, the $d$-values of reflections $hkl$ and $\bar{h}kl$ were so nearly similar that corresponding observed reflections on the powder photograph could not be indexed unambiguously. The value of $\beta$ was therefore held constant during least-squares refinement of $a$, $b$ and $c$. These cell parameters compare well with those of Hodenberg *et al.* (1985), as do the powder data, which therefore are not repeated here.

## COMPOSITION

Crystals of this Pennsylvania ramsbeckite were analyzed using microbeam techniques due to paucity of sample. They were analyzed using an ARL-SEMQ electron microprobe, operating voltage of 15 kV, sample current of 0.025 μA, and standards $Cu_2O$ (Cu), ZnO (Zn), and celestite (S). A wavelength-dispersive microprobe scan indicated the absence of other elements with atomic number greater than 8. The resultant analysis, with water calculated by difference due to paucity of material, yields: CuO = 43.8, ZnO = 18.1, $SO_3$ = 17.6, $H_2O$ = [20.5], sum = 100.0 weight percent. The chemical formula, calculated on the basis of unit cell contents, is: $4[Cu_{5.00}Zn_{2.02}S_{2.00}O_{8.00}(OH)_{10.04} \cdot 5.34H_2O]$. Because Hodenberg *et al.* (1985) showed that the Cu:Zn ratio may vary from 3:1 to 2:1, we write the ideal formula as $(Cu,Zn)_7(SO_4)_2(OH)_{10} \cdot 5H_2O$. However, because analyses show Cu:Zn ≈ 2.5, there is some suggestion of ordering of Cu and Zn on different sites.

## OCCURRENCE

The Ecton mine is one of several, including the Perkiomen mine, which exploited a Pb-Zn occurrence in Montgomery County, Pennsylvania. The exact location is given by Smith (1977) as

*Table 1.* **Crystallographic and optical data for ramsbeckite from the Ecton mine and from Hodenberg *et al.* (1985).**

| | Ramsbeckite Present study | Ramsbeckite Hodenberg *et al* (1985) |
|---|---|---|
| Crystal system | Monoclinic | Monoclinic |
| Space group | $P2_1/a$ | $P2_1/a$ |
| *a* | 16.02Å | 16.066Å |
| *b* | 15.62 | 15.577 |
| *c* | 7.09 | 7.102 |
| β | 90.0° | 90.20° |
| Z | 4 | 4 |
| Density (meas.) | 3.40 g/cm³ | 3.39 g/cm³ |
| Density (calc.) | 3.39 | 3.37 |
| Optic sign | (−) | (−) |
| Optic axial angle | $2V_x = 36(2)°$ | $2V = 37.0°$ |
| α | 1.624 | 1.635 |
| β | 1.674 | 1.675 |
| γ | 1.678 | 1.680 |
| Orientation: | $X\Lambda c = 5°$ | $X\Lambda c$ |
| | $Y \approx //b$ | $Y = a$ |
| | $Z\Lambda a = 5°$ | $Z\Lambda b$ |

". . . located to the east of Mine Run, 0.55 mile (0.85 km) west of the crossroads at Audubon and 0.15 mile (0.3 km) northeast of the junction of Mine Run with Perkiomen Creek." The mine is on the property of the Audubon Wildlife Sanctuary. Readers interested in these mines are encouraged to read the accounts by Smith (1977) and Evans (1980). These publications are very well written and highly informative. Ramsbeckite is known to us on one museum specimen and we have no knowledge of its occurrence or relations within the mine. The German occurrences are all post-mine, but there is nothing about the Ecton mine material that suggests it is of such origin; it appears to be formed contemporaneously with other secondary minerals.

Ramsbeckite forms as blue-green, subhedral crystals occurring both as isolated individuals and clusters of granular crystals, which are part of an assemblage of secondary minerals derived from oxidation of a primary galena/sphalerite ore occurring in a quartz vein. Copper may have been supplied by chalcopyrite. In addition to ramsbeckite, associated secondary minerals include linarite, anglesite, pyromorphite, posnjakite and a serpierite-like mineral. Anglesite was apparently the first secondary mineral to form, followed by linarite, posnjakite and ramsbeckite, but their relative positions in the paragenetic sequence are not clear. The serpierite-like mineral was the last formed, and it partially covers the other phases.

Ramsbeckite also occurs in a vug of granular crystals which appears to have been exposed to weathering; the other phases are not found in this vug. This sample was shown to several Pennsylvania collectors familiar with the Ecton mine, but they were not familiar with the mineral, suggesting that it might be rare at this mine. On the other hand, the five separate German occurrences plus this one suggest that ramsbeckite might occur at many localities, albeit in small amounts, and this description might thus provide an impetus to such additional finds. The studied sample is deposited in the Smithsonian Institution under catalog # NMNH 136297.

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# Neotocite from the Foote Mine North Carolina

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In the late sixties the author collected a specimen (NMNH #144766) from the Foote Mineral Company spodumene mine, Kings Mountain, Cleveland County, North Carolina, that has not until now been positively identified. It was only recently that its resemblance to neotocite was even recognized. Neotocite is described by Clark *et al.* (1978) as "the name given to a series of manganese silicates close in composition to $MnSiO_3 \cdot H_2O$, often with considerable amounts of manganese replaced by iron or by lesser amounts of calcium, magnesium, or aluminum." Because the mineral is nearly amorphous and there were a number of ill-defined, poorly crystallized manganese and iron phases to be considered (neotocite, hisingerite, penwithite, klipsteinite and stratopeite, to name some), the mineral was put aside following the original qualitative determination that it is an aluminous manganese and iron silicate. Recently the author's attention was directed to the paper on neotocite by Clark *et al.* (1978), so the material was reexamined and a favorable comparison between the unknown and neotocite was made based upon the important data presented therein.

The specimen is relatively large and rich, consisting of a flat fracture surface in pegmatite measuring 11 by 6 cm and covered by a druse of albite crystals with large apatite and fairfieldite crystals along one edge. Upon these minerals was precipitated a crust of dark brown neotocite up to several millimeters thick. Siderite, in pale brown perfect spheres about 2–3 mm in diameter, is scattered over this crust. The neotocite is waxy or pitchy with a conchoidal fracture; it is soft and brittle. It closely resembles specimens of neotocite from several localities in the mineral collection of the Smithsonian. A spectrographic analysis revealed the presence of major amounts of manganese, iron and silicon with lower levels of aluminum and calcium.

When the mineral was X-rayed it produced only four very diffuse and broad, barely discernible lines which reasonably match those reported by Whelan and Goldich (1961):

| Whelan and Goldich (1961)[1] | This Study[2] |
|---|---|
| d(Å) | d(Å) |
| – | 6.4 |
| 4.36 | 4.4 |
| 3.59 | 3.5 |
| 2.59 | 2.6 |
| 1.54 | – |

[1]from the Montreal mine, Wisconsin
[2]lines too diffuse for relative intensity estimates

After a sample of the mineral was heated to 1000° for 5 minutes, it produced the X-ray pattern of braunite, as did most of the samples similarly treated by Clark *et al.* (1978). In addition there is superimposed on the braunite pattern a weaker pattern of either jacobsite or magnetite. One of the samples treated by Clark *et al.*, neotocite from the Erik Ers mine, Gestrikland, Sweden, formed a spinel phase upon heating at 1000°C+ (either jacobsite or magnetite), as did an iron-rich specimen from Noda-Tamagawa, Japan, described by Ito (1961). It appears that the critical temperature determining whether braunite or a spinel forms from heating neotocite may lie in the vicinity of 1000°C.

The density of the Foote neotocite is highly variable and is in the range of 2.04 to 2.2. The mineral is isotropic with an index of about 1.55, and it is brownish orange in transmitted light.

Neotocite is rare at the Foote mine. It is, however, associated on

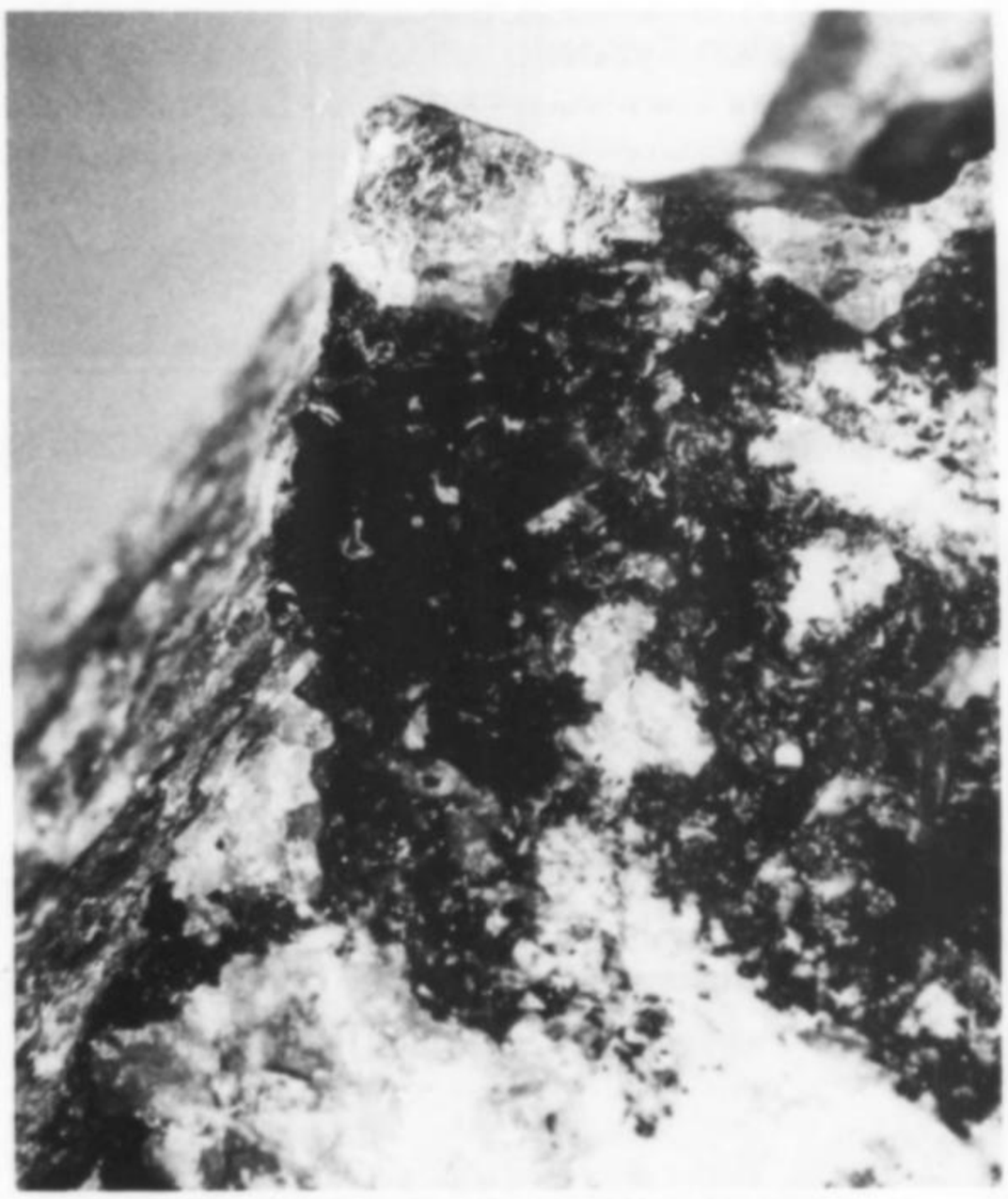

*Figure 1.* **Neotocite (black) with apatite (white) from the Foote mine, North Carolina. Surface area about 3 cm across. Photograph by the author.**

at least one specimen in the Smithsonian collection (NMNH #119473) with a mineral of similar composition that is very common at the Foote mine. This mineral, too, has been difficult to adequately characterize, but it is known to be a hydrated manganese phyllosilicate containing significant amounts of calcium, sodium, potassium, iron and aluminum. Its crystallinity is poor, resulting in a diffraction pattern of just a few lines (13.5 Å vvs, 2.81 m, 2.63 w, 1.63 w). In spite of this, the mineral commonly gives the appearance of being beautifully crystallized, resembling muscovite in spherical clusters of well-defined platy crystals. It is pale tan to dark brown in color, the depth of color seemingly dependent upon the degree of oxidation it has experienced. As it is an abundant phase at the Foote mine, and specimens are in the hands of many collectors, it has been assigned the working name of "Foote unknown #2" for reference.

Specimen #119473 shows a transition from a botryoidal, dark brown crust (wherein the hemispherical nodes show a radial structure when broken, resembling some of the more oxidized unknown #2) to neotocite. Nodes with radial platy interiors give an X-ray diffraction pattern which is the same as that of unknown #2. This is the only such specimen seen by the author, but it does suggest a similar origin for both phases.


## ACKNOWLEDGMENTS

The author is indebted to the following for assistance with X-ray and analytical determinations: Dr. P. J. Dunn, E. Jarosewich and J. A. Nelen.


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# POKROVSKITE, A COMMON MINERAL

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Pokrovskite was described by Ivanov *et al.* (1984) from an occurrence in the Zlatorgorskaya instrusion in central Kazakhstan, U.S.S.R., where it was found in a vein in dunite associated with dolomite, magnesite and a sjögrenite-like mineral. Its formula has been given as $Mg_2(CO_3)(OH)_2 \cdot \frac{1}{2}H_2O$. Samples of this mineral were found in abundance in Maryland and brought to the Smithsonian for identification as early as 1966. Of course, its precise nature was not known at the time. It looked very much like asbestos but was found to effervesce in dilute HCl, and its X-ray diffraction pattern did not match that of any known species. Semiquantitative tests had shown that it is a magnesium carbonate, with significant amounts of iron in its composition. For several reasons the unknown was put aside and nearly forgotten.

The very first samples brought into the museum had been collected by a local hobbyist who was a very active and inquisitive collector and could recognize something that might require more than routine attention. This gentleman, now deceased, was Darwin Rygg; the Smithsonian's collection has benefited greatly from his keen eye, his relentless pursuit of minerals, and his generous nature. He often brought in excellent specimens of minerals not then known to occur in the states of Maryland and Virginia.

The samples found by Rygg in 1966, and later, came from the Rockville Crushed Stone Company quarry, Hunting Hill, Montgomery County, Maryland, where pokrovskite occurs along fractures in a serpentinite that has several rodingite dikes intruding it. For a more detailed description of the locality the reader should consult Larrabee (1969), a publication which predated the identification of pokrovskite. Pokrovskite forms thin white veins 1–3 mm thick in the serpentinite (Fig. 1). Within the veins the mineral is densely packed and has a brilliant silky luster and fibrous texture at right angles to the plane of veins so that it greatly resembles asbestos. The quarry also has veins of asbestiform chrysotile as well as tremolite, hydromagnesite and talc, so it may be difficult to recognize immediately those that are pokrovskite. The strong resemblance of pokrovskite in this form to "satin spar" (gypsum) and its effervescence in acid should make it easily distinguishable from the asbestiform silicate minerals. The veins of pokrovskite are often surficially altered or coated so that they have a dull tan appearance.

Another specimen from the Rockville Crushed Stone Company quarry in the National Collection consists of groups of radial sprays of acicular crystals which form shallow cones with concave depressions at their centers, looking very much like miniature shield volcanoes (Fig. 2). The cones have a diameter of approximately 4 to 5 mm. The individual crystals in these groups are somewhat more ragged appearing than is the vein material and may have been weathered or damaged in cleaning. They are pale tan in color but were probably originally white. These conelike clusters are scattered over a surface of massive serpentine. This specimen

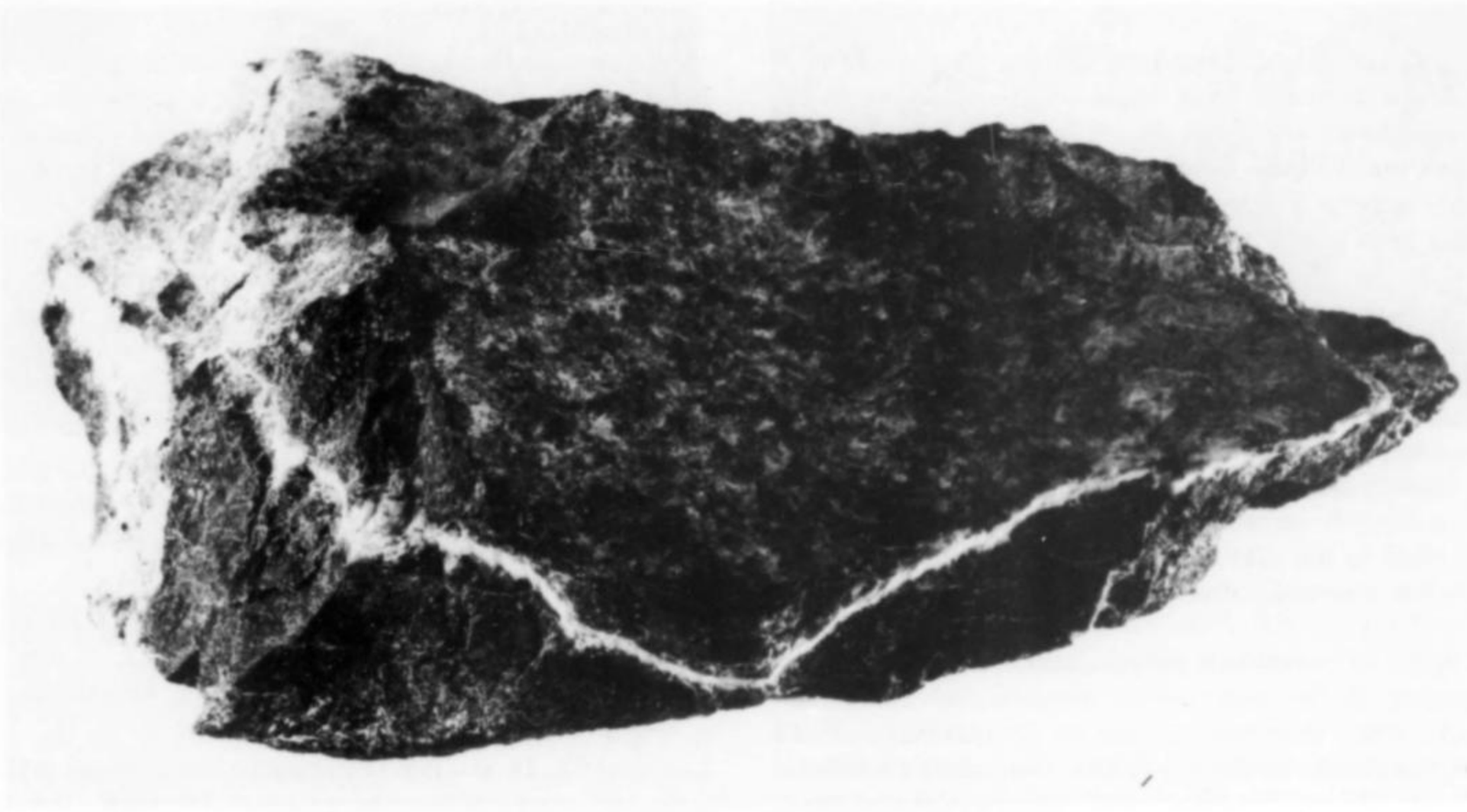

***Figure 1.*** **Asbestiform pokrovskite veinlets in serpentine. Rockville quarry, Maryland (NMNH #121346).**

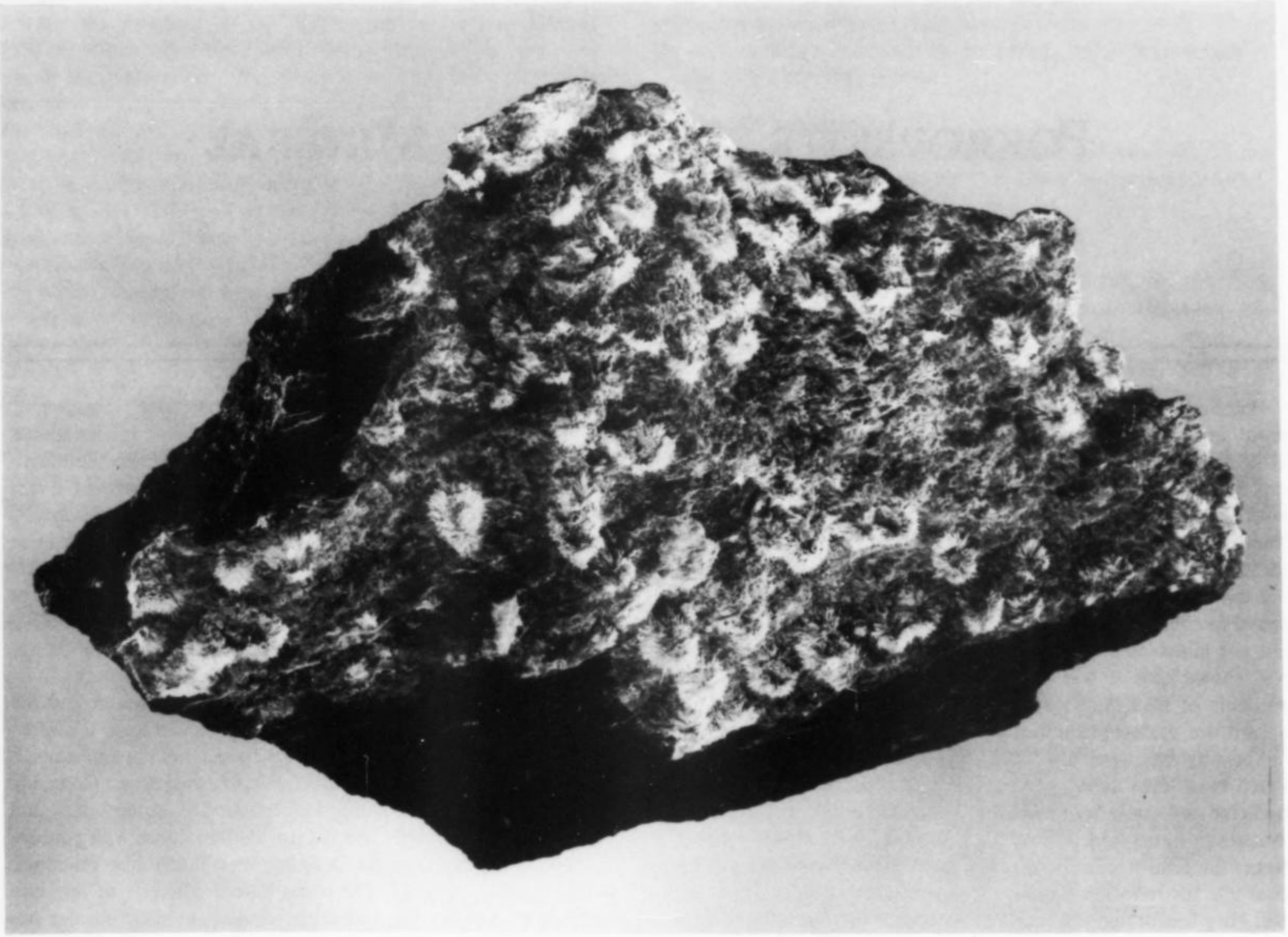

*Figure 2.* **Flat cone-shaped groups of pokrovskite crystals; the specimen is 9 cm across. Rockville quarry, Maryland (NMNH #122462).**

was also collected by and donated by Darwin Rygg, some years after the initial discovery. Rygg found another specimen of pokrovskite associated with coalingite. A specimen from Rockville came to us from the John Gruger collection and was a gift from Carl Francis in 1975. Its appearance is altogether different and one would never guess that it is pokrovskite. The crystals are arranged radially in circular clusters which lie flat on the serpentine surface but they are dark bronze in color and nearly metallic in luster. Philip Marcus, also a local collector, discovered and brought to the museum specimens that we recognized as the same mineral Rygg had collected.

