THE MINERALOGICAL RECORD

MAY–JUNE 2006 VOLUME 37 NUMBER 3

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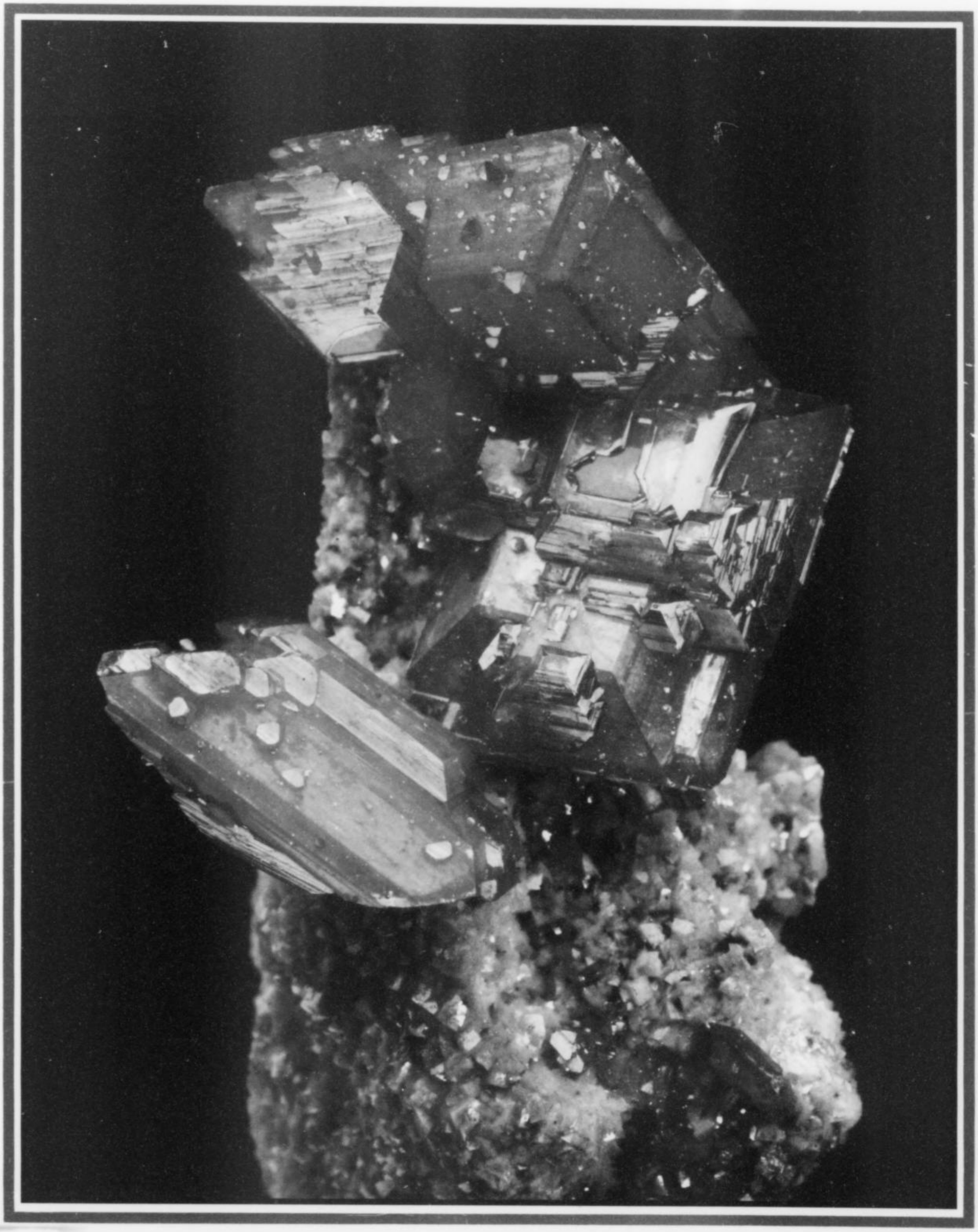

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THE MINERALOGICAL RECORD

May–June 2006 Volume Thirty-seven, Number Three

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COVER: WULFENITE crystal cluster on matrix, 6 cm tall, from the Tsumeb mine, Tsumeb, Namibia. Sandor Fuss collection (2004), now owned jointly by Stuart Wilensky and Irv Brown; Jeff Scovil photo.