Rodney Leftwich found the mineral at the Addie olivine quarry, Jackson County, North Carolina. In this locality it is found in fractures in a partly serpentinized granular dunite as flat radial sprays of white to tan silky fibers, much more loosely arranged than heretofore observed. Chromite crystals of micro size are associated.

A description of pokrovskite was presented in abstract form at a recent meeting of the International Mineralogical Association (Fitzpatrick, 1986). Reference is made to the occurrence of the mineral at four North American localities, two already cited herein (Montgomery County, Maryland, and Jackson County, North Carolina) plus two others in Sonoma County, California, and Baltimore County, Maryland. Fitzpatrick describes all occurrences as being "within ultramafic bodies of dunite or serpentinite, and associated minerals are other hydrous magnesium carbonates and silicates." He includes analyses of three of the North America pokrovskites and X-ray data for two of them.

So it certainly appears that pokrovskite is a widespread and abundant mineral and can be expected to occur in most serpentine environments, just as coalingite has proven to be nearly ubiquitous in these areas. The amazing thing is that it escaped detection for so long.

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# PHOSPHOSIDERITE FROM THE CHAMPION MINE, CALIFORNIA

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## INTRODUCTION

Phosphosiderite, the monoclinic dimorph of $FePO_4 \cdot 2H_2O$, has been identified in samples collected from the Champion mine, Mono County, California. This is the first recorded occurrence of phosphosiderite from this mine, and possibly from California.

## LOCATION

The Champion mine is located on the western slope of the White Mountains in eastern California at an elevation of 2800 meters and is well known for its rare phosphate minerals and rutile crystals. The mineralogy and geology of the mine has been described recently by Wise (1977).

During a recent trip to the mine, samples of a massive reddish brown mineral filling cavities in quartz were collected near the trail up to the Black Eagle camp. The massive quartz was not found in place but rather as part of the general float material resulting from earlier mining operations and general erosion. To date no other samples of this mineral have been found either along the slopes leading up to the main mining area or in place in the main deposit.

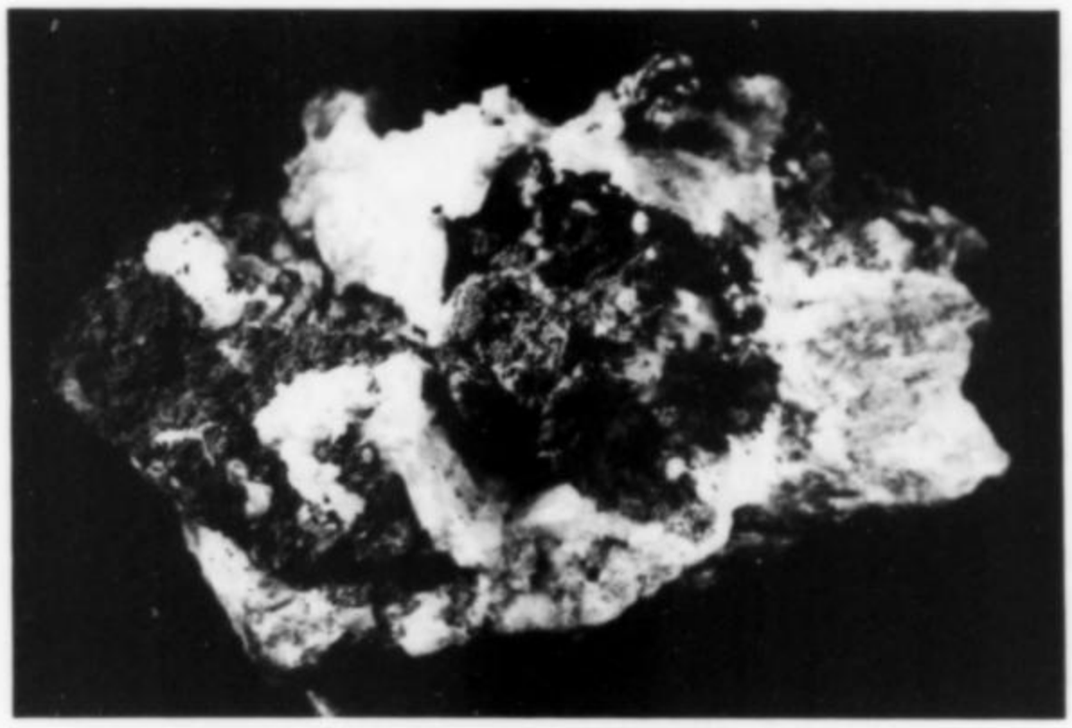

***Figure 1.*** **Typical sample of quartz containing reddish brown phosphosiderite. The specimen is 4 x 6 cm. G. Dunning photo and sample.**

## IDENTIFICATION

An energy dispersive X-ray analysis and X-ray diffraction pattern proved this mineral to be phosphosiderite. Strengite, the corresponding orthorhombic dimorph, has been identified earlier from the mine, notably in the upper workings at localities A and B of Wise (1977). Samples of massive, pale violet strengite have been found by the author as crusts on pyrophyllite in the talus rubble below the rutile area at locality E.

A macroscopic examination of the phosphosiderite revealed no evidence of crystallization. Figure 1 illustrates a typical quartz sample containing the massive phosphosiderite. The botryoidal surface and porous nature suggests that the phosphosiderite did not originate as a direct replacement of a prior mineral in the host quartz, but rather it was deposited as a gel-like solution. Figure 2 illustrates the porous surface with scattered microcrystals of barite. The barite shows a branch-like network.

## DISCUSSION

The formation of phosphosiderite and strengite was most likely by hydrothermal oxidation of pre-existing phosphate minerals, possibly members of the lazulite-scorzalite series, which are fairly abundant throughout the deposit. Phosphosiderite, for example, has been reported as pseudomorphs after lazulite at Graves Mountain, Georgia, by Barwood and Hajek (1979). Since both phosphosiderite and strengite have been found in very limited quantities, the conditions for their formation appear to have been limited and localized.

***Figure 2.*** **SEM enlargement showing delicate barite crystals covering surface of phosphosiderite. Field of view: 0.13 x 0.16 mm. G. Dunning photo and sample.**

## ACKNOWLEDGMENT

The author is indebted to William S. Wise for the X-ray diffraction and identification of phosphosiderite.

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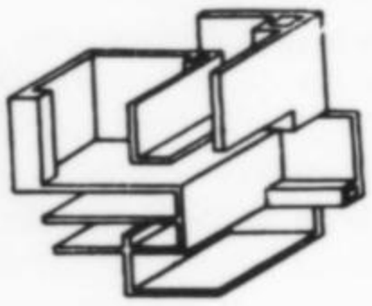

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## Quartz

Omer Dean, a good friend of mine, and I were inspecting micros not long ago. He has a superb collection of Franklin and Sterling Hill specimens including many of the rarer species. However, we were looking at plain old quartz, and remarked on the fact that it occurs in a never ending variety of habits, colors and associations—hence, would make a nice topic for a *Microminerals* column. This column, a joint effort, was the result of our conversation.

Quartz phantoms are not that unusual, but the one shown in Figure 1 is a bit out of the ordinary in that the phantom within it is much more slender than the complete crystal. More commonly, a phantom occupies much more of the total volume. As photographed, the phantom is seen three times through diffraction of light as it leaves three different prism faces of the quartz. The amethyst crystal in Figure 2, however, shows the more typical kind of multiple phantoms. From Crystal Park, Park County, Montana, it has at least six phantoms present as shown by the bands of darker amethystine color within it. If it is assumed that the color changes were caused by changes in the composition of the fluid from which the crystal grew, then it certainly lead a life fraught with vicissitude!

We could not resist including a photo of the starkly simple "floater" crystal of smoky quartz in Figure 9. From Moralla, near Cavendish, Victoria, Australia, this smoky brown, completely clear crystal was sent as part of an exchange by Peter Anderson of Camberwell, Victoria. The simple quartz in Figure 10 from Castellaccio, Bologna, Italy, is unusual for the complete lack of any prism faces. It is growing on colorless, saddle-shape dolomite crystals, and is a peculiar pale buff in color. Equally strange in its crystal habit and also from Bologna, Italy, is the quartz cuboid in Figure 11. Although it is pseudo-isometric and appears to be a combination of a distorted cube and octahedron, it is truly quartz showing a combination of a major and a minor rhombohedron. Similar but more complex cuboidal crystals are shown in Dana's *Textbook of Mineralogy.*

Many of the smaller quartzes from phosphate pods in the Palermo mine, North Groton, Grafton County, New Hampshire, have a peculiar, accordion-like midsection bounded by larger and quite normal combinations of the positive and negative rhombohedrons. The midsection of such crystals (Fig. 12) tends to be opaque white, while the terminations are clear and colorless. somewhat similar in a superficial way are the pagoda-like crystals of quartz from Young's River, Astoria, Clatsop County, Oregon shown in figure 13. However, the ridges around these crystals are not at any particular crystallographic angle to the quartz. Rather, they are all at the same odd angle on the hundred or so quartz crystals on the specimen. What caused all these parallel ridges on all these quartz crystals? Perhaps some high water marks of the solution from which they were growing in the cavity?

Not well known are the delicately amethystine crystals of quartz from the Flux mine, Patagonia Mountains, Santa Cruz County, Arizona. These crystals are quite complex in shape, as is the doubly tapering and doubly terminated crystal shown in Figure 14. Quite the reverse in habit is the nicely formed scepter crystal from the Glory Hole, Central City district, Gilpin County, Colorado, in Figure 15. It is associated with five other quartzes, four of which are also scepters. As can be seen, the scepter crystal in Figure 3 from Denny Mountain, King County, Washington, has an amethystine termination and a milky quartz base. This is not unusual in quartz scepters. In Figure 4 is shown another amethyst crystal from the Flux mine, this one being a reverse scepter. Three other crystal on the same piece of matrix show the same habit. This and the previous Flux mine specimen shown were collected by Wolfgang Mueller of Sherman, Connecticut.

Liquid inclusions in crystals can be extremely beautiful, as is shown by the amethyst crystal in Figure 5. Although the liquid-filled cavity is very distorted, it is a true negative crystal, i.e., the cavity is bounded by the commoner crystal forms found in quartz. This makes sense, since the most stable (lowest energy) faces bounding the outside of a quartz crystal or any other will be the most stable ones inside the crystal as well. Figure 16 shows multiple

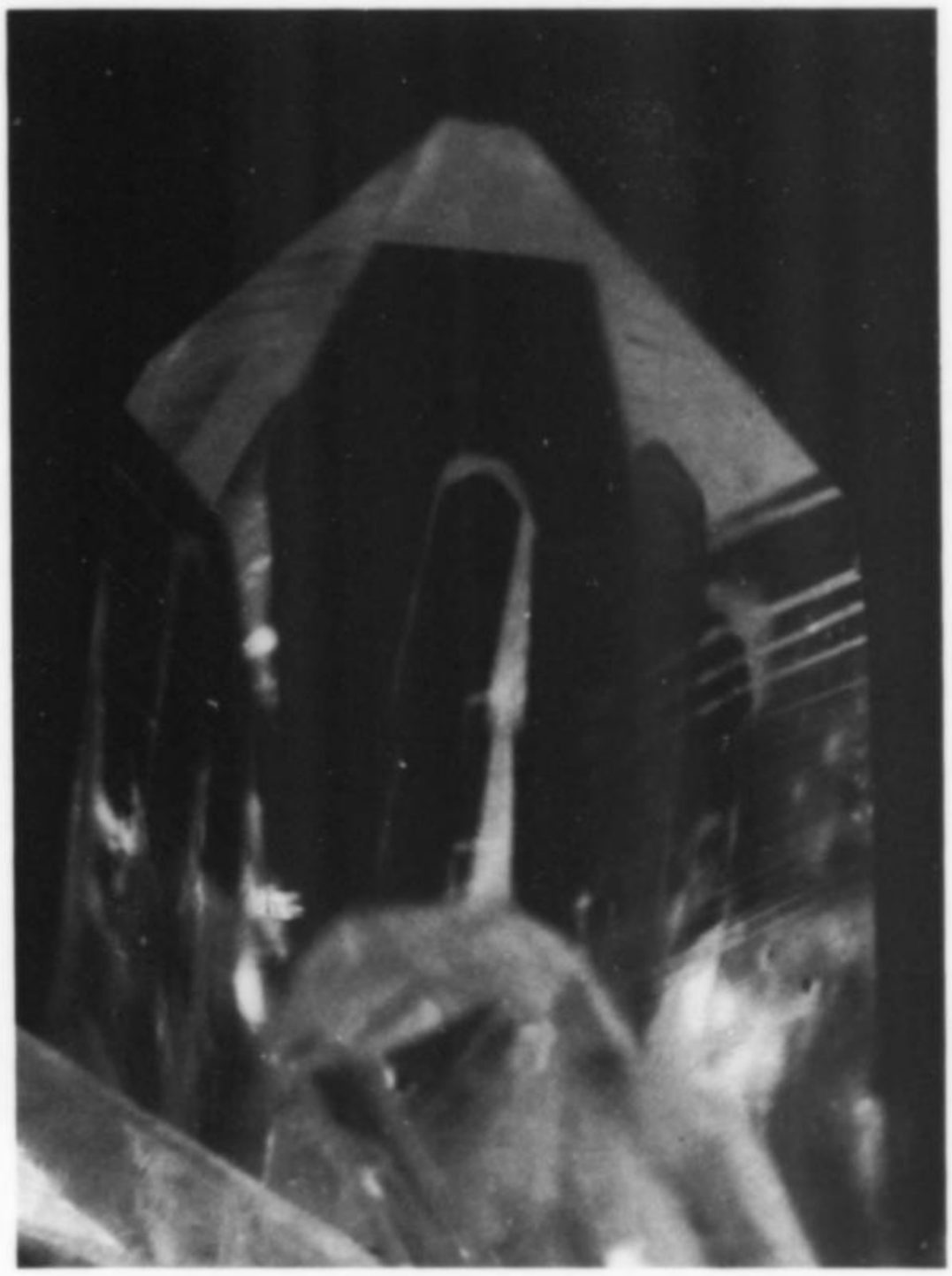

***Figure 1.*** **Colorless quartz crystal 4 mm high from Bridgeport, Montgomery County, Pennsylvania, with phantom. Omer Dean specimen and photo.**

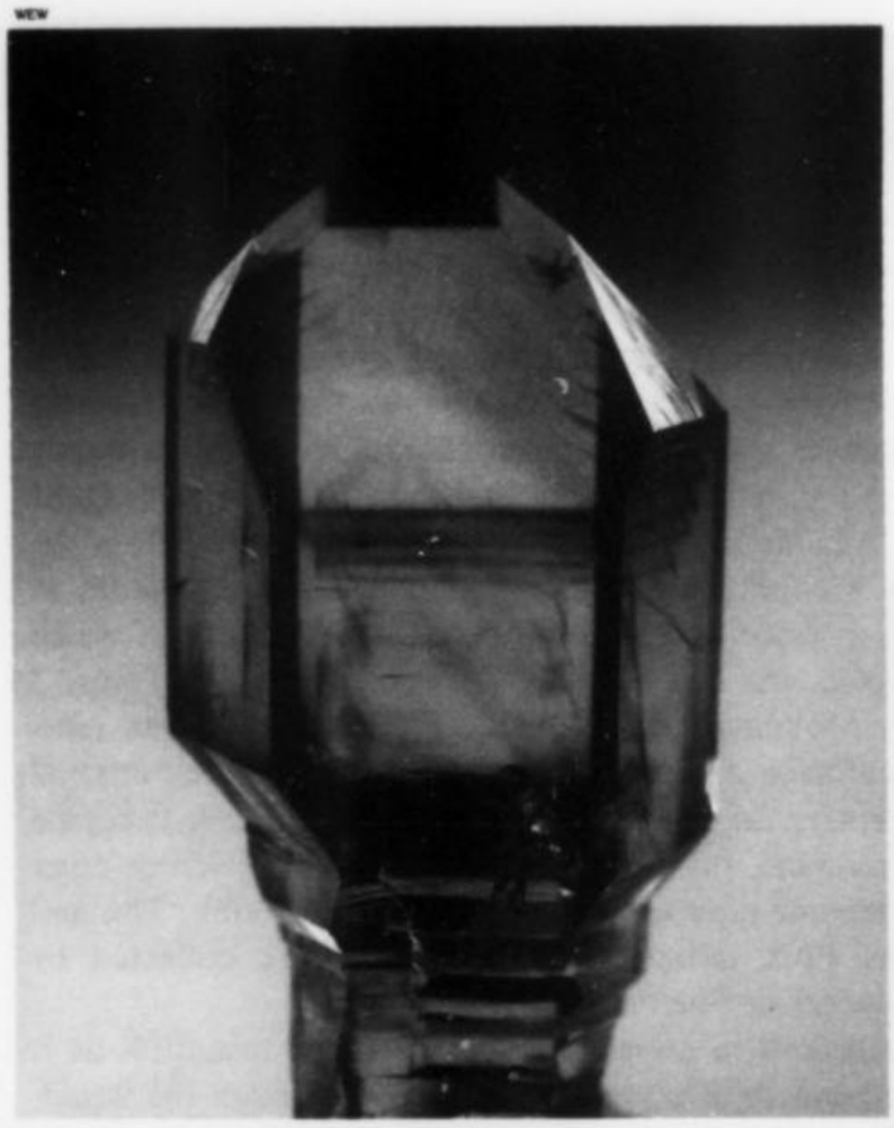

*Figure 2.* **Quartz scepter, 2 mm high, with multiple amethystine phantoms and colorless stem. From Crystal Park, Park County, Montana.**

*Figure 3.* **Amethyst scepter with milky quartz stem, 4.2 cm high, from Denny Mountain, King County, Washington.**

*Figure 5.* **Amethyst crystal with liquid inclusion. The inclusion is 1.2 mm wide; the specimen is from Osilo, Sardinia. Photo by Omer Dean.**

*Figure 4.* **Amethyst reverse-scepter 3.4 mm high, from the Flux mine, Santa Cruz County, Arizona.**

off by continued crystal growth and the enclosed fluid contracts upon cooling. Also of interest is the multitude of still smaller liquid inclusions forming a veil through the upper middle portion of the photograph. These follow a curved surface which was once a conchoidal fracture surface in the crystal. Any such surface is of high energy, and the crystal reacts to such damage by dissolving and reprecipitating part of itself such that the same volume of liquid as was entrapped within the original fracture is enclosed in cavities having a lower area-to-volume ratio and therefore a lower surface energy. That is to say, it redistributes itself so as to form a veil of negative crystals following the shape of the original fracture surface. Such veils are frequently found in crystals of quartz and other minerals.

While there are many more things to be learned from liquid

*Figure 6.* **Rutilated quartz crystal 3.5 cm high from Rio Grande do Sul, Brazil. The rutile grows out of and in the same plane as hematite inclusions.**

inclusions, we turn our attention now to crystalline inclusions in quartz. The first of these is the complex crystal of pyrite within quartz shown in Figure 6. The specimen was one of several purchased from Robert Jackson (Box 2652, Renton, Washington) and all show equally well-developed pyrites within euhedral quartz crystals. They are from the Spruce claim, Goldmeyer Hot Springs, King County, Washington. The much more beautiful rutilated quartz in Figure 6 is a ringer in that it is a good 3.5 cm high and thus hardly a microspecimen. The specimen is from Rio Grande do Sul, Brazil. Close inspection of the original shows that most of the rutile needles grow epitaxially from hematite plates, and are lying in the same plane as the hematite crystals. Present partially as solid inclusions and partially as crystals extending from the surface of the quartz matrix are the goethite needles in the specimen in Figure 8. These are from the Atlas Mountains, Morocco. Similar

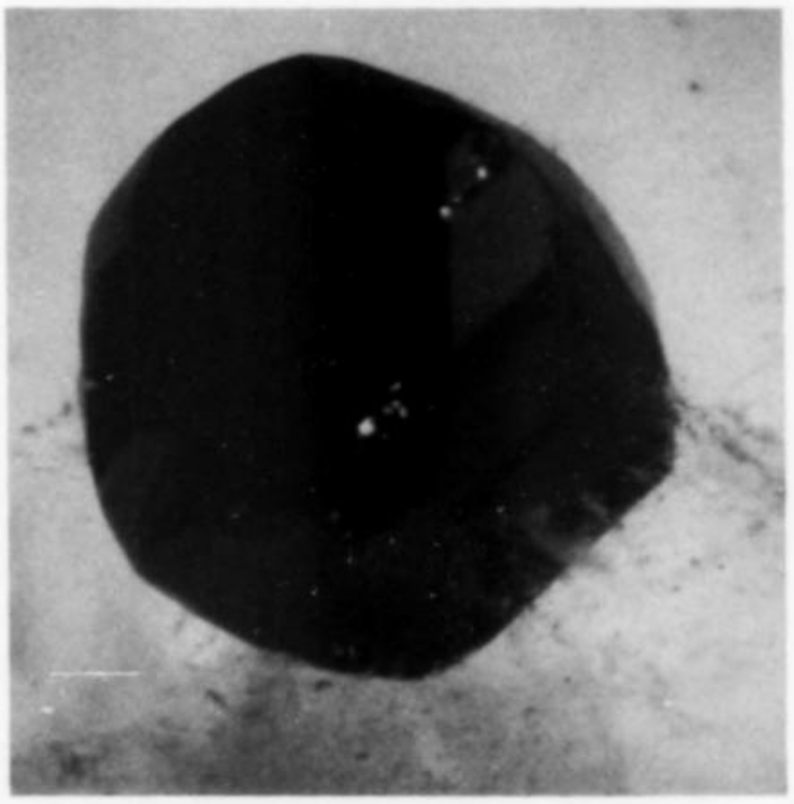

*Figure 7.* **Pyrite inclusion in quartz from Spruce claim, Goldmeyer Hot Springs, King County, Washington. The 0.8-mm pyrite is enclosed within a quartz crystal 4.2 cm long. Omer Dean photo.**

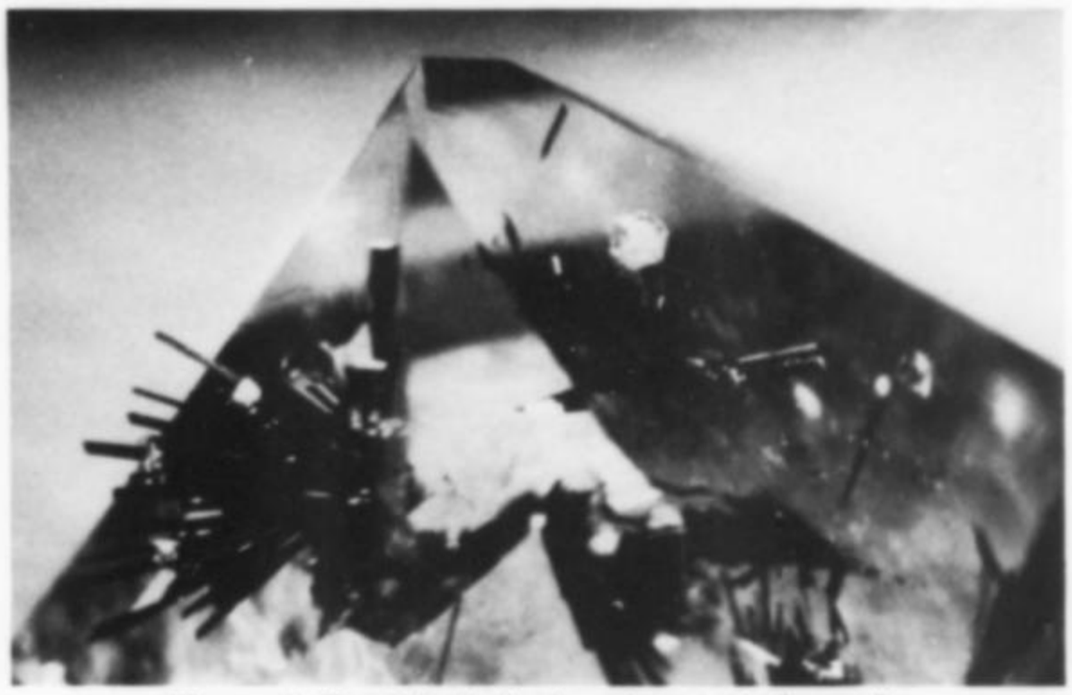

*Figure 8.* **Goethite inclusions in quartz from the Atlas Mountains, 42 km from Marrakesh, Morocco. Field of view, 1.2 mm.**

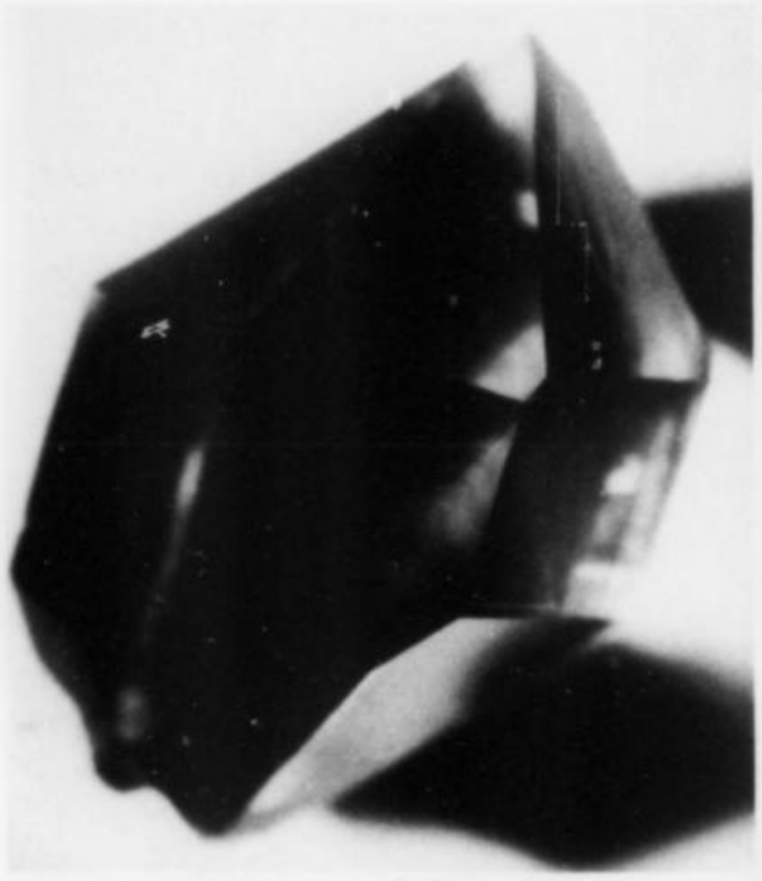

*Figure 9.* **Dark brown, transparent, 8-mm, doubly terminated smoky quartz from Cavendish, Victoria, Australia.**

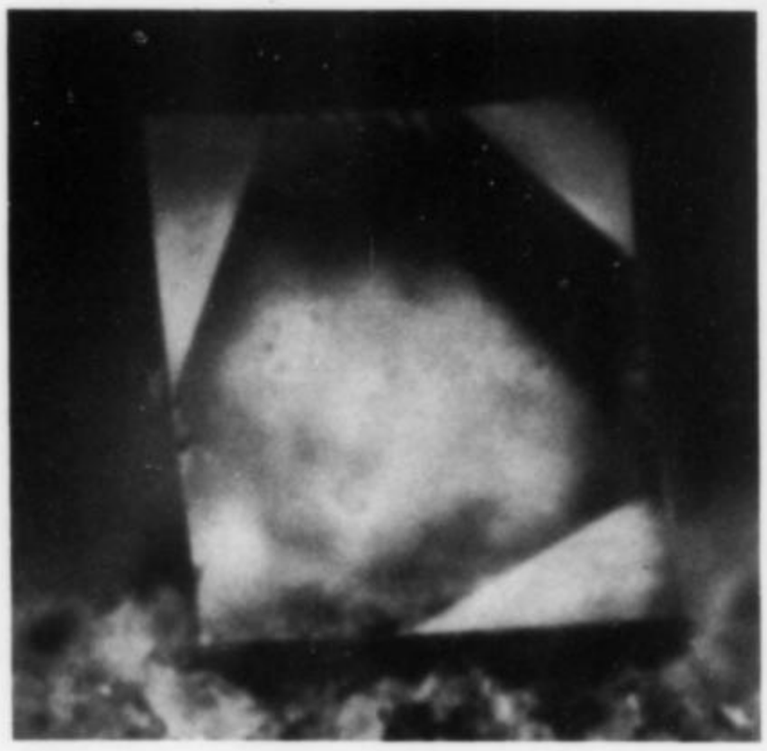

*Figure 11.* **A colorless quartz "cuboid" showing one large and one small unit rhombohedron, from Ca'de Ladri, Bologna, Italy. Size of crystal, 0.4 mm.**

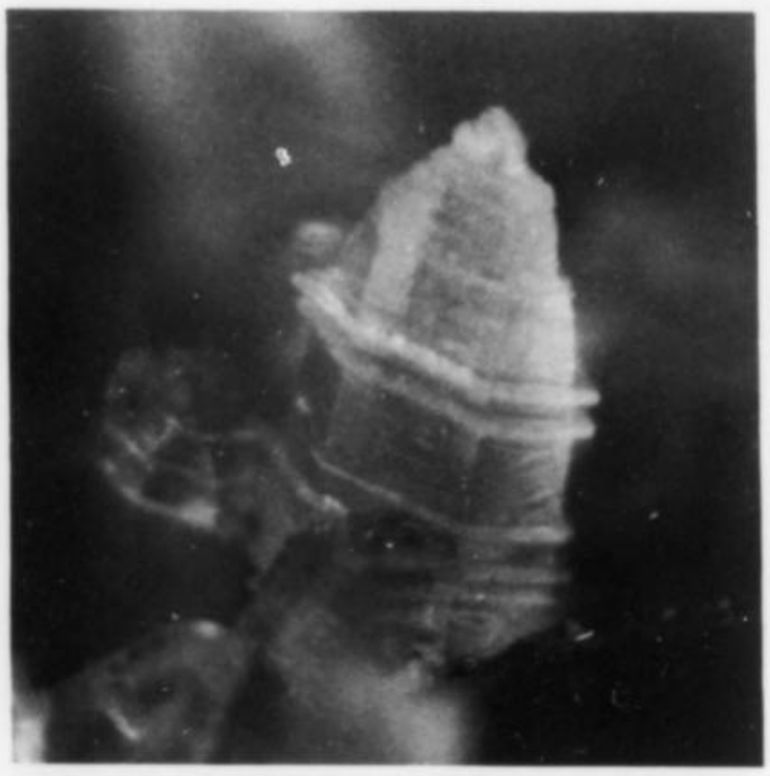

*Figure 13.* **Pagoda-like, colorless quartz crystals with parallel girdles of quartz unrelated crystallographically to the rest of the crystal. The crystal is 0.8 mm high and from Young's River, Astoria, Clatsop County, Oregon.**

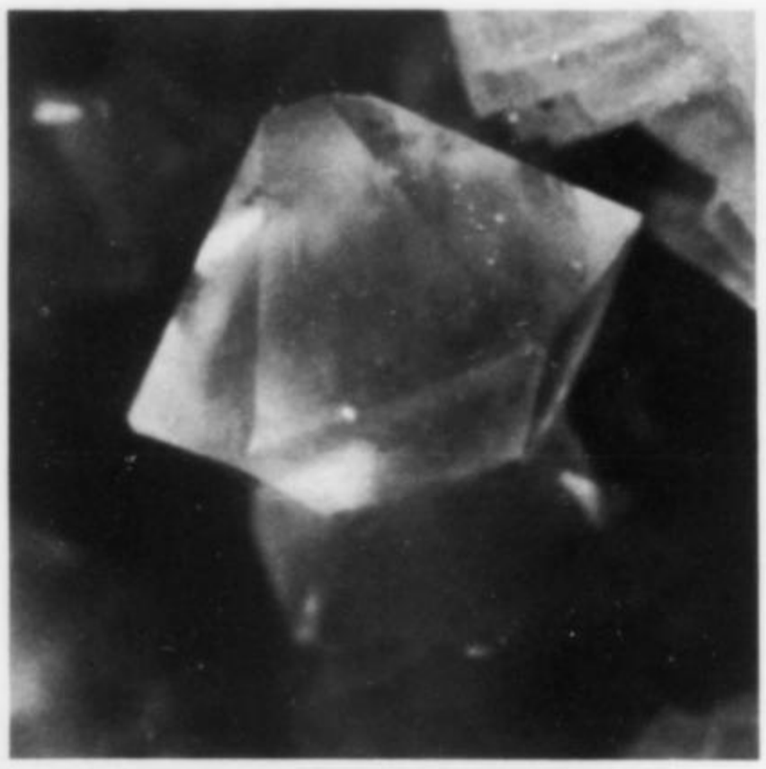

*Figure 10.* **Buff-colored, 1.2-mm quartz crystal showing only the positive and negative rhombohedrons, on dolomite. From Castellaccio, Bologna, Italy.**

*Figure 12.* **Quartz with poorly developed, opaque white prism zone and larger, well developed terminations, from the Palermo mine, North Groton, Grafton County, New Hampshire. Length of crystal, 1.2 mm. Photo by Omer Dean.**

*Figure 14.* **Doubly terminated, amethystine quartz, 8 mm in length, from the Flux mine, Santa Cruz County, Arizona.**

inclusions of goethite in quartz occur frequently in cavities in basalt, and the enclosing quartz is commonly amethystine. The Tessin quartz in Figure 17 is shown more for its interesting habit than for the solid inclusions within it. The latter are probably a feldspar. From Passo Lucomagno, Switzerland, the crystal shows the Tessiner habit found only in the Alpine areas where the most intense metamorphism and highest temperatures prevailed. Elsewhere, the normal quartz habit showing the predominant straight prism and

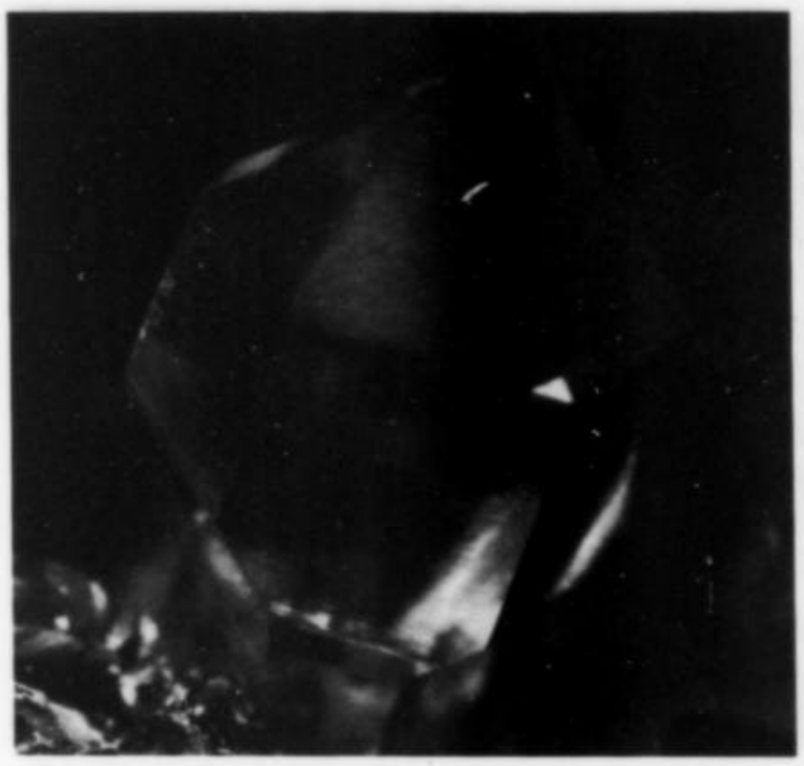

*Figure 15.* **A colorless quartz scepter crystal 2 cm high, from the Glory Hole, Central City district, Gilpin County, Colorado. Omer Dean photo and specimen.**

*Figure 16.* **A veil of liquid inclusions and negative crystals within a colorless quartz crystal from Fonda, Montgomery County, New York. Field of view, 2.5 mm.**

*Figure 17.* **Colorless quartz crystal of the high temperature, Tessin habit, containing inclusions (feldspar?), from Passo Lucomagno, Switzerland. Height of crystal, 7 mm.**

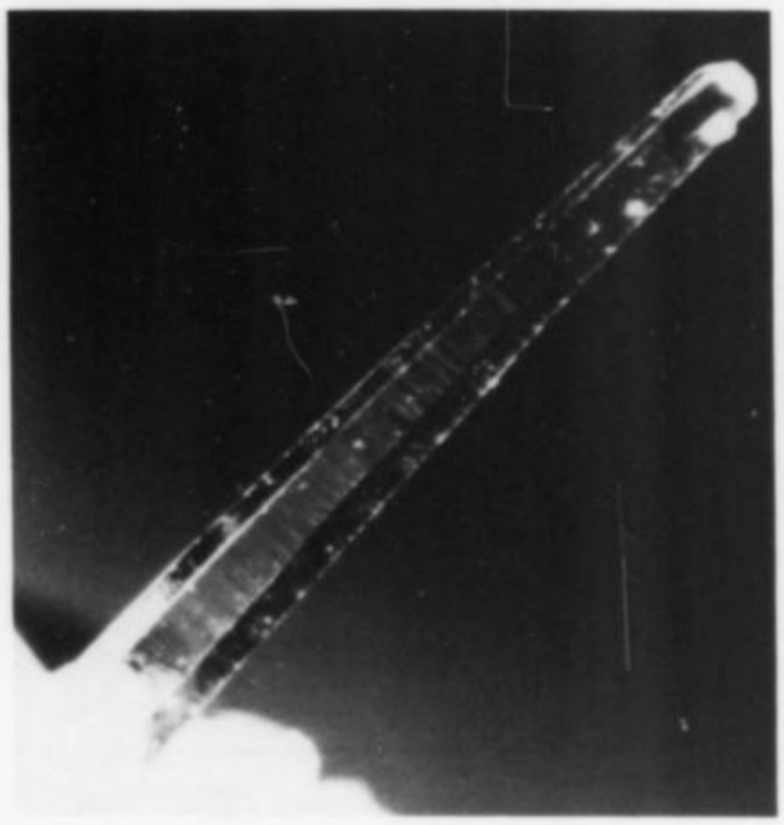

*Figure 18.* **Colorless quartz crystal with steep rhombohedral habit, 5 mm long, from Trepča, Jugoslavia. Photo by Omer Dean.**

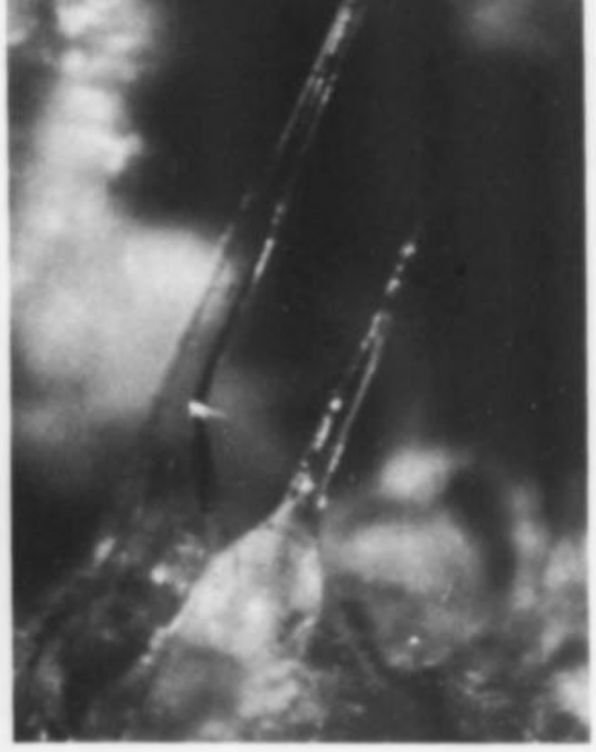

*Figure 19.* **Colorless needle-crystals of high quartz (now inverted to low quartz) growing from larger bases of the same mineral. From Bellerberg, Eifel district, West Germany. Field of view, 0.4 mm.**

*Figure 20.* **A colorless Japan-law quartz twin of tabular habit, 12 mm across, from Denny Mountain, King County, Washington.**

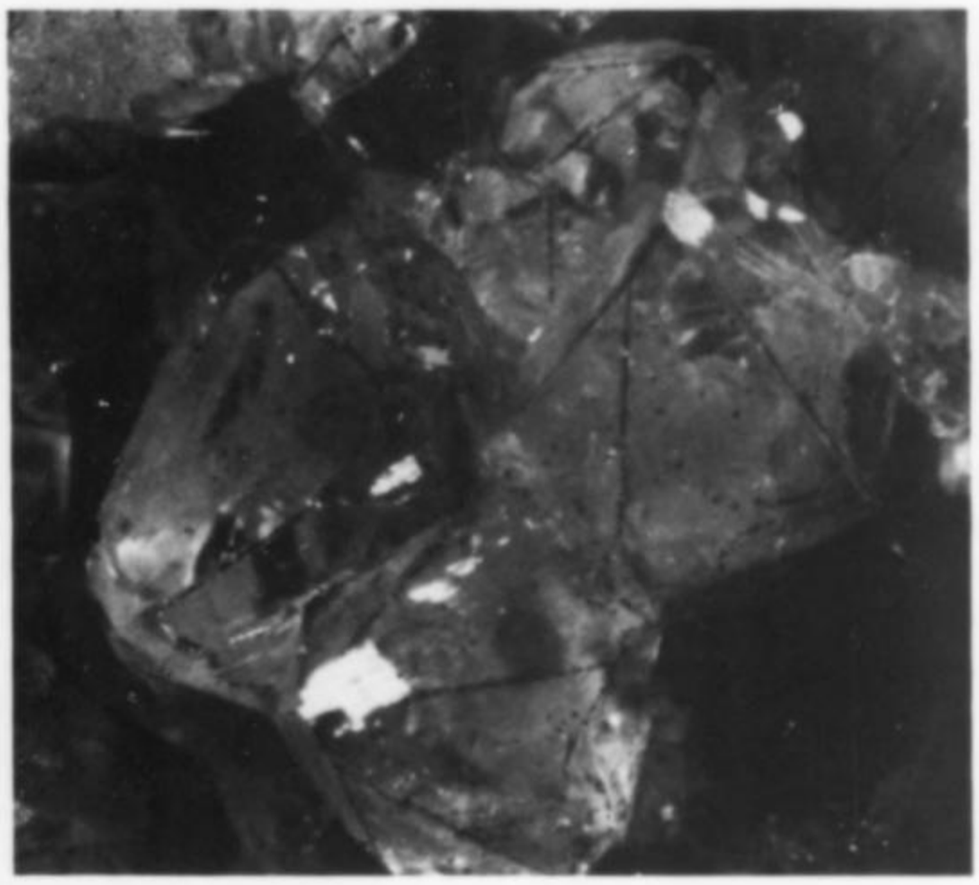

*Figure 21.* **Minute pyrite crystals delineating phantoms within colorless quartz crystals from the Reed's Gap quarry, Wallingford, New Haven County, Connecticut. Field of view, 3.4 mm.**

*Figure 22.* **A group of colorless quartz crystals forming a crown around the termination of an earlier, gray quartz crystal. From Broken Hill, New South Wales, Australia. Field of view, 6.5 mm.**

unit rhombohedral termination is found, to the exclusion of the Tessin habit. Tessin quartzes show higher (steeper) rhombohedrons, either alone or alternating with the prism, and, like the one shown here, may show the unit rhombohedron as a minor part of the crystal termination. This and other interesting facts are to be found in a small book on Alpine minerals written in English, *A Guide to the Minerals of Switzerland,* by M. Weibel. No collector with even the slightest interest in Alpine minerals should be without it.

Like the Tessin quartz just shown, the crystal from Trepča, Jugoslavia, shown in Figure 18 displays a tapering habit, but the positive and negative rhombohedrons bounding it are remarkably steep and uniform. Usually, the degree of taper of such crystals varies much more markedly along the length. The tiny crystal is sitting on a white dolomite rhombohedron, and was detached from a large hand specimen of 3 to 4-cm jet-black sphalerite crystals, for which the mines at Trepča are noted.

Extremely rare are needle-like high quartz whiskers such as those from Bellerberg in the Eifel district, West Germany (Fig. 19) (now inverted to low quartz). These are also of interest because each needle appears to grow from the tip of a quartz crystal of normal habit.

Of course, Japan-law twins of quartz have frequently been depicted in the *Mineralogical Record.* Nevertheless, we could not resist adding just one more, that shown in Figure 20. The specimen is from Denny Mountain, King County, Washington, and was obtained from the same Bob Jackson whose address was given earlier. He is a dealer, and usually has Japan-law twins and interesting inclusions in quartz for sale.

The quartz crystals forming the druse shown in Figure 21 are from the Reed's Gap quarry, Wallingford, New Haven County, Connecticut. Just beneath the surface of the crystals are thin lines of very tiny pyrite crystals. Apparently, shortly before the quartz crystals stopped growing, pyrite crystallized preferentially on the edge between each pair of rhobohedron faces. Of course, these crystals, like some of those described earlier, are phantoms.

The last specimen shown (Fig. 22) is from Broken Hill, New South Wales, Australia. It consists of a number of quartz crystals like the darker gray, central one in Figure 22, all dusted with tiny hematite crystals also visible in the photo. The interesting thing about them, however, are the large, later quartzes (the brighter ones in the photo) which surround the older crystal like a halo. These are in parallel growth, oriented crystallographically exactly like the parent crystal, and it is obvious that if they were to continue to grow, they would cover its tip to form a scepter crystal. Do most scepter crystals form in this way? Who knows?