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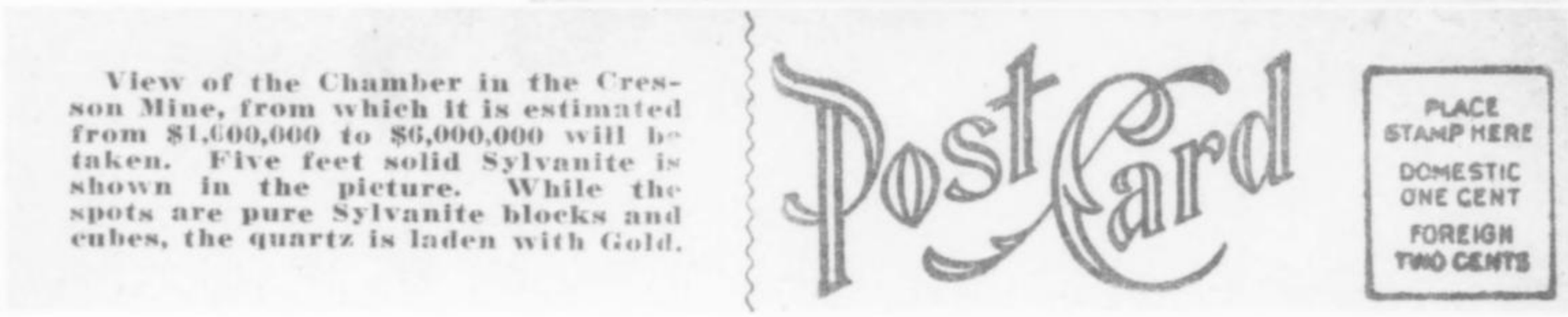
notes from the EDITORS

Cresson Vug Photo Found!

Readers may recall the story of the wondrous "Cresson Vug," discovered on the 12th level of the Cresson mine, Cripple Creek district, Colorado in 1914 (see "The Cresson Vug, Cripple Creek," by Art Smith, Ed Raines and Leland Feitz back in vol. 16, no. 3). It measured 13.5 × 23 feet and rose to a height of 40 feet. The floor was several feet thick of a white clay-like material that proved to be powdery celestine mixed with microscopic calaverite and kaolinite; sacked and shipped it yielded up to $16,000 in gold per ton (at 1914 prices). In "the cave of sparkling jewels" sylvanite and calaverite crystals studded the walls, interspersed with thumbnail-size leaves of gold. In one month 1,400 sacks of crystals and flakes were carefully scraped from the walls, bringing $378,000 in gold values from the (ouch) smelter. One specimen seen underground consisted of a 1-foot-square surface thickly covered with delicate, brilliant-lustered calaverite leaves from a half-inch to an inch across.