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# What's New in Minerals?

by Wendell E. Wilson

## DENVER SHOW 1986

[*The following report was provided by Gloria Ludlum.*]

The Denver Gem and Mineral Show, sponsored by the Denver Council of Gem and Mineral Societies, was held September 12–14, 1986, at the Denver Merchandise Mart, which provides excellent facilities for both the retail and wholesale portions of the show. This year the Show was a great success; attendance was at an all-time high (about 6700), the selection of dealers and displays was very good, and the show attracted many foreign visitors, both as buyers and as dealers. The promoters of the Independent Mineral Dealers Show, the satellite show held at the Holiday Inn North just a few minutes away from the main show, were also pleased with the success of their show which featured an expanded list of participating dealers including a few foreign companies.

A major find of bright blue-green amazonite was unveiled at this show. The specimens, found by Don Smith, are being sold by Wayne and Dona Leicht (*Kristalle*). (See following report.)

Ben de Wit had a fine selection of barite specimens from East Germany. These were found in a uranium mine (the Pöhla mine) near Crottendorf, and had been collected over the last 4 to 5 years. Only about 200 decent specimens have been found. Transparent yellow-brown crystals up to 12 cm were found initially, but more recent crystals are generally a lighter yellow color and smaller in size (up to 5 cm). Specimens range from miniature size to large cabinet size. During the summer, de Wit also obtained a few calcite specimens with associated sphalerite, galena and quartz from the 19th September mine, Madan, Bulgaria. He hopes to obtain more in the near future.

A small sampling of an aquamarine find in the Sawtooth Mountains of Idaho was on display at the show. Approximately 250 crystals were found by Stan Esbenshade (Tucson, Arizona) in early August, primarily in one major pocket measuring 45 x 48 cm. The aquamarine crystals were found loose at the bottom of a collapsed pocket among tree roots and were associated with smoky quartz. The transparent crystals vary from pale blue-green to dark blue and measure up to 12 cm in length. The quality of the crystals ranges from highly included with veils and bubbles to gemmy material. A simple hexagonal prismatic habit with flat terminations dominates.

Interesting new specimens from Peru were being offered by *Faust and Faust*. These specimens from the Pachapaqui mine, Ancash Province (due north of Lima about 680 km), include pastel pink crystals of various forms that were being labeled manganocalcite and rhodochrosite. Analyses are currently being done to determine the exact composition and identity. These carbonates are frequently associated with quartz, pyrite and tetrahedrite. Peter Faust is planning future trips to this locality to obtain additional specimens and information about the mines. Faust reported that other interesting

***Figure 1.*** **Prismatic aquamarine crystals to 11.4 cm, some with minor smoky quartz, from the Sawtooth Mountains, Idaho; collected by Stan Esbenshade.**

specimens have been found at this mine which also require further analysis before identification can be confirmed.

Southern Illinois continues to provide interesting new material. Ross Lillie of *North Star Minerals* had a small selection of sphalerite specimens from the Denton mine. These specimens were found in April in an orebody parallel to the main orebody. The crystals, up to 3 cm, are brilliant black with bright drusy chalcopyrite scattered over them. These are probably the best sphalerite specimens to have come from the Denton mine. A few of these have associated lustrous octahedron-modified cubes of galena up to 6 cm. Also associated are purple fluorite cubes to 3 cm.

The *Tideswell Dale Rock Shop* of Derbyshire, England, had a large selection of high-quality fluorite specimens from three mines in the Weardale area. Close to 200 specimens of classic penetration-twinned Weardale fluorite from the Eastgate mine were on display, most of them in the 1–4 cm size range. A few cabinet specimens, with crystals up to about 3 cm, were also available. The color is generally a lovely dark green with purple zoning and, in some cases, liquid inclusions. From the Blackden (or Black Dean) mine were specimens taken from a large pocket discovered in early 1986 as a new drift was being driven. The selection of about 40 pieces included specimens from 2 to 10 cm in size. The Blackden mine was closed recently for economic reasons. The West Pastures mine was represented by about three dozen yellow fluorites being recirculated from earlier finds; very little has come out of the mine in recent times. This may well be the finest selection of Cumberland fluorites to appear on the American market since the 1977 Detroit Show (see vol. 9, no. 1, p. 37).

Carlos Barbosa, a well-known Brazilian dealer, brought a small find of attractive violet-pink apatite crystals recovered in August at the Golconda mine near Governador Valadares. The largest crystal (about 3 x 7 cm) and several others were being offered by *Roberts Minerals*. Some crystals are associated with bertrandite. Barbosa also had a selection of the pink and gray tourmalines from the recent Agua Boa find, and pale green tourmaline crystals to 10 cm from a discovery near Conselheiro Pena, Minas Gerais. Most of these green crystals have reddish pink cores and a few have pink terminations.

*Tierra Minerals* (operated by J. Carl Faddis, the *Mineralogical Record*'s new columnist on Mexican mineral news) was selling some interesting amethyst specimens obtained from the Fresnillo Mining Company at Naica, Chihuahua. The long, thin, pale violet crystals reach 6 cm in length and are associated with lustrous galena, small scalenohedral calcite crystals, colorless fluorite, and sphalerite. Nearly 600 specimens were collected from a single pocket, but the mining company then blasted the remainder of the pocket to bits in order to forestall any further collecting by the miners.

After ten years of unavailability, a good selection of "star" mica was once again available from several dealers including *Jewel Tunnel Imports, TransGem,* and *Rodgers' Minerals*. These pale yellow to golden clusters of star-shaped muscovite twins range in size from 20 to 35 cm, with individual crystals up to 5 cm. The locality given was not specific: either Ceara or Minas Gerais.

*Jewel Tunnel Imports* also had a selection of about 200 gaudefroyite crystals from Wessel's mine, Kalahari manganese field, South Africa. The black, hexagonal crystals measure up to 3 cm in size but most are around 5 x 15 mm.

There were many other interesting items to be seen. On exhibit was a fine collection of smoky quartz and green microcline ("amazonite") groups found in 1970 at Harris Park, Park County, Colorado. Dan Kile won the award for the best-personally-collected-piece-in-the-last-year with his superb "rabbit ear" smoky quartz on amazonite from the Lake George area, Colorado. Tony Jones of *California Rock and Mineral Supply* had 15 specimens of chrysoberyl ("alexandrite") found in 1976 near Port Victoria, Zimbabwe. A bright green to red-purple color change characterizes these crystals, on plates of matrix up to 30 cm across. There was also kutnohorite (?) from Huanuco, Peru (several dealers); five beryl crystals to 15 cm from a 40-year-old find in the San Jacinto Mountains, Riverside, California (Mark Rogers); native selenium with smithsonite and pyrite from the Defiance mine, Darwin, California (Mark Rogers); and a few gold crystals from Venezuela (Tony Jones). Institutional displays this year included Harvard, the Denver Museum of Natural History, the Houston Museum of Natural Sciences, Colorado School of Mines and New Mexico Bureau of Mines. (My thanks to Gale Thomssen for helping to gather some of this information.)

The above notes refer to dealers at the "main show" (at the Merchandise Mart) and also at the satellite show a few minutes away at the Holiday Inn. Over 40 dealers comprised the satellite show this year, including such familiar names as David Wilber, Harvey Gordon, David Shannon, Keith Williams and many others. A *Mineralogical Record*-hosted author's party at the Holiday Inn gave visitors the opportunity to meet Ulrich Burchard (*Minerals Museums of Europe*), Paul Desautels (*The Jade Kingdom*) and Betty Llewellyn (author of an interesting autobiography and also publisher of the English edition of *Mineral Museums of Europe*).

The Denver Show, bolstered by the satellite show, is becoming an increasingly important event on the American show calendar and is attracting a large number of European visitors (not to mention contingents from Boston and other distant, exotic areas). The attractions of the surrounding area, such as the Denver Museum of Natural History, the Colorado School of Mines Museum in Golden, and natural scenic beauties unparalleled, make traveling to the Denver area amply rewarding.

For 1987 the main show will be held September 18–20, and the satellite show (under new management; contact Martin Zinn III, P.O. Box 2433, Evergreen, CO 80439) September 16–20.

## COLORADO AMAZONITE

[*The following note is from Joel Bartsch of Bellaire, Texas.*]

The Crystal Peak region of Colorado has been a prolific producer of pegmatite minerals for more than a century. Perhaps the best known specimens from the area are the beautiful amazonite (= green microcline) crystal groups that are often found associated with white albite and smoky quartz crystals. Although amazonite is known from other localities worldwide, specimens from this area are considered to be the best in terms of quality and esthetics.

On June 20, 1986, a new find of amazonite was made at the Ten-Percenter mine in Teller County by Don L. Smith Sr. of Florissant, Colorado. The pocket, nicknamed the "Key-Hole vug" after the shape of the initial opening, eventually became a room that measured 2.3 meters long, 2.2 meters wide, and 2.5 meters from floor to ceiling. The pocket produced approximately 800 kg (1800 pounds) of specimens with pieces ranging from single crystals to plates of crystals measuring up to 82 cm (32 inches) across. The individual amazonite crystals have good color, are well formed, and range up to 10 cm in length. Most of the specimens are small cabinet to museum size pieces; very few are in the miniature range. Many of the blue-green crystal groups occur with white albite, making the specimens very attractive. In addition, a few specimens exhibit minor associations of columbite-tantalite, fluorite and phenakite. The columbite-tantalite occurs as well-formed blackish crystals up to 5 mm and is usually found attached to the albite. The fluorite occurs in severely etched, gray-green crystals on massive white feldspar. Phenakite is present only as transparent microcrystals scattered intermittently on the surface of a few of the matrix pieces.

Curiously, there is a noticeable lack of smoky quartz attached to

*Figure 2.* **The "Key-hole vug" in the process of being excavated by Don Smith Sr.**

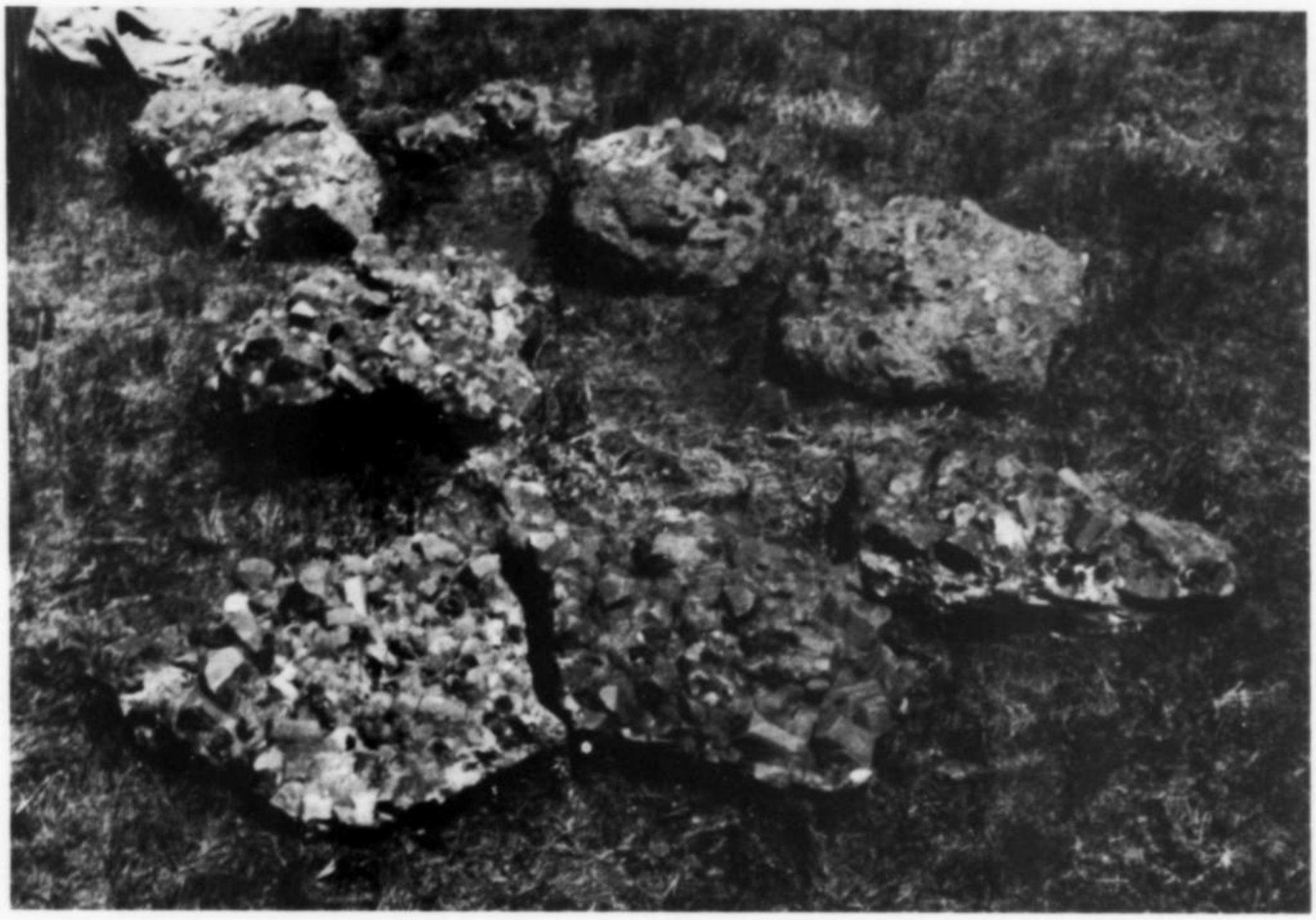


*Figure 3.* **Huge, mud-caked, freshly removed slabs of amazonite crystals from the "Key-hole vug." The largest slab measures 82 cm.**

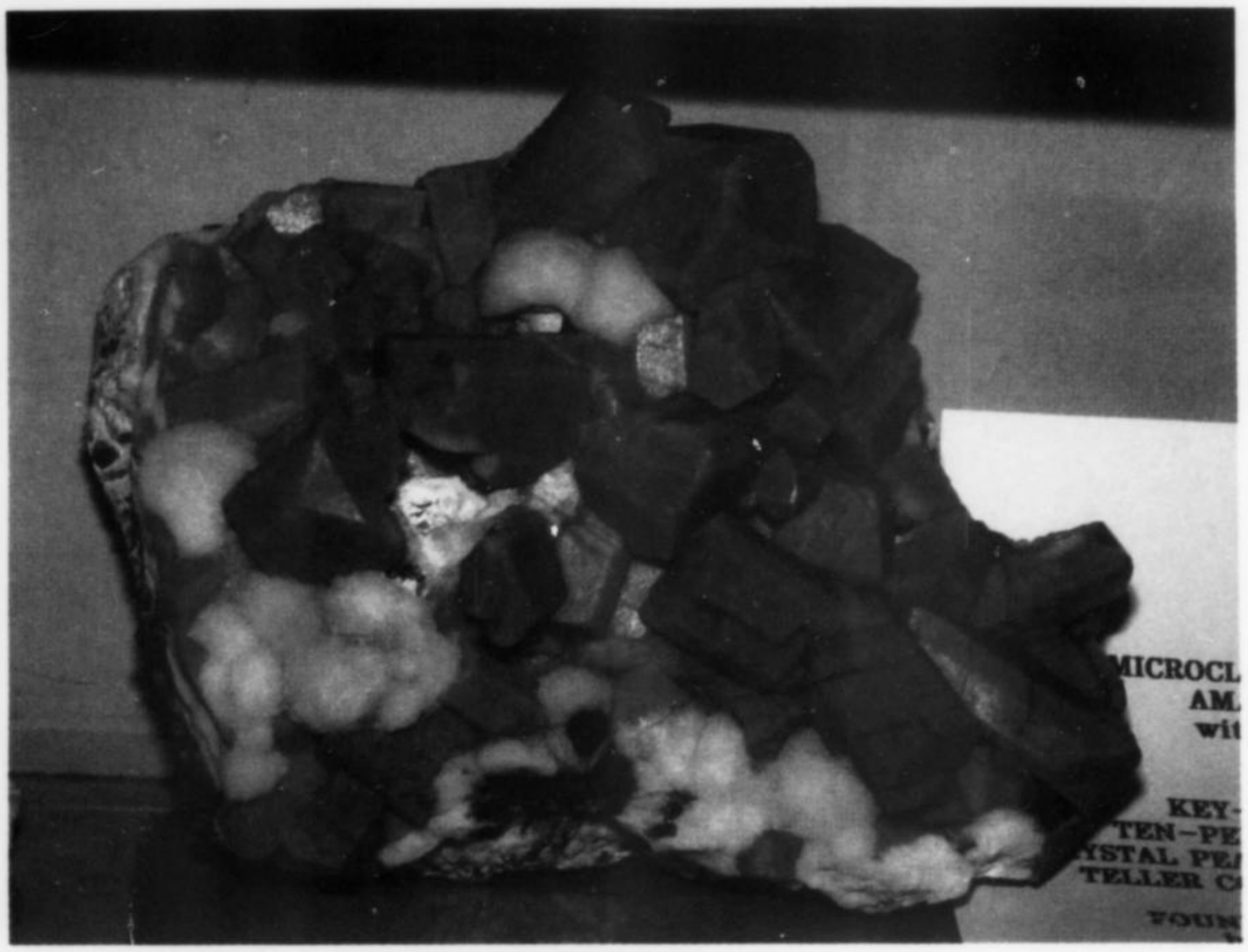


*Figure 4.* **Large cabinet specimen of amazonite from the "Key-hole vug," Ten-Percenter mine, Teller County, Colorado. Barbara Muntyan photo.**

these specimens. On a few of the pieces there are some minor smoky quartz crystals but they are small and poorly formed. Smoky quartz crystals do occur on the backs of some of the plates and in some of the cracks in the larger specimens, indicating that there was a secondary growth of smoky quartz after the contents of the pocket had become disrupted. In addition, more than 1000 smoky quartz crystals, most of them doubly terminated, were found loose in the pocket. On the larger plates and cabinet specimens there were hexagonal holes up to 5 cm across in the albite matrix that suggest the earlier presence of a hexagonal mineral.

It seems that the larger plates were originally attached to the ceiling of the pocket but fell in when the pocket collapsed. Fortunately, there was enough debris in the pocket to cushion the fall, and the crystals sustained almost no damage. As a result, these amazonite plates, which are undoubtedly some of the largest and finest ever found, were well preserved. The majority of the specimens are being marketed by Wayne and Dona Leicht of *Kristalle* on behalf of Don and Wyonna Smith. Several fine examples were on display at the 1986 Denver Show and other late-1986 shows.

*Figure 5.* **Small cabinet specimen of amazonite from the "Key-hole vug." Barbara Muntyan photo.**

## MISCELLANEOUS NOTES

The big (Big!) attraction at the 1986 Detroit Show was not in a display case or a dealer's booth; it was hanging from the ceiling. Paul McCready's full-size functioning model of a giant Pteradactyl loomed over several booths simultaneously. The remote-controlled flying model was commissioned by the Smithsonian for a movie they made about the history of flight.

*What-on-Earth,* in their booth at the Detroit Show, was disposing of a collection of old mineralogy books which included a number of rare items. As for minerals, there were plenty of interesting minerals to be seen but nothing significantly "new." The dealer ranks were diminished somewhat by the lack of a mineral-oriented satellite show this year, but we are hoping the situation will be temporary.

The Rocky Mountain Federation Show in Phoenix was a good one, with plenty of fine displays from sophisticated Arizona collections. Arizona minerals were, of course, most prominent, including a display by Bill Hawes of rosasite and aurichalcite recently removed from a fine pocket in the Silver Hill mine.

Closer to home, Forrest Cureton recently acquired what must be the finest known specimens of the uranium mineral saleeite. The tabular green crystals, looking nearly identical in habit to other members of the autunite and meta-autunite groups, form square, subparallel growths up to 2.5 cm across. The locality is the Ranger #1 mine in the Ranger district, Northern Territories, Australia.

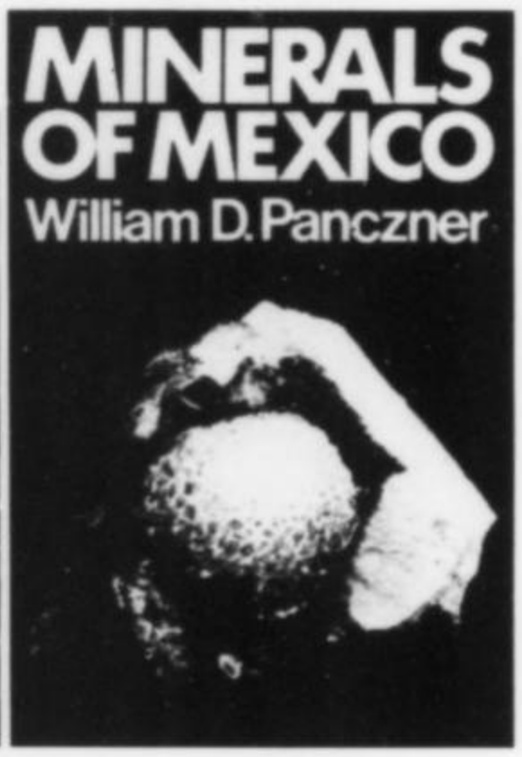
At the Pasadena Show in November an interesting and entertaining new twist was added. Various interesting specimens were se-

*Figure 6.* **Saleeite subparallel-growth crystal 2.5 cm (1 inch) across, from the Ranger district, Northern Territories, Australia. Cureton Mineral Company specimen.**

lected from the collection of the Los Angeles County Museum of Natural History for a "mineral quiz" showcase. Show-goers were then invited to test their knowledge by attempting to visually identify the specimens. It was great fun. Most owners of large collections have several unusual-looking specimens with which they delight in stumping visitors. The game of "What is it?" has probably been played since the time of Haüy and Werner . . . it's one of those little unwritten traditions of mineral collecting. Bringing it out for the enjoyment of the general public was a fine idea which I hope other shows will pick up on. It's educational, and it gives viewers the opportunity to do more than just stare into case after case, with their hands in their pockets. Incidentally, when people got around to comparing their scores on the quiz, the top scorers (as you might have predicted) turned out to be the dealers, led by Rock Currier.

W.E.W.



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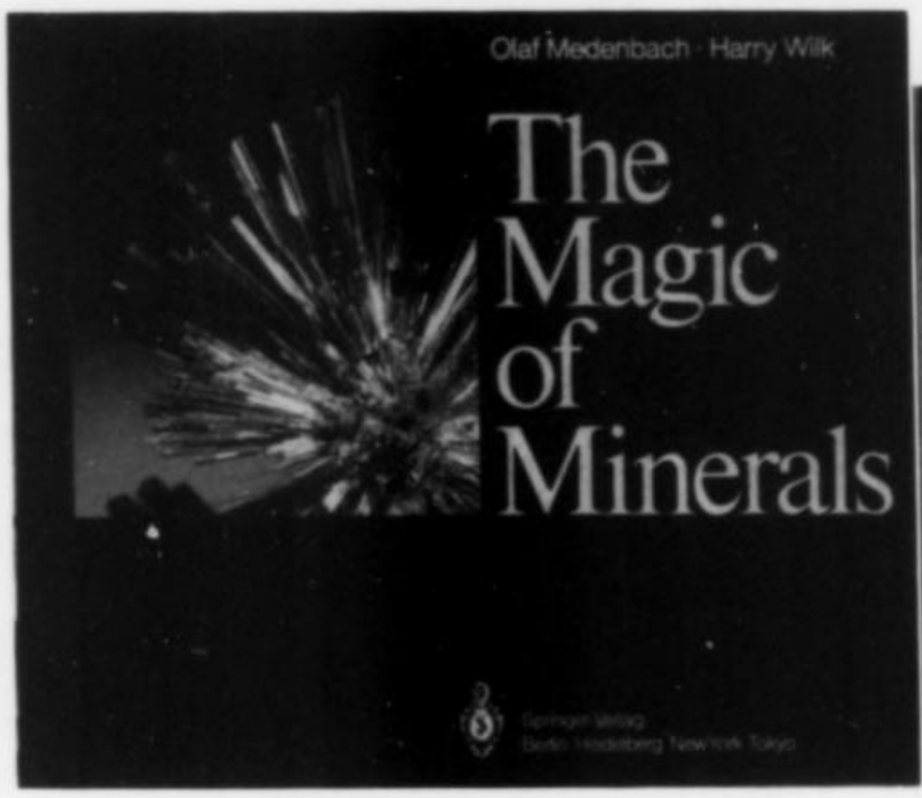


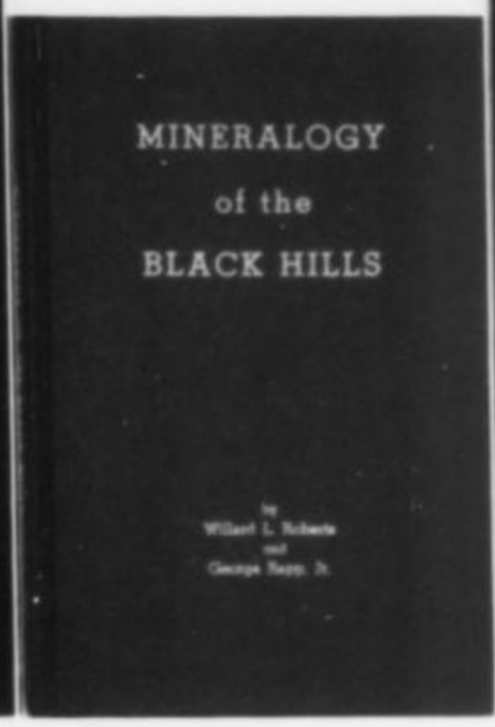



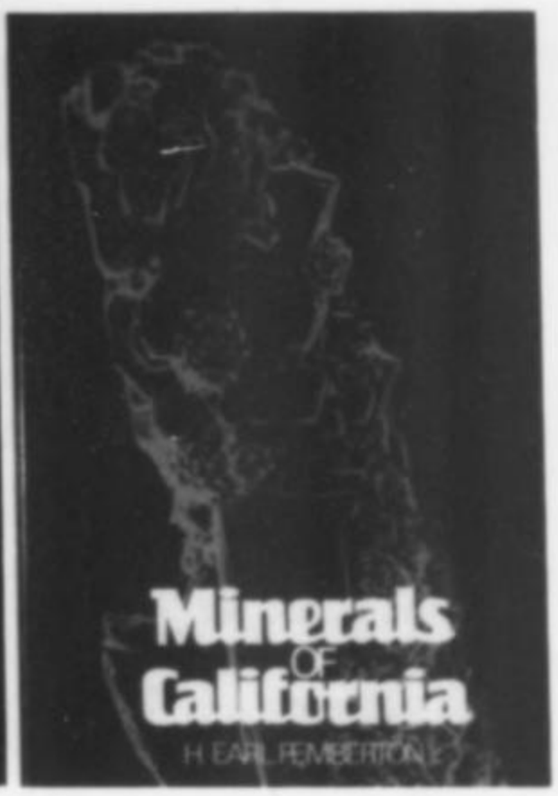


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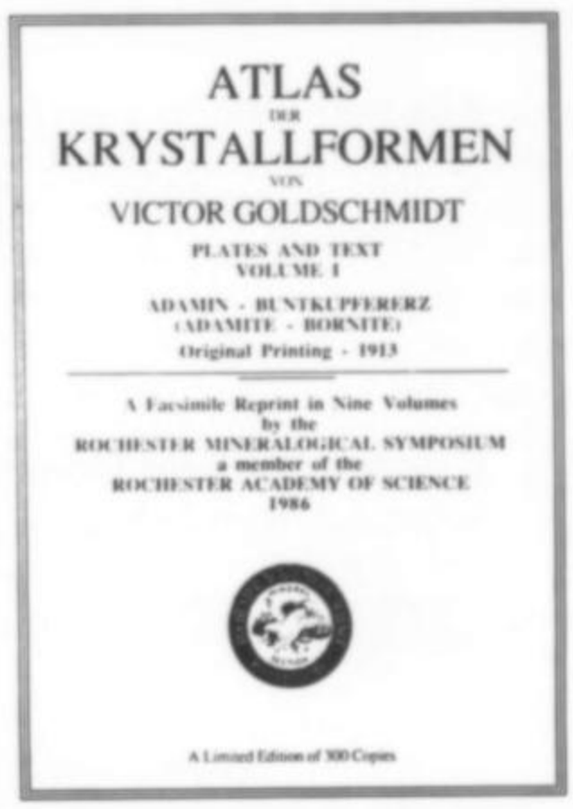


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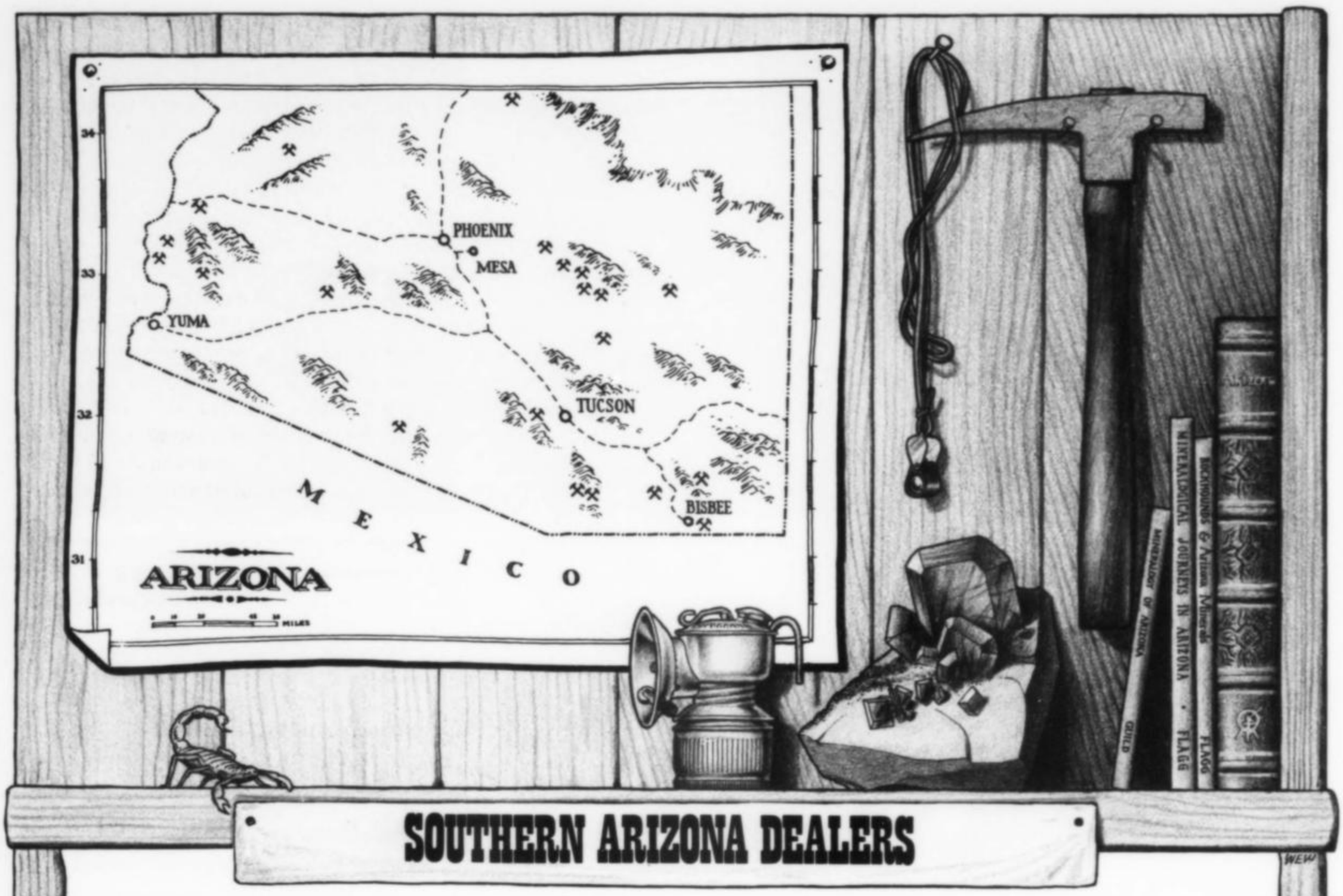


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# Notes from Mexico

by **J. Carl Faddis**

For well over a century, Mexico has been one of the world's leading producers of exceptionally fine mineral specimens. Who can ever forget those fine orange wulfenites from Los Lamentos, or the danburites from San Luis Potosi, or countless other great finds. At one time these locations had merely to be visited and minerals could be obtained. However, this is not the case today; Mexico has gone through many changes and the mineral situation has changed with it. Mineral prices have increased substantially in recent years, and so has the cost of travel and food. But despite all the changes, Mexico, with its friendly people and beautiful children, is still one of the unique spots in all the world to visit; it is easy to enjoy the Mexican culture.

If you are planning to visit Mexico for the first time, you will hear all kinds of advice from friends about where to go and what to do and see. Unless you are fortunate enough to have an experienced mineral collector as an advisor, all you will probably hear about are the tourist areas; Mazatlan, Acapulco, and so on. These spots can be very exciting for vacations, but they do not offer much in the way of minerals. So let's imagine that I am your best friend and through the next few issues of the *Mineralogical Record* we will travel Mexico together.

## TAXCO

We will start in Mexico City because nearly all regularly scheduled airline flights in and out of Mexico land there. Mexico City has much to offer in the way of museums, the arts and a zoo, but because there is very little in the way of minerals, let's go south to Taxco in the state of Guerrero.

We will go by bus; Mexico City is one of only two places in the world where I refuse to drive (the other being Bombay, India). Both are wall to wall traffic with no rhyme or reason as to how people drive. This will be your first encounter with Mexican Police, who blow their whistles and wave their arms for, as far as I can tell, no apparent reason. Taxco is located 154 kilometers south of Mexico City by bus. It takes about 3½ hours via Cuernavaca. The bus passes rose fields which make you wish you were close to home so you could buy a few dozen; then onto lush mountains where you can stop for a lunch of iguana—that's right, the lizard. If you so desire, you can buy a live one from the children along the road. Little boys and girls hold live iguanas, 70 cm long, and wave for your bus to stop as you go by. If you feel as I do about lizards, you pray the bus keeps going. This danger having been survived, we continue on a short distance to Taxco.

Taxco calls itself the Silver Capitol of Mexico, and not without justification. The Taxco silver deposits were discovered in 1549 and were the first orebodies to be mined by Europeans in the Western Hemisphere. Production since then has totalled about 100 million ounces. The silver occurs in veins from 1 to several meters thick cutting limestone, and the richest deposits have been found where two veins intersect. (Bill Panczner's recent book, *Minerals of Mexico,* provides much historical background on this fascinating district.)

Much fine jewelry (and a lot of overpriced junk) is made and sold in or around Taxco. It is hard to tell how many people live in Taxco, but it is the right size to enjoy. Its streets are steep and, for the most part, taxis are Volkswagon "Bugs" which maneuver through the streets with ease. We will take one of these taxis to Aqua Escondido ("hidden water") Hotel. This hotel dates back to the 1700s, about 200 years after the conquest of Mexico (1521). While riding to the hotel, you can't help seeing the huge mineral specimens decorated with silver jewelry in the passing shops, and you can't wait to get out of the taxi and browse. Upon leaping from the taxi, and telling the taxi driver to wait, you discover that these great specimens are all broken and damaged and are just used to display the silver jewelry. So with this disappointment in hand, pay the driver and check in.

Now it is time to start looking in earnest for minerals. You begin by asking the desk clerk, who tells you where the mineral shops are, and you almost run to get the first prize. As you leave the hotel, which is on the Main Square (Zocalo) you follow the main street to the right until you come to a fountain. Turn right, up a hill, and the shop is on your left. Upon finding the only true mineral shop in town, the *Plateria, Piedras y Plata* ("stones and silver"), you are now able to purchase some good mineral specimens at a very reasonable price. While in Taxco, don't forget to look for the "hidden away in the corner" specimens at other jewelry shops. They can be spectacular.

Taxco offers a variety of specimens, usually including the following:

*Galena,* in cubic and cuboctahedral crystals, is the most common metallic sulfide available in Taxco.

*Sphalerite,* massive and in distorted crystals, is typically associated with galena, pyrite, marcasite and chalcopyrite.

*Barite* in well-formed crystals is associated with chalcopyrite and calcite. Colors range from clear to blue, green and yellow.

*Calcite* occurs in a wide variety of habits. Color varies, but for the most part is white or cream.

*Quartz* is common, ranging from colorless and transparent, to green muddy masses. Crystals average about 6 cm in size.

*Pyrite* forms mostly modified cubes ranging in size from tiny grains to 3–4 cm.

*Silver* is available, as one might expect in a silver mining town; small but good wires can be purchased from time to time.

Most all of these specimens come in a variety of sizes and in

*Figure 1.* **The city of Taxco. Photo by William Panczner.**

associations with other minerals. Most of the minerals at Taxco come from the Solar mine, located almost in the center of the city; its mill can be seen from your hotel window. Looking south, you can recognize it by its red roof, white paint and long conveyer belt system. The second mine is called Remedios. This mine is located to the east, just off the main road coming into Taxco. Both mines are in one zone running east-west for several kilometers.

You can spend from one to five days in Taxco visiting shops of all kinds, with modern-day ice cream shops giving way to old restaurants hidden away on side streets. Even if you were not a mineral collector, you would not want to miss Taxco because of the church called "Santa Prisca" which is rich in silver and gold decor and beautifully designed. This church dates back to 1751, and is located on the east side of the main square 50 steps from your hotel.

The minerals of Taxco, though not as famous as those of Santa Eulalia or Zacatecas, should be rated highly; however, good specimens from this locality are hard to get. Taxco is a mineral collector's dream, but what you find depends upon how many times you go there and who you get to know. This can change with each visit because, as with all business, buyers, sellers and suppliers come and go. It is not easy to obtain large quantities of any one mineral because, as is the case in most mines in Mexico, mineral collecting by miners is frowned upon by the mine management. Because of this it is hard to obtain precise information on locations.

After visiting Taxco and coralling some treasures, be sure to pack them for travel so they can be thrown down, walked on, and crunched under other bags set on top of them, as this is standard practice on public transportation. I recommend you take a separate suitcase, obtain cardboard boxes and cotton for packing your specimens well, then put a layer of clothing in the bottom and all around the specimens. If you have any extremely fragile specimens, be sure to carry them by hand . . . this is the only way they will survive.

Be sure to check your departure time at the bus station well in advance because schedules may change. Buses for Mexico City leave four times a day and, unlike the trip south where they stop at Cuernavaca, they go direct to Mexico City.

If you decide you have some extra time and you like riding buses, go south to Iguala. This is a large town 40 minutes south of Taxco. By the way, I personally guarantee this is a bus trip you will remember for the rest of your life; the curves which lead to Taxco and Iguala are like no others in the world. After going to Iguala, if you are not too tired and want to see more of Mexico, our next trip will take us to Matelan for Guerrero amethyst, and on to Veracruz for amethyst and green demantoid garnet. Hope to see you on our next trip.

**J. Carl Faddis**
**3651 E. Marginal Way S.**
**Seattle, WA 98134**

# People, Happenings And so forth



## AUSTRALIA 1986

[*The following note was provided by Gale Thomssen.*]

Americans and Europeans looking for an interesting early Spring get-away should consider a trip to Australia. We made the rounds last year and found a wealth of mineral-oriented events, people and places to visit.

After having shipped ahead a cubic meter or so of books and magazines we embarked on the 18-hour flight from San Francisco to Sydney. The Australian Museum in Sydney (curated by Dr. Lin Sutherland) has an interesting collection well worth visiting, although it was being completely remodeled at the time we were there. Also residing in Sydney is Albert Chapman, perhaps Australia's best known private collector. Al has kept his collection pared down to a mere 1000 top-quality specimens.

Kevin Davy, one of Australia's best mineral dealers, is located not far away in Wagga Wagga and should certainly be paid a call as well.

From Wagga Wagga to Adelaide is approximately 1000 km, but the trip is a must in order to visit the South Australian Museum (curated by Allan Pring). Many fine Broken Hill specimens are on exhibit here, including a spectacular boleite (one of only two known; the other is in the British Museum), and the world's finest atacamite crystals (to 10 cm, from the Burra district).

Loxton, about 100 km northeast of Adelaide, was the site of the 1986 Australian National Gem and Mineral Show (Gemboree), which this year was a South Australian Jubilee (150 years) project held by the Gem and Mineral Club Association of South Australia and the Australian Federation of Lapidary and Allied Crafts Association. Each year the Gemboree is held in a different state at Easter time. Exhibitors and competitors come from all over Australia, the U.S. and Europe. There were about 40 dealers inside the show this year, and the campground outside was a tailgater's paradise. There were over one hundred people set up outside for swapping, buying and selling, and the area was heavily attended by customer, traders and sight-seers despite temperatures of up to 109°F. One collector we know acquired a trading-table specimen in a *partially melted* perky box; it was hot. Show attendance nevertheless topped 10,000.

For visiting foreign collectors the show at Loxton was a great chance to see the finest in recently collected Australian minerals. But Australian competition is rather unlike that in the U.S. because there are no points given or taken away for showmanship, so the emphasis is entirely on the specimens. Competitions are designed to encourage collecting (especially self-collecting), and beginners seem to catch the enthusiasm quite easily. Of course the displays are not as smooth and professional-looking as in the U.S., but one does get to see all that Australian fossicking (field collecting) has to offer. It is obvious that Aussies love collecting, and we noticed almost as many women collectors as men.

Following the show we traveled out to the famous Broken Hill mine. The mine is situated on the edge of the "outback," amid the kangaroos, emus, and approximately 58 billion flies. Through the kind offices of Dr. Howard Worner it was arranged for Chief Consultant Geologist David Mackenzie of the CRA Zinc Corporation to take us on an underground tour to a depth of over 900 meters. I was lucky to be allowed to make the descent; until Queen Elizabeth broke the ice on a visit there a few years ago, women were not permitted underground for fear they would cause bad luck.

Dr. MacKenzie also gave us a tour of the surface operations and the mining and geology museum where scale models of the geology and the underground workings can be seen.

The next day we joined members of the Mineralogical Society of Victoria collecting in the South Mine pit and dumps (Broken Hill), where we found micromount stolzite and chlorargyrite. Then we moved to Blackwood's pit where we found red spessartine crystals to 2 cm, bustamite, pink rhodonite and green apatite. From there we soon proceeded to the dump where several tons of fresh material had just been exposed from the old Broken Hill Proprietary pit. We found smithsonite, silver, cerussite, linarite, pyromorphite and chlorargyrite.

**Steep pit walls at Blackwood's pit, Broken Hill.**

Afterwards, those interested were taken to see specimens which had been collected and were being offered for sale by the mining company. Here we saw many of the same species and also anglesite. What a pleasant surprise it was to encounter a mining company which is thoughtful enough and enlightened enough to salvage specimens on their own and make them available to the public!

Finally, after bidding our farewells to the club members and Broken Hill staff, we grabbed some Kentucky Fried Chicken and headed toward Melbourne. We passed through the old gold mining town of Bendigo, toured the refurbished Deborah mine facilities and the local mining museum, and continued on.

In Melbourne we met up with the Mineralogical Record's Australian representative, Piers Foa, toured his shop, and then pressed on to the Museum of Victoria (curated by Dr. William Birch) for a look at their magnificent golds. It made an exciting end to our trip.

Wherever we went in Australia we found the people friendly and accommodating. My husband Dick (Mineralogical Record President Richard Thomssen) gave several slide lectures along the way to gracious and appreciative audiences. In all, it was a trip I can highly recommend to any mineral collector. (The 1987 National Gem and Mineral Show will be held April 17–20 in Shepparton, Victoria.)

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# Notes from Germany

**by Thomas P. Moore**

**HEIDELBERG & FRANKFURT SHOWS 1986**

As I write this in October, the fall mineral show season in Europe is, like the gorgeous autumnal weather, in full parade, and these days one could (if only one *could*) visit two or three shows each weekend in West Germany alone. But, overworked as I am, it hasn't been possible and I have even been forced to scratch two of the major shows from my personal schedule. The Colmar, France, bourse could not be visited because a terrorist-harassed and understandably jumpy but over-reacting French government has demanded that every non–Common Market citizen who crosses any French border show a visa. Two roundtrips from my home in Kaiserslautern to the French consulate in Frankfurt, first to request and then to pick up the visa, would have meant driving twice the distance as to Colmar itself, and in righteous dudgeon I simply refused. And my attendance at the huge show in Nürnberg was sabotaged, more mundanely, by an alternator (whatever that is) going *kaputt* and keeping my 1978 Mitsubishi in the garage from Friday through Tuesday. Thus, in the pre-Munich days, I have had to settle for the smaller shows at Heidelberg and Frankfurt.

Heidelberg, the lovely, over-touristy city that is the unchallenged capital of nineteenth-century German Romanticism, is unfortunately nothing too special for me, since my job takes me there quite regularly. But it offers the oldest and (most say) best university in Germany, and the most patly "picturesque" ruined castle. For the mineral show it provides a very pleasant setting: the large, ornate *Stadthalle* building, which overlooks the civilized little Neckar River, with green bankside parks and baroque bridges visible all the way to the middle of town. Just before the entrance to the pillared and vaulted, heavily chandeliered room on the ground floor where the show was, the foyer offered some very impressive mineral display cases. Three of these, put out by the Mineralogical Institute of the University, were full of fine old specimens of copper minerals; but two larger showcases, also of copper minerals, from the private collection of Günter Klimm, Edesheim, stole the show. I have known Klimm (Staatstrasse 65, D-6731 Edesheim/Pfalz) for a number of years, but never before had seen these particular wonders from his private collection: enormous azurites from Bisbee, Tsumeb, and China; a dazzling pair of Quincy mine, Michigan, calcites enclosing copper, one of them 10 cm high; Michigan copper-silver halfbreeds to 12 cm across; an amazingly sharp malachite-coated cuprite crystal 3 cm across, on matrix, from Onganja, Namibia; and lots of others. Günter has good material for sale, too, with a specialty in English minerals—visitors to his home will not soon forget the swarms of Northumberland fluorites in all sizes and all shades of limpid green.