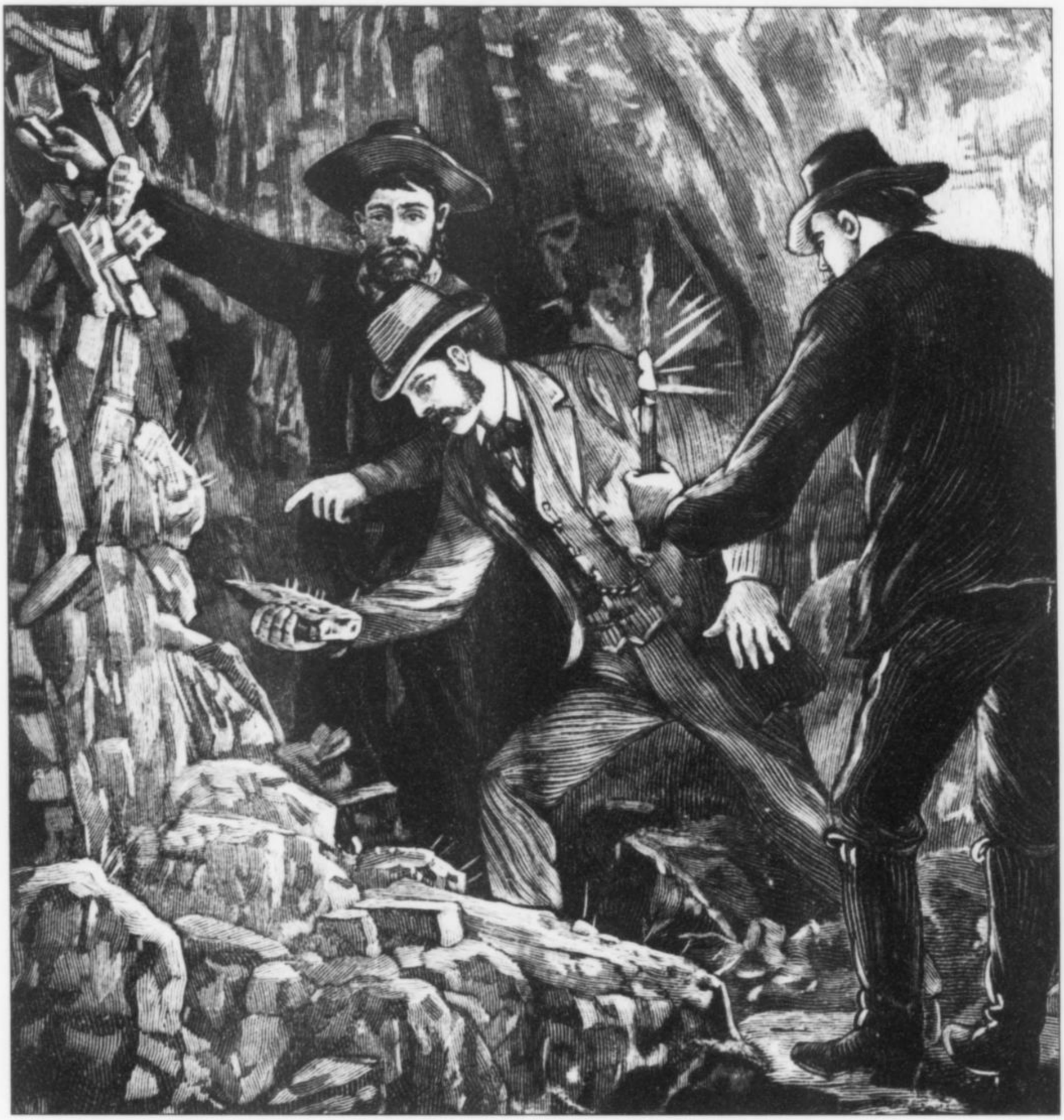
No photos of the vug were thought to exist—until now! Our thanks to Bloomington, Illinois collector John Taylor, who has found a postcard, shown here, which shows one wall of the vug, photographed by a man named Woodard in Victor, Colorado. The photo must have been taken in the first few days after the discovery, before the walls were scraped. The caption states that the photo shows a 5-foot vein of solid sylvanite (heavily tarnished), studded with lustrous, metallic-white "pure sylvanite blocks and cubes" which must be about thumb-size. If only a thumbnail collector had been on hand to salvage a few crystals!

PHOTOGRAPH OF THE MOST WONDERFUL DEPOSIT OF GOLD EVER DISCOVERED IN THE WORLD. CRIPPLE CREEK DISTRICT. CRESSON MINE. 1200 FOOT LEVEL.
(PHOTO BY WOODARD. VICTOR. COLO.)



The Mineral Collector—Last Chance!

Twenty years ago the late Jay Lininger, publisher of *Matrix*, did the mineral world a tremendous service: He found a very rare, complete, 15-volume set of the early journal *The Mineral Collector* (1894–1909), disbound it, photographed every page (this was in the days before scanning), and reprinted the entire run, over 6,000 pages! *The Mineral Collector* originally had a relatively small circulation, and unfortunately was printed on high-acid paper. A hundred years later nearly every copy had crumbled to dust. Jay's timely action saved from extinction this critical and fascinating part of the history of mineral collecting.