In the show hall I found another dealer I've known for some time: Erich Schmidt (Friedhofstrasse 3, D-8591 Tröstau). Tröstau is a little town in northeastern Bavaria only about a half-hour's drive from the Czech border, and Schmidt, who makes the trip regularly, usually has a rare thing or two to offer from the great mineral districts of Bohemia and the East German Erzgebirge. This time it was four large cabinet specimens and three miniatures of wire silver from Pribram, Czechoslovakia. They were heavily tarnished to a sort of moldy grayness and were—let us be forthright—ugly, resembling overused scrub brushes, but the largest was 25 cm across and solidly matted with silver. There were also about 30 miniatures, at very low prices, of *octahedral* purple fluorite from the Erzgebirge. Their luster is rather dull and individual crystals never exceed 1.5 cm on edge, but they still form fairly attractive groups of a habit I'd never seen before from that famous off-limits, tantalizingly near-yet-far locality in the "other" Germany. Finally, Schmidt had just three cabinet specimens, but outstandingly fine ones, of yellowish white translucent celestite from, of all places, the Libyan desert: the locality was given as "near Sebha," 500 kilometers from the Mediterranean coast. After a bit of predictable talk about "the ones Gaddafi let get away," I was suffered to pick up and admire closely the best specimen: a beautifully composed cluster of crystals gathered around a complete orthorhombic tablet 8 cm high. (Could this actually be the same locality that Russ Behnke's Libyan celestites came from, vol. 14, no. 6, p. 388?)

Otherwise, no striking new finds were in evidence at Heidelberg (or for that matter at Frankfurt), and so I must fall back again to speaking of interesting miscellanies. A German dealership called *Mineralien Breitenborn* (Weinstrasse 13, D-6731 Neustadt) had some good Alpine material, apparently recently collected: many good smoky quartzes from Uri in singles and a few fair-quality gwindels; hematite roses from Cavradi, fine rounded ones to 2.5 cm on matrix; Tessin-habit (or "needle-type") clear quartz from Val Bedretto, Tessin; and some good orthoclase groups from Baveno, Italy, on which, as my hand lens verified, were sparsely sprinkled black, micro-sized babingtonites. A Spaniard had the usual stacked pyrite groups from Logroño, the largest about 20 cm high. And Günter Klimm, just returned from Portugal, had some excellent thumbnail-sized cassiterites from Panasqueira.

But my most interesting encounter at Heidelberg was with one Igor Bogucki, a Russian (living in Vienna) with whom I had some difficulty conversing, both because of his mildly paranoid manner and because his German was of a much different fracture-habit than mine. Among the impeccably well-arrayed, well-lit, often gimmicky stands of the German dealers, Bogucki had two tables covered with plain tablecloths and specimens carrying hand-lettered labels. These were interesting, oddball, and in some cases very good Russian and Polish pieces. For instance, there were three large (to 6 cm high), loose danburite crystals, pale yellow and perhaps one-fourth gemmy; an 8-cm-long, doubly terminated, very bright blue apatite from Lake Baikal; a downright "competition-quality" phenakite thumbnail which could have passed for a Brazilian one, the locality given only as "Ukraine"; and two 7-cm specimens of what he said was *creedite,* from somewhere in Kazakhstan—mammillary aggregates of microcrystals, off-white and sparkling, the specimens resembling cauliflower heads. Unfortunately the only one of these Russian localities about which Bogucki was *not* vague was the well-known old one in Siberia for vesuvianite and green grossular, given in my 1949 Dana as "the Achtaragda, a tributary of the Vilui River in Yakutsk." This is correct, said Bogucki, adding that the locality has been sporadically productive for many years but is no longer so, since it's now under water as a result of the damming of one of the rivers; this information of course in-

duced me to buy one of his good grossulars. But it wasn't until a few more minutes of conversation had hobbled past that I finally managed to convince this man I was not a KGB agent but merely a writer for the *Mineralogical Record*; he then (1) complained to me about not having received his March-April 1986 issue, and (2) wrote his address in my notebook (Dopplergasse 7/21, A-1110 Vienna, Austria).

The Frankfurt show was held in one corner of a large, modernistic, geodesic-domed convention hall in the suburb of Höchst. This area is, like Frankfurt in general, a businesslike and unscenic industrial place, with only small, token throw-rugs of parks and gardens here and there among the working-class streets. Since this time I had in tow my seven-year-old daughter Alexey, it was perhaps just as well that the show turned out to be a small one, although I hadn't expected it to be. The only other Frankfurt show I'd attended was the very first one held in 1979, a far larger and seemingly up-and-coming event.

I first came upon the very large and impressive stand of the affable (and English-speaking!) U. & R. Buchner of the *Kristallkeller Nürnberg* (Hefnersplatz 8, D-8500 Nürnberg), who are show-only dealers but who nevertheless welcome visitors to their *Keller* (i.e., cellar) in that uniquely beautiful Bavarian city. What I saw of their stock in Frankfurt made me resolve to visit soon: fine Brazilian and Afghan and Madagascar and even California elbaites of all colors and sizes, many quite gemmy; Indian rubies in matrix; Arizona turquois nuggets to 12 cm across; very fair Colombian emeralds in matrix; good Panasqueira material; and one absolutely unsurpassable thumbnail of vividly yellow-green pyromorphite from Bad Ems (an "Emser tönnchen," or "little Ems barrels," specimen, as these are known over here), for the reasonable price of 350 DM, or $175. Interestingly, the Buchners also had an outstanding small miniature of brownish green pyromorphite from the Mine de Farges, Ussel, France, for *1500* DM. They said they'd indeed had to pay something like that for the specimen—and we discoursed for a while on just why it is (if, in general, it is) that pyromorphites from Ussel, which is admittedly a now defunct but only 1970s vintage locality, come so much higher than comparable ones from "classic" Ems. Having been many times to Ems (where one now finds nothing but old people strolling in gardens, palatial turn-of-the-century spas overlooking the Lahn, and gazebo-enclosed mineral springs selling cupfuls of foul-smelling "waters"), I have always respected Ems as a venerable locality and am unwilling to accord the French source anything like the same lofty status. The old mine dumps in the Ems region are very well picked-over, although Dietrich and Bode, in their fine article on Ems in vol. 15, no. 6, report some recent finds of interest. It's odd how *localities,* almost apart from the species or specimens they have produced, can compete for one's fond regard . . . especially here in Europe, where so many of these old places slumber in such apparent innocence, having long since given up their treasures.

An Italian dealer at Frankfurt had a good selection of new stibnites from Tuscany; the locality is given as Montauto, Manciano. I don't know how liberally these are appearing at U.S. shows—they must be devilishly hard to pack and transport—but they are plentiful now in Europe. At Frankfurt there were about 50 specimens, from large miniature to large cabinet size, the largest a 30 x 30-cm porcupine-quill affair priced at $600. The stibnite crystals are bright but extremely thin, their esthetic appeal vitiated by the fact that they are almost always bashed off, or else just very ragged, at the terminations. They are less than appealing when the calcite in which they are found enclosed has been etched away, leaving greasily shining, off-white, unattractive matrixes; the best groups are those which grew freely in pockets without this calcite filling. The same dealer also had some very nice, inexpensive, deep green acicular brochantite groups from Bou Becker, Morocco, and some fine thumbnails of bright, small, octahedral crystals of gersdorffite in dense clusters, also from Morocco, but rather stiffly priced (e.g., a small thumbnail for $80).

Finally, a Berlin dealer (D. Enterich, Konstanzer Strasse 6, D-1000 Berlin 15) had a small case full of excellent things that he acquired at Tucson last February. My curiosity about how much he had marked them up for the German market must have shown in my face, for we had one of those very German "joking" exchanges about the recent precipitous fall of the U.S. dollar to only 2.0 Deutschmarks in value, over which fall he gloated and from which I suffer. The "joking" here is a fine example of the kind of German humor known as *Schadenfreude* or, roughly speaking, joy in another's sorrow. But never mind; his six miniatures of stephanite from San Luis Potosi, Mexico, were superlative pieces: fine, sharp, skeletal crystals arranged in roughly parallel groupings on small matrixes. The crystals are gray, brightly metallic and up to 2 cm long individually; specimens were priced at $200–400. Unfortunately he could give no more exact locality designation than "San Luis Potosi." Thinking that these might have been from the same find reported in "What's New in Minerals?" (vol. 11, no. 5), I checked that issue and found that, no, *those* stephanites are of a much different habit and are from Zacatecas. In any case, Herr Enterich's stephanites were the most impressive things at Frankfurt, and here's hoping that more will appear, somehow, sometime, over here—does anyone have any information about their source?

Every main-line fall-season German mineral show, even smallish ones like these two, yields up a few fine things to gawk at like those I've described here—not to mention chances to practice one's mineralogical German and to improve one's sketchy knowledge of What's New in specimen sources. Enough for now, though, of these sideshows and on to the enormous, intimidating, manic and wondrous Center Ring that is *Mineralientage München*.

## MUNICH SHOW 1986

To travel to Munich I took the midnight train out of Kaiserslautern, alone this time—with so much to do, there was no justifying asking sidekicks or family companions to share and tolerate up-close my all-day mission. I hit the Munich train station at 6:30 on what was shaping up to be a gray, overcast morning, had a leisurely breakfast, and was easily able to be on hand at 9:00 for the show's opening ceremonies at well-remembered *Messehalle* 16.

For these ceremonies, white-coated waiters dispensed free champagne to exhibitors; men in the bright formal costumes of nineteenth-century German miners stood solemnly flanking the podium where dignitaries made speeches; a clear stream babbled and washed over huge polished slabs of petrified wood in an artificial forest grotto; and a giant, blackened and leafless tree reared almost to the ceiling in front of a painted flat representing, one had to judge, a Carboniferous coal forest. "Petrified Wood" was the show's main theme this year, and, sure enough, many more polished, immense, varicolored slabs squatted around the main exhibit area; green dividers, soft lighting, lush potted plants, and a layer of wood mulch on the floor all contributed to the primordial-forest effect. A somewhat over-selfconscious finishing touch was a flanking row of loudspeakers that emitted more water noises, bird chirps and songs, and low, alarming beast-grunts which suggested a small swampful of dinosaurs avidly cropping cattails.

Wall cases displaying smaller petrified wood slabs were arranged carefully by geological era and period, but still my experience was of a certain geological time-vertigo: was the general decor intended as Paleozoic (that painted back-drop), or Mesozoic (those dinosaur wallowings), or Cenozoic (the birdsongs, sounding as if they came from some very advanced birds indeed)? Of course, my mildly carping tones here may be prompted chiefly by the very idea of Petrified Wood as a show theme—my nose was joined in its slightly

upcanted position, I'm sure, by those of most other mineral lovers present. And this is unfair, since it *is* true, as I was reminded later by Herr Johannes Keilmann, Munich Show impresario, that "Europe's top show" (as the ads justly call it) has many diverse tastes to please. So, knowing that I would later come on the displays devoted to the show's secondary theme, "800 years of Freiberg," I quickly passed through this Wooden main display area. I resolved to devote the next many hours to checking out the arrays of dealers' offerings, and looked forward to getting back to the good stuff (i.e., those Freiberg cases) later.

I need not take up space in describing the setting and ambiance of this enormous mineral bazaar, or of the *gemütlich* city of Munich itself, since Wendell Wilson's "The Munich Show" (vol. 15, no. 3) has already carried off these tasks admirably and accurately.

Might as well, to get them out of the way, begin my specific comments on the 1986 show with a few slightly negative impressions. Far fewer Americans made the trip than in earlier years, probably because of the unfortunately low dollar exchange rate. (Nevertheless, total attendance was at a record high of 22,000 people!) The next mild downer—I mean, of course, from a mineralogical perspective—was that, presumably thanks to petrified wood, there was a higher than usual ratio of gem/lapidary and fossil to mineral dealers—about 1:1:1 among a total of some 330 dealers. Oh yes, next, I do wish that so many dealers weren't so careless or callous as to display pretty little red proustites and well-crystallized sulfurs under bright, hot display lamps. Finally, and most downingly, the overall quality of the specimen offerings seemed sharply off from last year, an impression seconded by some dealers and by Renato and Adriana Pagano who were manning the *Mineralogical Record* booth.

Still, no Munich show can fail to provide exciting new and old things to see and to talk about. For example: loose, very pretty and quite gemmy, yellow-brown crystals of diaspore, from an abandoned corundum mine in the hills between Aydin and Mugla, western Turkey. The crystals, sharply and intricately terminated and up to 2.5 cm long, were hiding among loose piles of much larger cleavage fragments of diaspore, and the dealer (Erich Elias, Ottakrinerstrasse 129, A-1160, Vienna, Austria) was selling everything indiscriminately as gem rough at $20/gram—not bad for what must be among the best diaspore crystals ever found. The same dealer also had a few miniatures and small cabinet-sized *matrix* specimens of the famous gem forsterite ("peridot") from Zabargad Island, Red Sea, Egypt; the matrixes are vuggy chunks of an ultramafic-looking rock, presumably peridotite. Herr Elias had also placed one of these in the competitive *Sonderausstellung* case: a matrix 20 cm high with about a dozen gem peridots peeking out from irregularly spaced crannies.

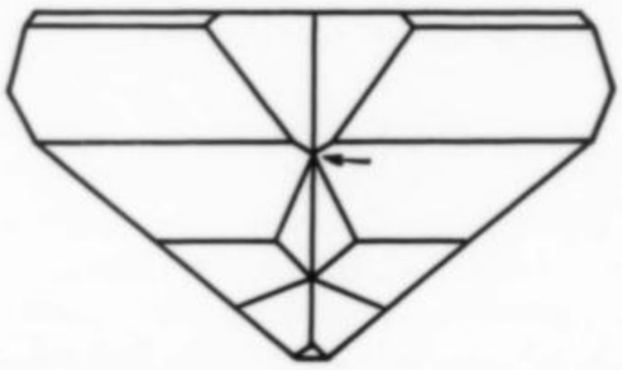

***Figure 1.*** **Sketch of the complex termination of a 2.2-cm, yellow-brown and gemmy diaspore crystal from Aydin, Turkey; *c* axis perpendicular to the page. (Arrow = terminal point.)**

Another item of interest with similarly exotic flavor was a selection of about 20 large, flat slabs of black rock having shallow open veins and vugs lined with very sharp, twinned cinnabars averaging 5 mm across. They resemble the classic Chinese cinnabars in all except size, but the locality is the great mercury mine at Almaden, Spain. The dealer (Manfred Grimmel, Gewerbeschulstrasse 36, D-5600 Wuppertal 2) asked only $75 for his best piece, a 15-cm slab with a 2 x 5-cm cavity solidly lined with sharp red crystals up to 1 cm across.

The Italian dealer I mentioned in an earlier Note (though failing then to specify that he is Dr. Piero Garonetti, Via Bassini 15, I-27100 Pavia) was back again, not only with more Tuscan stibnites, but with a small number of self-collected thumbnails of gersdorffite from Ait Ahmane, Morocco. The price had come down on these since last I saw them, so I happily bought one: a tight cluster of very sharp, metallic gray octahedrons etched out of once-enclosing calcite. Gersdorffite is very rarely seen in presentable macrocrystals, and these averaged 3 mm on an edge, the whole 2.4-cm group costing $40. There were a few others, as well as some very bright skutterudite and fragile safflorite of similar style, from the same locality.

The Dutch dealer Ben de Wit (currently in the process of moving to California; P.O. Box 1911, Fallbrook 92028) had some spoils to show from a recent trip to Bulgaria: specifically, to the 19th of September mine near Madan in the Rhodope Mountains, 25 km from the Turkish border. De Wit said that he had already brought some specimens from this promising new locality (an active mine) to one U.S. show, and that more should be forthcoming generally on the market (I hope they'll continue to have the labels I saw in Munich, with both Roman and Cyrillic lettering). The specimens, mostly medium-to-large cabinet size, are reminiscent of Trepča material: white nailhead calcite, very good jet-black sphalerite, and galena, sphalerite and rhodochrosite crystals intimately mixed on quartz crystal groups. Although the best pieces on view at Munich were not on a par with the best that Trepča can muster, the prices were low, the esthetic values high—and De Wit tells us to hold on especially for some excellent calcites from here.

At the same dealer's stand were some large, spectacular groups of the new golden barite from the Pöhla uranium mine at Crottendorf, Erzgebirge, East Germany. The resemblance this time is to the well-known golden barites from the Eagle mine, Colorado. The crystals are bright, gemmy, deep orange tablets to 4 cm on an edge, in groups up to 12 cm ($650), and also one 25 x 30-cm group ($1500).

Speaking of central European barites, the market for some years now has been sporadically graced with lovely groups of absolutely colorless and transparent plates, set off nicely sometimes by black psilomelane matrix, from Stanislawow, Poland. Of the several dealers who had these at Munich, Herbert Becker (Rheinpreussenstrasse 14, D-4130 Moers 1) offered the best—pellucid and sparkling (and inexpensive) miniatures and thumbnails. This dealer also had the best of the show's Freiberg silvers (though there were many around the hall, appropriately, for the "800 years of Freiberg" occasion). Becker's were both wire and arborescent groups of very high quality, most of them on matrix, all about 5 cm across and priced at up to $2000.

And speaking of barite (again) the Victor Goldschmidt Prize for best specimen in the show went to *Wilke-Mineralien* of Eppertshausen, West Germany, for a golden barite from Elk Creek, South Dakota, an occurrence coincidentally covered elsewhere in this issue.

At Munich, of course, one does look for old German classics. And many dealers tried manfully (or womanfully) to highlight these, sometimes against the honest resistance of the mediocrity of the pieces themselves. The best around, I'd say, were the Erzgebirge argentite and pyrargyrite, and one incredible Ilfeld manganite (12 x 15 cm at $1800) that neighbored the silvers at Becker's stand, and

*Figure 2.* **Golden barite, about 5 cm, from the Pöhla uranium mine at Crottendorf, Erzgebirge, East Germany. Photo courtesy of Ben de Wit.**

also the cabinet-sized, one-of-a-kind Ems pyromorphite and Harz niccolite at Wayne and Dona Leicht's *Kristalle* booth. The German goodies, though, were somewhat upstaged by the golds that the Leichts offered: six fine miniatures and thumbnails from the Michigan Bluff District, Placer County, California.

Among the contemporary exotica were eight good purple creedites from the Potosi mine, Santa Eulalia, Chihuahua, Mexico—the only ones of these I saw at the show—in well-composed miniature-sized groups on matrix, cheap at from $50 to $225, from *Fleck-Mineralien München* (Parkstrasse 22, D-8023 Pullach). But fairly plentiful in the show were good copper minerals from the Shaba province, Zaire; Gilbert Gauthier (7 Avenue Alexandre III, F-78600 Maison-Laffitte, France) had some crisp thumbnail groups of "primary" malachite crystals from the Mashamba mine, and Siegbert Zecha (Windecker Pfad 1, D-6369 Schöneck 2) offered two 14 x 14-cm groups of the new pink cobaltian calcite (at $600 and $750, whew!), as well as good stalactitic malachite, six matrix metatorbernites to 11 cm and $200, and a brilliant 2-cm carrollite crystal in matrix.

Contemporary Locality Survey: among the things very abundant in fair to "competitive" specimens were (of course) secondary lead minerals from Morocco; Panasqueira material of every kind; Yukon phosphates, especially lazulite; excellent cabinet clusters of green Colorado microcline; black Mexican andradite; Elmwood, Tennessee calcites, fluorites and sphalerites (one German dealer had hundreds, the calcite matrix plates routinely up to 60 cm across); Nigerian aquamarine; celestite and barite from the Machow mine, Tarnobrzeg, Poland; extraordinarily fine zircons and some almandines from Sieland Island, Norway; dignified chisel-shaped crystals of ilvaite, in singles and groups, from Seriphos, Greece; and a surprising number, perhaps a dozen, of top-notch thumbnails of incandescently yellow-green pyromorphite from the Bunker Hill mine, Idaho.

The real abundant joy of the Munich show, however, is in its sheer size and variety, its cosmopolitan nature, its elbow-room that accommodates all sort of odd mineralogical squatters. As for cosmopolitanism, well, besides the full complement of German dealers of many degrees of sophistication and kinds of stock, there are *Übersee* (overseas) dealers bearing national treasures from Japan, Australia, England, France, the U.S., Spain, Canada and Brazil, and almost any other well-mineralized country you can think of. There are dealerships wholly or in large part devoted to rarity-suites from localities like Pribram, Monte Somma, Cornwall, Laurium, Hagendorf and Lengenbach (these last three mostly for micromounters of course). There are vast *systematik* species offerings in prominently displayed, madly pedantic stand-up cabinets with little pull-out drawers; on the other hand there are garish Stonehenge-arrays of "decorator" Spanish pyrite and Indian zeolite groups a foot high. Best of all there are, in inconspicuous corners, lots of little eccentric things that one either has never heard of at all, or else only dimly remembers reading about, failing convincingly to visualize, missing in the big museum collections—you know the kind. My notes and memory recall particularly the tiny crystals of euclase and phenakite on orthoclase from Epprechtstein, Bavaria; the loose, dirt-brown, ugly-as-sin subhedra of fergusonite and euxenite from Madagascar; and the even uglier, but very rare (it should be, at $700), dull gray, reniform thumbnail of argyrodite, a germanium sulfosalt first described from the renowned Himmelsfürst mine *bei* Freiberg (where this one was from, a fact which some might think sufficient justification for tacking a hundred of those sadly deflated bucks onto the price, this "Freiberg" year). Finally, there is room also at Munich, I'm pleased to add, for more humble, mundanely familiar mineral-show manifestations: cheap costume jewelry, little perpetually running machines demonstrating lapidary technology, whole coral reefs reassembled on shelving, 15-year-olds at rockhound-club stands selling self-collected pseudomorphs of *Dreck* at five marks a shot . . . there is a secure home in my memory, even, for a really preposterous 10-cm epsomite flower on a wood-timber matrix from some old mine shaft somewhere. Before we compose ourselves and assume proper reverent miens for the Freiberg display, let us reaffirm that this, truly Europe's top show, offers up a mineral experience continually laced with pleasant surprises—offers, that is, a pretty fair one-weekend short course in many subtle and rare facets of specimen mineralogy (once, that is, you got past those grunting dinosaurs at the door this year).

The secondary-theme display alcove was small, understatedly done in pale blue, and contained only a few plain glass cases, plus a short of shrine with a huge enlarged photo of Abraham Gottlob Werner's gravestone—but "800 years of Freiberg" could offer pure awe to the admirer of crystallized silver minerals, and much diversion and instruction to those interested in the history of central European mining. Two flat cases displayed maps, antique wax-sealed documents, notebook-scrawled mining records, old lithographs, etc., the whole reaching back in highlights through much of these eight centuries at Freiberg and in the nearby Erzgebirge—the district as a whole making unquestionably (as I've always known and everyone else should too) one of the, say, ten greatest mineral-specimen districts on earth. A couple of more cases had raw ore samples—streakings of metallic gray through conglomerations of a dozen different gangue species—from the Himmelsfürst and Himmelfahrt mines, as well as fragments of miners' costumes, bits of mining paraphernalia, ore assaying equipment, frog lamps (!), and a large force of inch-high toy miners of painted tin, marching in parade for some eighteenth-century holiday.


*Figure 3.* **Heraldic crest of the city of Freiberg, ca. 1900.**

The specimens, in three well-lit wall cases, were predictably magnificent—and well arranged, well and widely spaced, and often accompanied by antique labels. They included your most amazingly flamboyant dream-silver-wire aggregations; stately, sharp stephanite crystals (to 3 or 4 cm long, in groups to 6 x 6 cm); spiky acanthite war clubs and long stacks of sharp argentite octahedrons, both to 10 cm long; barites, arsenopyrites, galenas of the same caliber; wonderfully clear 4-cm lilac fluorite cubes perched lightly atop metallic matrixes; one 7 x 10 proustite group with protruding 2-cm scalenohedrons, still bright red . . . I'm tired of my own ravings by now. Herr Keilmann had solicited these specimens for display from diverse European collections, but the biggest single source was the old collection of Victor Goldschmidt, of *Atlas der Krystallformen* fame. Goldschmidt (1853–1933) worked during the 1870s at the Bergakademie Freiberg, later at München and Heidelberg Universities; in 1909 he gave his private collection to the Natural History Museum of Mainz. But the lucky, eerie, and finally rather depressing fact is that this collection was only "discovered" at the Mainz museum six *weeks* before this year's Munich show—

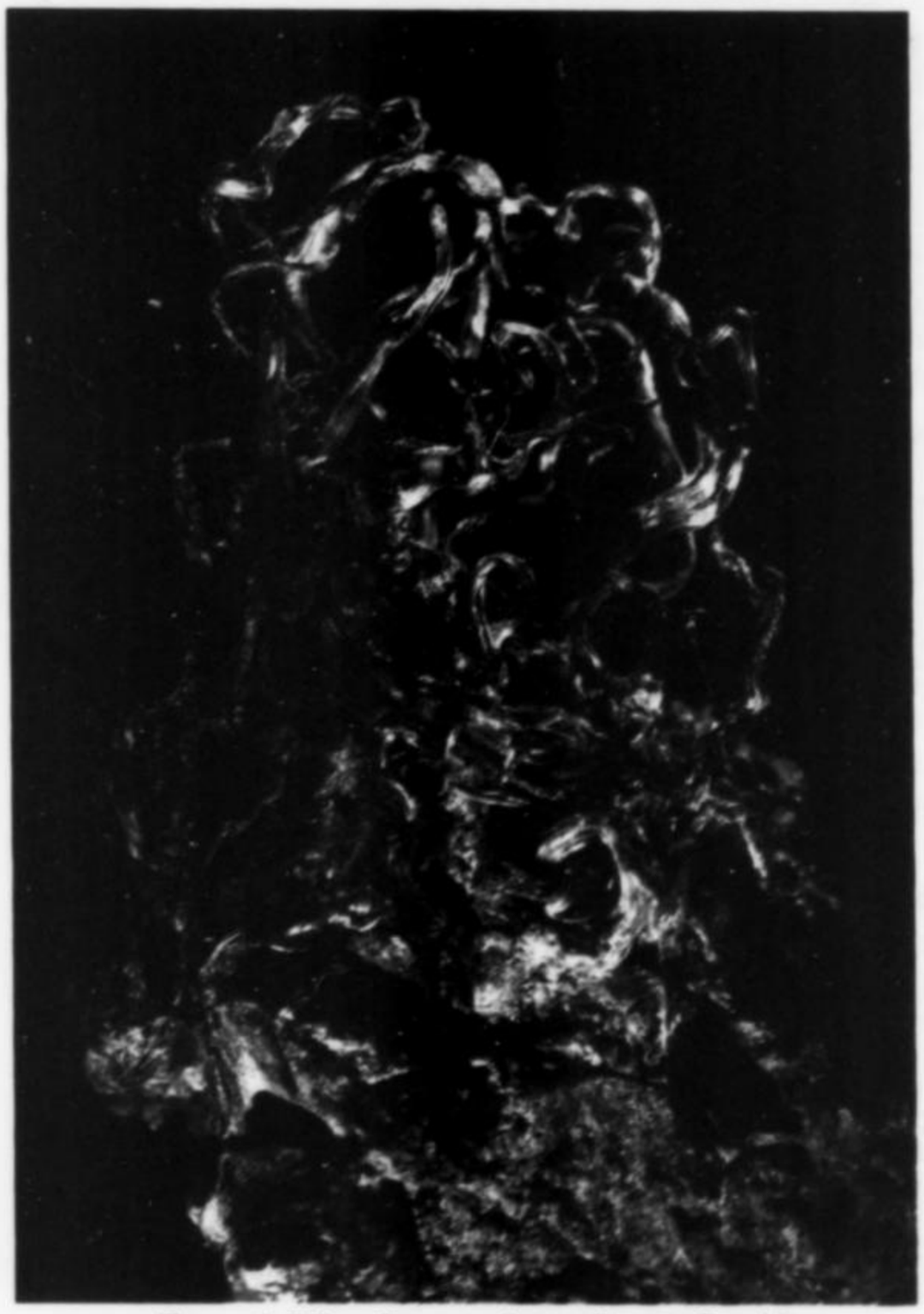

*Figure 4.* **Wire silver specimen, 5 cm tall, with argentite, calcite and pyrite from Vereinigt Feld, Brand-Erbisdorf near Freiberg. Günther Grundmann collection; photo by Rupert Hochleitner.**

*Figure 5.* **Victor Goldschmidt (1853–1933), author of the famous *Atlas der Krystallformen*, posing dressed as a medieval miner during his student days in Freiberg around 1880. Photo courtesy of the Mainz Natural History Museum.**

until then its very existence had been quite forgotten. Readers may compose on their own a suitable moral: perhaps something purephilosophical, about time, entropy and all that, or perhaps something more moralistic and cautionary, something about being very careful concerning to whom you will your rocks, even if the candidate is a venerable institution. Well at least the collection was preserved intact for us to enjoy now. In all, the Freiberg exhibit, organized by Dr. Günther Grundmann of the Mineralogical Institute at Munich's Technical University, was a rare and fascinating thing to study which many show-goers will remember for a long time. It will be interesting to see what Herr Keilmann chooses for the subject of next year's "Portrait of a Mining District" at the Munich Show.

Never mind: out of space, I must sign off now—*Glück auf,* as the old miners said—until next Note.

**Thomas Moore**
**Karlstalstrasse 9**
**D-6751 Schopp. West Germany**

# California Dealers

**Bourget Bros.**
1636 11th Street
Santa Monica, California 90404
Tel: (213) 450-6556

**California Rock and Mineral Co.**
P.O. Box 86
Brea, California 92622
Tel: (714) 990-5073

**Frazier's Minerals and Lapidary**
Si and Ann Frazier
2000 Centre Street, Suite 1177
Berkeley, California 94704
Tel: (415) 848-9541

**Galas Minerals**
Chris and Agatha Galas
1419 N. Commons Road
Turlock, California 95380
Tel: (209) 632-6222

**Cal Graeber**
P.O. Box 47
Fallbrook, California 92028
Tel: (619) 723-9292

**Hamel Minerals**
6451 West 84th Place
Los Angeles, California 90045
Tel: (213) 645-1175

**Jewel Tunnel Imports**
Rock H. Currier
1212 S. Mayflower Avenue
Arcadia, California 91006
Tel: (818) 357-6338
Wholesale Only

**Kassionas**
John and Dolores Kassionas
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# Western Minerals

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# Letters

**ON FRAGMENTATION**

We are writing in response to the guest editorial by Pete Dunn and Carl Francis entitled "Dangers to Science from Species Dealers" (vol. 17, no. 4, p. 226). *[Ed. note: because significant time has passed since publication, it is recommended that readers reread the guest editorial before proceeding.]*

In the past many dealers have admittedly answered the commercial call and broken specimens down to sizes which could be offered to the trade at the lower prices which were expected for rare and uncommon species. We believe this was most commonly done 2½ to 4 years ago. Since that time, criticism of the smaller sizes has occurred, and customers have accepted the fact that if they want larger specimens they must pay respectively higher prices. Since that time, we have specifically noticed a diminishing number of "minute only" species. Most dealers, when offering rare species, provide a reasonably complete range of sizes and prices where this is at all possible. For this reason alone, the authors' editorial seems unduly harsh and out of date.

However, insofar as small specimens or even capsules are concerned, it must be realized that many private individuals have neither the storage space, desire, or the funds for large specimens. These individuals desire either very small pieces or capsules and their desires must be met. As individuals they have the right to their own personal choices. We should all remember that private collections are the foundation of almost all major museum collections of the world.

We also have specific requests from eminent scientists on a continual basis for minute to very small particles of material (as pure as possible) for microprobe, x-ray standards, and/or polished section work. Large specimens are not acceptable to many of these people!

We, as dealers, also would prefer that all new minerals could be obtained in large pieces, but that is simply not possible. Fragmentation, as often as not, has occurred *prior* to the dealer receiving the material. In other cases the minerals are originally collected in the field as minute pieces. Specimens cannot be sold in larger sizes than found. One of the authors of the guest editorial is famous not only for the number of minerals which he has described, but for the miniscule size in which many occur.

Possibly if major museums took a more realistic scientific approach to acquiring minerals (i.e., more money for rare species instead of another fine topaz or tourmaline to go into the vault), then the large pieces would end up where the authors feel they belong. It has been our experience that, when large (and therefore expensive) research specimens are offered for sale on our lists, most museums pass them over for smaller, less expensive specimens, and these "fine research pieces" end up in the hands of private collectors. As it is now, museums in North America are "cheap" when compared with their European and Asian counterparts. Therefore, many of the high quality research specimens leave this country and end up in foreign museums or, as stated earlier, in the hands of private collectors.

We are irritated that the authors seem to resent dealers making a profit through the sale of mineral specimens. As species dealers we do feel that we provide beneficial services to the scientific community. We contact mineralogists worldwide in an attempt to obtain rare and new species. These same specimens are then sold or exchanged to museums, institutions of higher learning, researchers and collectors worldwide. Many of these minerals would never reach institutions if the initial contacts were not made by dealers. Many curators just do not have the time, money or manpower to individually make the contacts necessary to acquire new minerals, much less to execute an exchange. What the authors seem to consider unimportant is that if dealers cannot show a profit, then they cannot continue to exist. Historically, there have been mineral dealers of a sort since mining began, and professional dealers for at least 150 years.

Further, how many scientists actually field-collect all of the materials on which they do research? Amateur collectors and many dealers are constantly out in the field searching and making important new discoveries of both display and research materials. Therefore, to say that few benefits to science are derived from commercial activity is grossly unfair.

In closing, we would like to state that the majority of dealers in rare species come directly from the ranks of rare species collectors and are not trained mineralogical scientists. For this reason differences of opinions and outlooks are bound to occur in varying degrees. Dealers are proud of the services they provide, not only to private collectors,

but also the scientific community. We are not perfect, but we try to provide the best services possible, and in general, we feel that we are on very good terms with the scientists with whom we deal.

Forrest & Barbara Cureton
Tucson, AZ

**Authors' reply:**

We consider much of the Curetons' response to be common knowledge and non-germane. Surely no one objects to selling minerals which occur naturally in small samples; this is irrelevant. The Curetons clearly set out the "reasons" why specimens are broken up. They provide an expansive presentation of the commercial side of the matter. They explain "why" these specimen fragmentation practices abound, but, unfortunately, do not address our concerns at all!

The position we took, and still hold, is that the irresponsible fragmentation and dispersal of rare minerals and rare mineral assemblages is harmful to science. It matters not how many arguments may be advanced to justify this sort of commercial activity. It matters not how eloquently they are worded, widely published, or popularly held. Our position remains unchanged and is irrefutable: fragmentation of rare minerals and destruction of mineral assemblages impede scientific investigations and, in some cases, preclude them.

We take issue with the Curetons' statement that the breaking up of specimens "was most commonly done 2½ to 4 years ago." The statement is true, but incomplete: it implies that the problem was largely in the past. However, this fragmentation of species was in high gear when we wrote in the autumn of 1985, and was still very active in October of 1986, when we drafted this reply.

We sincerely regret the loss to mineralogy represented by the thousands of miniscule chips and gelatin capsules of purported rare minerals now in private collections or remaining in dealers' inventories. We believe that these specimens are or will be lost to future collectors and to science. Is there any dealer willing to purchase or to buy-back these chips and capsules? Is there any museum that seeks to acquire specimens so meagre that nothing will remain for curation after making the X-ray or microprobe mount necessary to establish its identity? If, as we suspect, there are not, then these specimens are commercially valueless and will be discarded. We welcome the Curetons' claim that the number of rare species appearing on the mineral market in minute quantities is diminishing. Ultimately, we hope to see this destructive practice totally eradicated.

We again encourage the concerned collector to be an active critic of these practices, and to speak up for preservation.

Pete J. Dunn,
Smithsonian Institution
Carl A. Francis,
Harvard University

## ROCKHOUNDING

I just had to write to you after reading your editorial "What's happening to rockhounding?" (vol. 17, no. 5, p. 290). I consider myself a rockhound or a mineral collector or whatever . . . all I know is that I love the hobby and enjoy it to the fullest.

I have been a mineral collector for about 25 years and have been able to build up a fairly decent collection, although I have never been able to spend much money on specimens. I do own, for example, a rhodonite from Broken Hill and a lazulite from the Yukon. I am strictly a housewife—not a professional of any sort. Fortunately I have become close friends with someone who owns the only shop around, and she has obtained some specimens for me at big shows which, distance-wise, are out of my reach.

From my experience I would say there are many young people who would probably love to become involved with rocks and minerals. I have gotten two of my grandchildren most interested. Unfortunately there are no shows held in Albany and no local source for inexpensive specimens. Last year a show did come to Crossgates Mall, but the few mineral dealers had their specimens priced so high that there was no way even I could buy anything. For beginners the cost of even common everyday things was out of line.

I feel that if rock shops and local show dealers would carry low-priced specimens for beginners it might bring more people into mineral collecting. At a recent show in Saratoga the dealers' prices were, for the most part, fair and they had quite a selection of 75-cent specimens available, some of them very unusual.

I was always under the impression that the *Mineralogical Record* was a way-out technical-paper magazine. About eight months ago someone who knew I was interested in benitoite and neptunite gave me a copy of the *California Issue* (vol. 8, no. 6). Oh! What a joy. I read and reread that issue—I was thrilled. When my friend saw this she borrowed several more copies for me to look at from her club's library, and let me borrow her *Tsumeb!* issue. That was that! The next week I subscribed to the *Record* and I have been enjoying it to the utmost. I have been able to send for a few back issues although I shall never be able to have all of them. I have even offered up my entire collection of *Chocolatier* magazine for sale in order to be able to buy more back issues of the *Mineralogical Record*! How I wish I had been familiar with this magazine earlier. I now look forward to each issue. Incidentally, I have shown two other "rockhounds" your magazine and they have decided to subscribe too.

Bertha Kotlow
Albany, NY

Your editorial on rockhounding was very interesting. We knew our club wasn't the only one with problems, but we didn't realize it was so widespread. I showed the editorial to our bulletin editor and he would like to reproduce it for the club members. I hope that you approve.

Audrey L. Dunn
San Luis Obispo, CA

*Permission granted. Ed.*

That was an excellent editorial on rockhounding . . . it put into words the same things I've been thinking myself. Most clubs sure are past the point of no return.

My experience with clubs may be a typical one, at least for young people. I belonged for a while to what once had been a mineral club but by the late 1970s it had become a rockhound club. I learned very little through the club and didn't really get off the ground as a mineral collector until 1981 when I read Sinkankas's *Prospecting for Gemstones and Minerals*. A friend gave me an old crystal collection which I learned a lot from, and later another friend introduced me to micromounting. I eventually quit the club because of their mediocrity, poor ethics, and tendency toward mis-identifications.

Dana M. Morong
Maine

Regarding your editorial on rockhounding, I believe I know a contributing cause to the decline.

I have been collecting, buying, selling and swapping esthetic mineral specimens for more than 25 years and feel that I am somewhat of an authority concerning this hobby. My chief interest is mineral collecting and I have amassed a medium-sized collection of some outstanding esthetic specimens that would rival many collections in the U.S. and Canada. Most of my best specimens have, however, been collected by swapping.

I wish to state an observation that I have noticed over the years, especially recently at the 1986 Midwest Federation Show at South Bend, Indiana. Swapping has become decreasingly noticeable at major mineral shows primarily because it is discouraged. Swappers are required to keep to themselves and have become invisible in many of our major shows. The officials of these shows are neglecting the fact that historically swapping started the whole process of mineral shows.

Avid swappers like myself have brought their children to many dozens of shows to get involved in the mineral hobby. In the early days, children were encouraged to swap specimens and become involved. Today this is not so, except in some rare cases. We need for children to become mineral collectors and avid swappers. Children are good at swapping. They are, in fact, the future of this great hobby.

Have you noticed also at many of these "great" shows what is being sold? At some prominent shows in the U.S. and Canada this past summer I have seen fewer mineral specimens, more sea shells, plastic jewelry, stamps, coins, brass and other unrelated paraphernalia for sale on the counter tops. Many of those Gem and Mineral shows are becoming sophisticated flea markets.

Another note about swapping and swapper dollars. Swappers of mineral specimens are collectors. They are drawn to these shows to swap and to upgrade their own collections. I have also swapped with the dealers, and much of the time purchases of special mineral specimens are made from these dealers, as many of them have very fine specimens that you cannot get elsewhere. The dealers at these shows welcome the swappers with open arms, as it is money in their pockets. Swappers are an extremely important asset and an integral part of the mineral collecting hobby.

In closing, I have resolved not to attend another mineral show unless swappers and swapper dollars are encouraged and become part of a mineral show. I know for a fact that swappers bring many thousands of dollars to mineral shows throughout the U.S. and Canada. I am a personal witness to this.

Herman Prins
Grand Rapids, MI

I read your editorial "What's happening to rockhounding?" and decided I had to write this letter. I agree with much of what you wrote, and would like to add two important points:

(1) Many collecting localities are now closed to individual collectors. If you live in an area where there is no rock club to join for group admission to such localities you're out of luck.

(2) And this is my biggest gripe: there is very little encouragement given to young collectors by the big mineral dealers. My son has been collecting since he was seven years old, and is now in college studying to be a geologist. Several years ago we visited the Detroit Show. He brought along a small box of copper specimens from the Michigan Copper Country. Granted, they weren't fantastic specimens, but he had worked hard to collect them and clean them. The big dealers couldn't have cared less about a 14-year-old trying to sell copper. Only Bob Sullivan and his wife talked to him and encouraged him to keep on collecting and go on in the field of geology. He will never forget them.

The same thing happened at another Midwest show a couple of years ago. My son had brought some nice thumbnail hematite crystals. But was anyone interested? Not one dealer. When we got home his comment was, "Why bother? No one wants them."

So how about encouraging young collectors. I'm sure there aren't that many of them around anymore.

Mrs. Charles Carlson
Crystal Falls, MI

*You make some good points, but wait a minute. Is your son aspiring to be a mineral collector or a mineral* ***dealer****? Everyone should feel obliged to encourage young mineral collectors as Bob and Maudine Sullivan did. But mineral* ***dealing*** *is a hard business, and the sooner your son learns the facts of life about money and minerals the better equipped he will be. Dealers would not be doing him a favor by charitably paying him good money for specimens they consider unsaleable or unprofitable. And in fact he seems to have caught on: if he doesn't want the specimens for his own collection, and if no one else wants them either, indeed why bother collecting them? Actually your son might have had more luck with swapping, where interesting but low-cash-value specimens easily change hands among appreciative fellow beginners (see previous letter). As for dealing, the recommended course is to first become a thoroughly knowledgeable advanced collector before turning commercial. Not that lucky beginners can't expect to sell off a flat of nice specimens once in a while, but if dealing is the primary goal, the school of hard knocks issues the diplomas. Ed.*

In the first part of your editorial you downplay rockhounds as "curio" collectors and handicraft hobbyists, with no intense interest, while upgrading mineral collectors. But most people become interested in the hobby because of its general wide range of activities. Later on they chose their specialty and worked in it with just as much intensity, curiosity and scientific bent as anyone else. Can one separate mineral collectors from rockhounds? Most mineral collectors I know are still rockhounds belonging to clubs. We are all a part of one great hobby, regardless of our specialty, and should work together without putting one interest group down when losses occur in the hobby.

Hank Schlicter
Kirkwood, MO

*My intention was not to judge or criticize but merely to define for practical purposes. If the shoe fits, wear it and be proud, whether it's a rockhound's shoe or a mineral collector's shoe. Mineral collecting may well be on the same "family tree" with many other earth-materials-related hobbies, but individual goals can be very different and, in some cases, actually opposed to each other (whether or not to cut and facet a crystal, for example). There is nothing to be gained by ignoring important differences, and continuing to call yourselves rockhounds when you are really mineral collectors. But you are absolutely right that we should work together with related hobbies at every opportunity. The following letter gives a good case history of how this can be done. Ed.*

I found your editorial, "What's happening to rockhounding?," to be a very true reflection of the situation and its relation to the mineral collecting hobby. Perhaps by relating our situation here in Houston, mineral collectors and rockhounds in other parts of the country will benefit. When I first came to Houston in 1963 as a young geologist and relatively new mineral collector, I attended a couple of meetings of the Houston Gem and Mineral Society. At that time I thought the group to be predominantly your classic rockhounds, agate lickers, stone polishers or what have you. I shuddered at being called a rockhound and really had nothing in common with the group. However, their annual shows were the best place to buy minerals so I was a faithful attendee. By the early 1970s my own taste in minerals had improved significantly. At one particular show there was only one dealer with minerals, and he brought the same minerals to the show which he had brought for the past two years with few or no additions. They were really tired specimens, probably from all that traveling. I complained about this to the only mineral collector I knew to be a club member. He said I should get some other mineral collectors to join the club and let's do something about it.

By that time the Houston Gem and Mineral Society had been subdivided into sections. We have *Mineral, Lapidary, Faceting, Paleontology,* and *Youth* Sections. Each group meets separately once or twice a month, and then there is one combined meeting a month, usually of general interest. The Society is run by a President elected from any of the Sections and a Board of Directors comprised of representatives from each section. I think the results have been astounding. Through the educational efforts of the Mineral Section some predestined rockhounds became pretty knowledgeable mineral collectors. Actually the same thing has happened in all the sections. People could go to a meeting that suited their inter-

est, and each became more knowledgeable and better skilled in his specialty. In several cases people are now earning their living at activities first learned in the Society. At first the Lapidary Section was the largest and most dominant group but now the membership is more equally divided among the sections with many people regularly attending more than one section meeting.