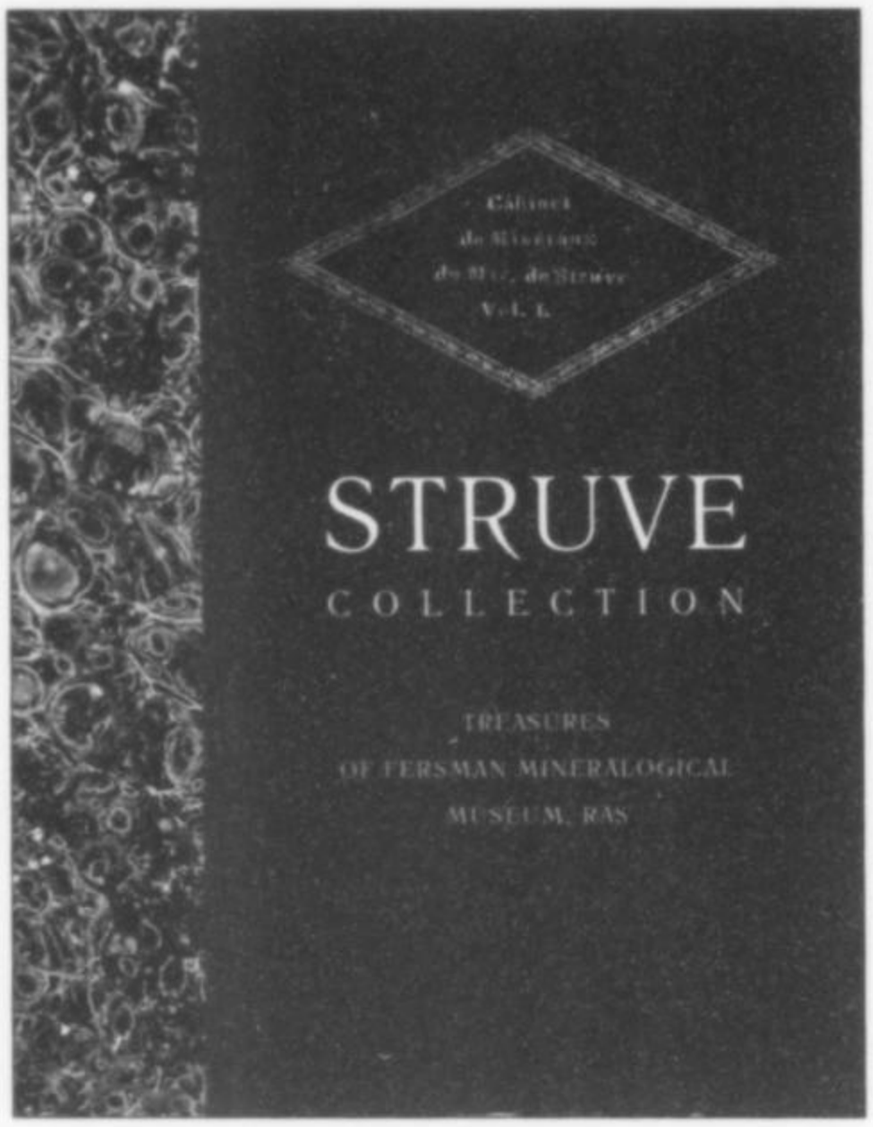


Cresson mine manager Dick Roelofs showing the Cresson Vug to an amazed Hildreth Frost and Ed De La Vergne on November 26, 1914, as depicted in a contemporary woodcut engraving.

Jay is gone now, and his fine mineral collection and library have been sold. We recently learned that his wife Paula has just **10 complete hardbound sets** of *The Mineral Collector* reprint remaining in storage, and another 20 unbound sets which could be bound if the demand warranted. (She also has a few miscellaneous volumes in softcover, but no complete sets in softcover.) We have agreed to sell the hardcover sets on her behalf, at the price of $475 postpaid in the United States and Canada (write or e-mail for the shipping surcharge to other countries). You can order through the Bookstore section of the Mineralogical Record website, www.MineralogicalRecord.com, or directly by e-mail (to minrec@aol.com). There are many many hours of interesting reading (not to mention the interesting ads!) in these old volumes. We highly recommend that you acquire one of these last sets for your own bookshelf now, while you still can. You might also consider buying a set to donate to a local library, mineral club or mineral museum. These volumes need to be preserved for the sake of preserving the history of mineral collecting. This is your last chance, so don't wait; Paula wants to clear out her storage, so whatever hasn't been sold in a reasonable length of time is going to be discarded.

Struve Book

Heinrich Christoph Gottfried Struve (1772–1851) was a prominent member of the Russian Diplomatic Service in Hamburg, Germany, a well-known mineral collector, and the namesake of the mineral *struvite*. His mineral collection is preserved in the Fersman Mineralogical Museum in Moscow, along with something extraordinary: his collection catalog, filled with hand-painted illustrations of his specimens! This unique catalog is a one-of-a-kind illustrated mineralogy (you can't get rarer than that) which should take its place alongside the other well-known examples of early mineral art, such as Philip Rashleigh's catalog of British Minerals (1797–1802) and James Sowerby's *Exotic Mineralogy* (1811–1817) and *British Mineralogy* (1804–1817). Up to now, few people have been aware of Struve's catalog, and fewer still have had a chance to actually examine it. Now,



however, the Fersman Museum has reprinted a limited number of copies in color, accompanied by newly discovered biographical information about Struve that was found in the Archives of Foreign Affairs of the Russian Empire. Some of the artwork illustrations are even accompanied by photographs of the actual specimens.