All the sections work together to put on the annual show. At first we invited three or four good mineral dealers to the show. Now we have twelve or more in a show that has grown steadily through the years. We rented a clubhouse where we could store showcases, set up equipment, and hold small section meetings. We outgrew it and moved to a larger one. Then in 1985 we purchased our own building and remodeled it ourselves; it is now fully functional. It contains over 5000 square feet and includes a large storage area, a work room with all types of saws and lapidary equipment, an office, 2 restrooms, a kitchen, a small meeting room, a large central meeting room that seats about 100, a small museum room and a well-stocked library with most publications and articles already indexed for quick reference.

Although there are members in every section in all stages and phases of this diverse hobby, there are very few, if any, stereotype rockhounds in our club. It is amazing to see the enthusiasm, teaching and learning of the different sections. They may be beginners, advanced or even rate as professionals in their groups but they are faceters, silversmiths, jewelers, lapidaries, carvers, fossil collectors and mineral collectors. It no longer bothers me to be called a rockhound or to be associated with them because I know the company I keep and it is good. Sure, the different sections have to be tolerant of each other's peculiarities and I still wince when I see a good crystal cut into a gem but that is part of life and the benefits of working together have been good for all of us.

Art Smith
Chairman, Mineral Section
Houston Gem & Mineral Society

## PSEUDOMORPHS

How about some articles on pseudomorphs? Have you ever treated any aspect of this topic in the *Mineralogical Record*? I collect pseudomorphs and find so little to read or study about the topic. An article or two about their significance and meaning would be most appreciated.

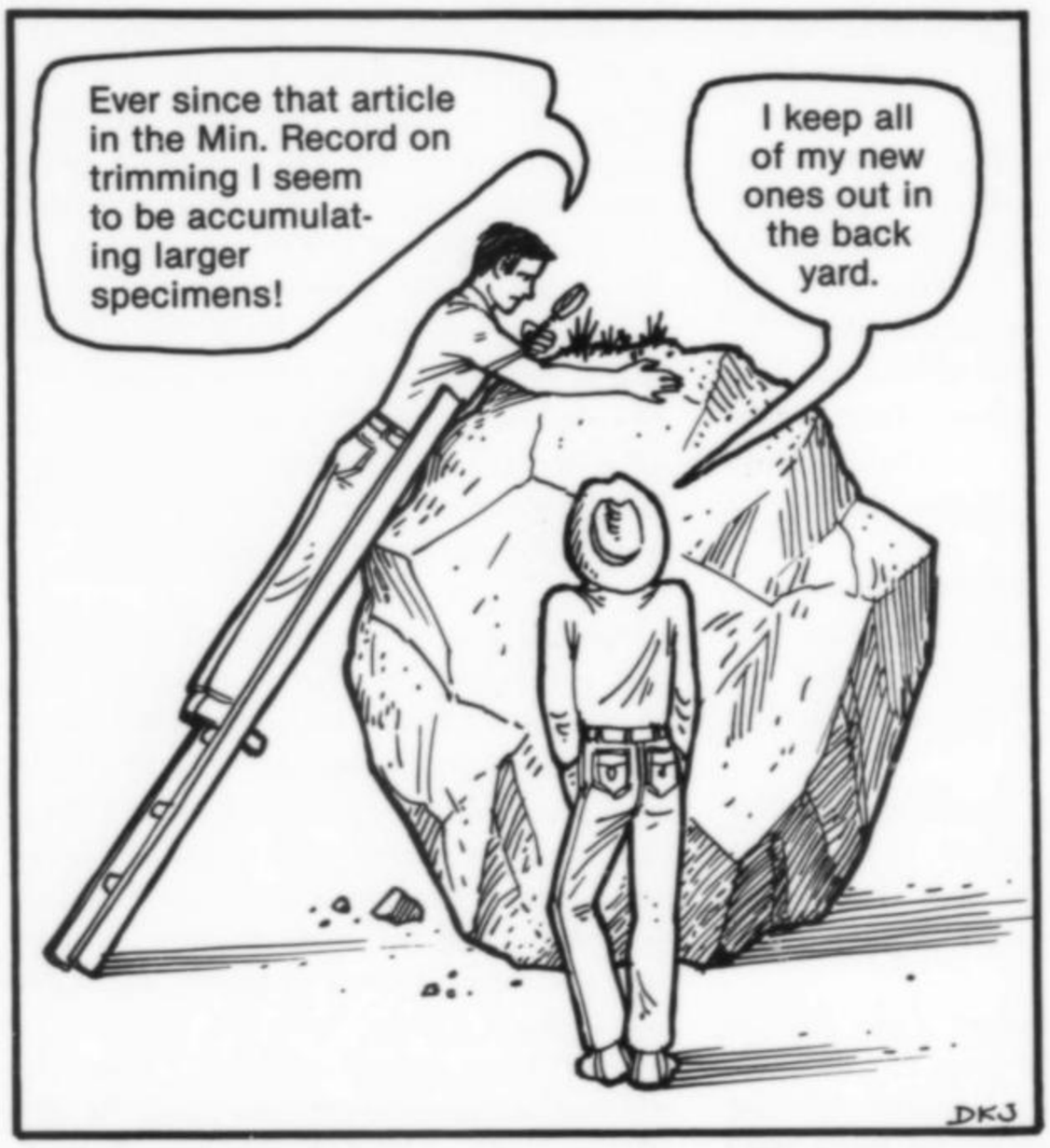
Donn Cook
Santa Ana, CA

*Pseudomorphism, the alteration of one mineral species into another while retaining the original external crystal shape, is simply evidence of a change in physical and/or chemical conditions. That being said, about all one could do in an article on pseudomorphism would be to discuss a selection of specific cases, and it is true that we have never had an article exactly like that. However, if you have a substantial number of back issues of the* ***Mineralogical Record*** *you do indeed have quite a reference on pseudomorphs. Specific cases are discussed again and again as part of broader articles on the mineralogy of localities. The 14-year cumulative index, available through the Book Department, lists references to more than 250 pseudomorphic (before and after) species pairs, many of them noted from several different localities. This is really the best way to study pseudomorphism, in the full mineralogical context of each locality. Ed.*

## MORE ON TRIMMING

The article on trimming (vol. 17, no. 3, p. 163), serious though it may have been, somehow touched my funny bone and caused a number of humorous images to pass through my mind. Enclosed is one which I put on paper.

David K. Joyce
Kamloops, British Columbia




I read with interest the article on specimen trimming and my reaction to it was much the same as my reaction to the one on specimen cleaning some time back: I strongly disagree. The article stressed the esoteric dangers of trimming and played down the many advantages. I was left with the distinct impression that many valuable pieces have a life cycle from the Almighty to the trash basket, via the trim job. This loss is supposedly due primarily to the unwarranted temporary esthetic standards of the mineral collecting community. In actuality the vast majority of trims are for the removal of excess matrix, matrix which carries the same scientific value in a small piece as in a large one. Most of these trims do not affect the area of crystallization, the area of scientific importance. The remaining balance do involve some "crystal chopping." Even here it is highly doubtful that we will destroy much if any of importance since to reconstruct the chemistry, mineralogy, paragenesis, etc. from a single specimen is impossible and once the contents of a pocket of "find" have been scattered to the four corners of the earth this opportunity has vanished. For the scientists it is lucky that most "finds" are handled by an individual dealer or collector who rarely has the time to do much in cleaning or trimming, and the imaginary dangers can be avoided by buying early. It is my belief and experience that trimming enhances a specimen and that a piece considered esthetically pleasing now will always be so. Esthetics are not only a matter of education but are inherent to the human race. The "Old Masters" were appreciated as much when they were painted as they are now; so it is with fine specimens. I think of a trim on a mineral as a frame around a painting: the better the trim the fancier the frame setting off the natural beauty of the piece before you.

There are significant advantages to trimming:

(1) Increase in financial value—the prime motivator in our democratic society. Corollary to this is—increase in esthetics.

(2) Maximum use of space—today's collectors and museums have limited budgets and space available; you get more in less, so to speak, with trimming; or call it specimen dieting.

Last but not least,

(3) The thrill of being part of creating something special—we all have a bit of the artist or sculptor in us.

Cal Graeber
Fallbrook, CA

*Perhaps you missed the point of our article. It was not to say, "Don't trim, and shame on anyone who does." It was to provide food for thought, to suggest that people keep the possible long-term consequences in mind. As for myself, I fully intend to keep on trimming specimens much as I always have, shooting for "classic" esthetics. But I will be examining the specimens and the debris very carefully, may send off a box of raw material to some institutional repository from time to time, and will not make specimens any smaller than absolutely necessary.*

*I must take issue with some of your specific statements, however. You suggest that to "reconstruct the chemistry, mineralogy, paragenesis, etc. from a single specimen is impossible" once the pocket contents have been dispersed. That is plainly untrue; a* ***partial*** *reconstruction is always possible, the degree of completeness depending on the specimen. What you are suggesting is that, since much information has been lost, it won't hurt to destroy whatever is left!*

*And I hasten to point out that, although many of the Old Masters were popular and prosperous in their day, many others struggled in anonymity and were only recognized as "great" in later years, after their deaths, when public taste caught up to them. Tastes do change, but I hope along with you that we are truly on the right track to eternal esthetics. Ed.*

## MORE ON MISLABELING

I read with great interest the recent article on mineral specimen mislabeling (vol. 17, no. 2, p. 99–103), and also the letter on the same subject by Kay Robertson (vol. 17, no. 5, p. 346). I myself have often been confused, astonished, outraged, etc., by the information or lack thereof on labels. Some years ago I purchased part of a Danish systematic collection. In the collection ledger that accompanied it I saw that two specimens of collinsite had been entered several years apart. One was labeled "Bancroft, British Columbia, Canada" (!), and the other was recorded from "Custer, South Dakota." I kept both of these, my only collinsites, for a couple of years until one day, while fiddling with them and marvelling at their similarity, I discovered that they fit together perfectly! They were actually two pieces of the same specimen. Incredible . . . I could have sworn there was more than 3 cm distance from British Columbia to South Dakota.

Incidentally, I have found that very old and almost entirely faded labels which might otherwise be considered illegible can sometimes be read under longwave ultraviolet light. The paper fluoresces but the faded ink does not.

Claus Hedegaard
Faarvang, Denmark

Although fraudulent mine naming does happen, a far more common problem exists with regard to labeling confusions. When a claim or mine is located or sold, it can and is renamed by the new owner. Most of this was done by prospectors/miners, with no intention of hiding or falsifying locations, but instances are known of mineral collectors filing claims on old mines, and renaming them to suit their own tastes. It is legal, valid, and the new name is legitimate. One example comes to mind: the Finch mine, Gila County, Arizona, has produced nice wulfenite crystals covered by and pseudomorphed to quartz. It was reclaimed and renamed the Barking Spider mine because the miner "didn't like birds." Between the time of this name and the original name "Finch" (by Mr. Finch, no connection to the bird) it has been called the Kullman-McCool mine, the Reagan mine, the Brick Group and probably others I am not aware of. Let me stress again, all of these names are real, valid mine names, not fraudulent or deceptive.

The Apache mine, Gila County, Arizona, is *not* a fictitious name, contrary to what one might conclude from the USGS's name on the Globe quadrangle; in fact, reference elsewhere to "Vanadium Shaft," as the map calls it, cannot be found. As early as 1927, Mr. A. L. Flagg was discussing the economic merits of the Apache vanadium mine. This should be a relief to collectors considering "correcting" their Apache mine vanadinite specimens.

Under current claim laws, a given outcrop could theoretically have a new valid name every year, as the new claimants rename the deposit. I do not know of a good rule to use when labeling specimens from such multinamed mines. Problems include the difficulty (impossibility) of determining the last valid mine name used, and even if determined, it frequently is not the logical choice. The Barking Spider mine claim was only held for one year, and now appears to have been invalid (being cross-claimed by the Flea Bag #96 or some such name). "Finch mine" has been used by collectors most frequently, but was only valid until about 1900. The other names used appear to date from the period of 1900 to 1950, and which name followed which is anybody's guess.

One suggestion is that any author writing a paper on an occurrence should report the other names by which the deposit has been known and suggest the name he feels should be used in labeling. Many *Mineralogical Record* authors have already done this, and their efforts are appreciated by anyone having labeling problems.

David Shannon
Mesa, AZ

## A GREAT SHOW

From time to time I peruse old issues of the *Mineralogical Record.* (I am one of the fortunate ones who have a complete set.) I noticed your comments on the military equipment collectors in the January-February 1984 issue. I am sure it is an exciting show, but I wish to describe the recent Ameripex show in Chicago, which was an international stamp collecting show. It is my guess that Ameripex was the finest show of any collecting hobby that was ever put on anywhere in the world at any time! Which is a pretty strong statement. . . . To bring it into terms that any mineral collector would understand, a comparable mineral show would have to be set up as follows:

1. An international show.
2. Only exhibitors who have achieved a second or better at the national-level (Federation or equivalent) show could apply to enter regular competition, and their entry would have to be "judged" worthy to be entered. (Some would be rejected.)
3. There would be a special section for entries who had won previous international competitions, and these entries would compete among themselves.
4. All specimens of international fame would be exhibited. I guess this would be similar to those pictured in Bancroft's book (which was done in Tucson) but it would not be limited to those, and would also include important historical pieces.
5. Dealers of international repute, plus others, would have sales booths.
6. Owners of major international collections, both institutions and individuals, would send displays of choice pieces.

In all, everything there on display would be the "crème de la crème." That was Ameripex. Has any other hobby ever gathered everything together for display under one roof?

Henry Fisher
Columbus, OH

## TIP TOP MINERALS

I read with interest the recent article by Campbell and Roberts on the phosphate mineralogy of the Tip Top mine (vol. 17, no.

4, p. 237–254). I collected there often during the last period of mining, and was (with Campbell) responsible for the discovery of the new species tiptopite and fransoletite.

Two additional species should be added to the Tip Top phosphate list. On two separate occasions I have found white, orthorhombic, lath-like crystals of hopeite to 2 mm. These occurred in the altered triphylite assemblages consisting of (a) sphalerite, triphylite and hopeite, and (b) ferrisicklerite, leucophosphite, laueite, robertsite, hydroxylapatite and hopeite. Identification was made using X-ray powder diffraction analysis and electron microprobe analysis.

The second additional species is wardite, found as pseudo-octahedral crystals to 4 mm, associated with ferrisicklerite, mitridatite, pink whitlockite and red montgomeryite. No primary phosphates were noted in close proximity to the pocket. Identification was made by the same methods. These may well be the finest wardites known from the Black Hills. The best of the specimens is currently in the collection of the Black Hills Institute of Geological Research, Hill City, South Dakota.

Martin Jensen
Murray, Utah

## CLEANING AND PRESERVING

I have for you an answer and a question, but unfortunately they do not go together.

First the answer: A good technique for removing minute bits of dust and debris from delicate micro specimens is to pick up the detritus with a bead of contact cement on the tip of a needle. Allow the cement to become somewhat tacky, and gently blot the unwanted material from the specimen. Drying the bead under a strong light for a moment seems to work best. The surface dries and toughens quickly, giving the bead a bean-bag-like consistency, and then softens and becomes more adhesive as solvent diffuses outward from the interior of the bead. Although decidedly tedious for all but the smallest specimens, this technique avoids the sudden shocks caused by tapping; the lack of control when blowing with either air or steam; and the potential solubility and drying problems that come with washing in liquids.

And now the question: I have heard of a method of forestalling the inevitable deterioration of marcasite specimens. The treatment involves, among other things, exposing the specimen to ammonia fumes for a period of time. (My interest was piqued recently when I saw several badly decomposed specimens still on display in a small museum.) Are you familiar with the details of this method or with any other method of preserving marcasite?

Edwin L. Clopton
Mount Morris, IL

*See the article on preserving pyrite and marcasite in vol. 9, no. 4, p. 231-233, and also the follow-up letter on the same subject from Gary Hansen in vol. 10, no. 1, p. 56. Ed.*

## EXCHANGES

I would very much like to exchange good-quality showy minerals from Europe (many classic items from Germany, Switzerland, Russia, England) for equal-equality specimens from the U.S. (e.g., Alaskan epidotes on matrix, Washington pyrite and quartz, California tourmalines on matrix, large Arkansas brookite crystals, Arizona vanadinite from the J. C. Holmes claim, etc.). No micromounts or thumbnails please. Free trading list available.

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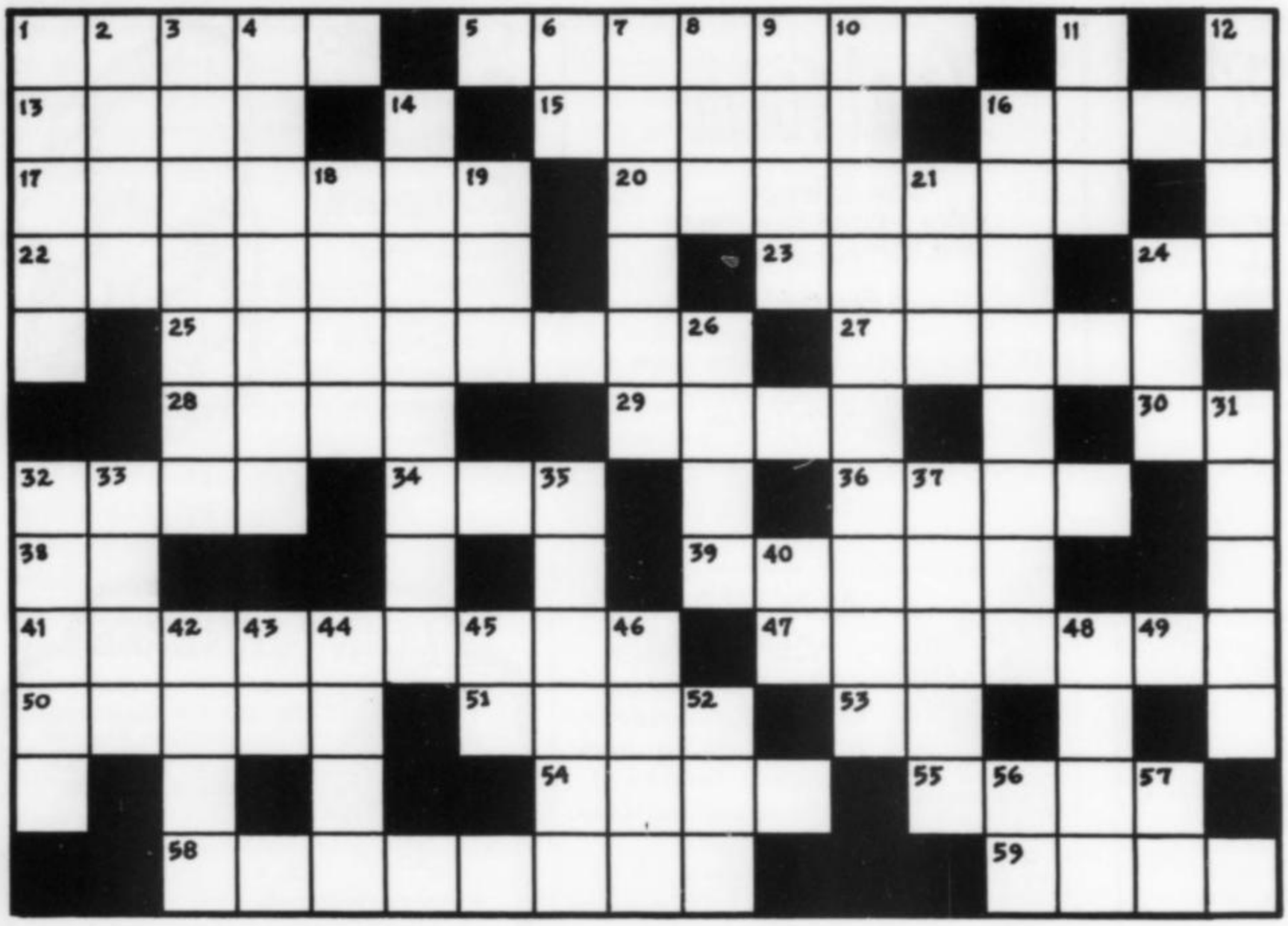

## MINERALOGICAL CROSSWORD PUZZLE

For people with nothing better to do (and a desire to test their knowledge of minerals) we offer the following mineralogical crossword puzzle. Nearly all of the words in the puzzle are mineral names with the *-ite* suffix removed. But watch out—some names are obsolete or do not end in -ite anyway. The solution will be published in the next issue. In the meantime, cheaters are referred to Fleischer's *Glossary,* Hey's *Chemical Index,* Mitchell's *Mineral Names,* and Dana's *System.*

W.E.W.

### ACROSS

1. Named for a mine manager at Tsumeb
5. Arsenic trioxide
13. Ojuela mine analog of eveite
15. $Ni_9As_3O_{16}$ from Cornwall, England
16. _____tlite; jurupaite is a magnesian variety
17. An aluminum phosphate named for an African country
20. Named for the mineralogist famous for his studies of liquid inclusions
22. $Sb_8O_{11}Cl_2$ from the Cetine mine
23. A lead sulfantimonide from Madoc
24. Chemical symbol for beryllium
25. Equals thorogummite from Western Australia
27. _____cite; from the Greek for "new born"
28. PbTe; named for a mountain range in Siberia
29. _____pore
30. Chemical symbol for radium
32. The first mineral in Dana's classification
34. What sublimate minerals precipitate from
36. A lead oxychloride from Långban
38. "A new (old) common member of the tourmaline group"
39. _____ooreite; named for a Chicago mineralogist
41. Named for a noted Franklin collector
47. Sodium-copper sulfate abundant at Chuquicamata
50. Named for the composition: iridium, arsenic and sulfur
51. Thorium silicate
53. _____psum
54. _____sonite; a nickel porphyrin
55. A potassium-zirconium silicate from Ascension Island
58. Green chlorite-like mineral found in Upper Michigan cupriferous amygdaloids
59. Named for the composition: a hydrated uranium-vanadium oxide

### DOWN

1. Lead uranate-silicate from Katanga
2. A New York amphibole resembling tremolite
3. From the Greek for "luster"
4. Chromian beryl
6. Named after a ship which was named for an Egyptian god
7. Forms large peach-pink crystals at Mont St-Hilaire
8. What mineral collectors hate to see crystals treated as (spelled backwards)
9. Equals samarskite; "new mineral" in Spanish
10. Named for a town near Franklin, New Jersey
11. _____nubite; after the Roman name for Cornwall
12. Blue cubes from Baja
14. $CoTe_2$; named for a lake in Quebec
16. Yttrium phosphate
18. Named for a curator at the Royal Ontario Museum
19. _____lingite (German spelling); $FeAs_2$
21. _____rite; named for a co-author of *Rock-forming Minerals*
24. _____ax
26. _____tase
31. $PbBi_2Te_2S_2$; from the Alekseev mine, USSR
32. Equals meliphanite
33. Named for the Red Cloud mine's most successful collector
35. From the Sanskrit name for Ceylon
37. British mineral dealer Brian _____
40. _____erite; variety of spinel
42. Stolzite dimorph in fine crystals from Broken Hill, Australia
43. Chemical symbol for strontium
44. _____ebite; named for a famous African locality
45. Chemical symbol for astatine
46. _____eite; hydrate calcium borate from Furnace Creek
48. Forms a series with danalite
52. _____erite; named for an Austrian geologist
56. Chemical symbol for gold
57. _____g; synthetic yttrium aluminum garnet

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