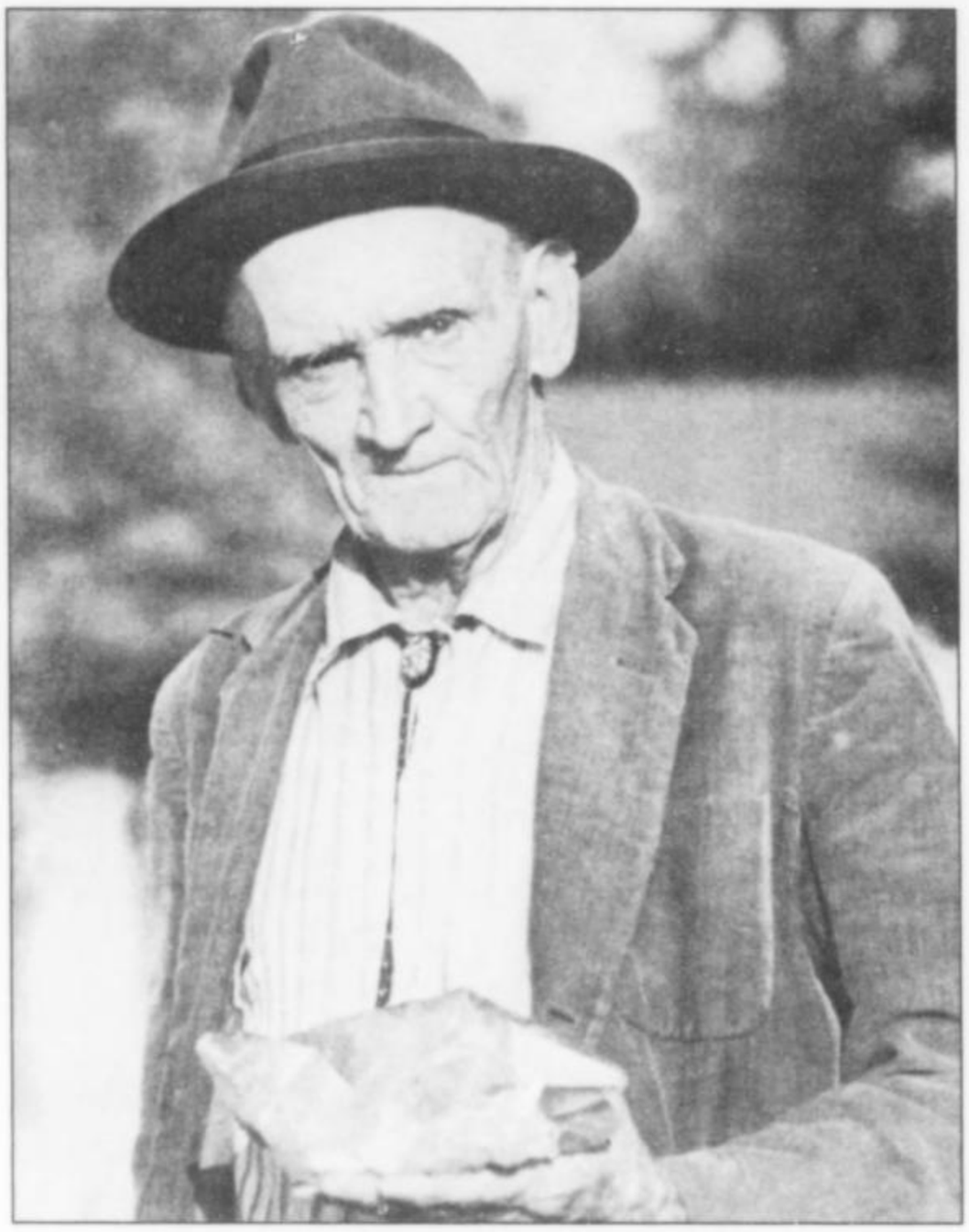
It's a beautifully produced book of 100 pages, softbound with a stiff, glossy cover and text printed on high-quality paper, with color on almost every page. Anyone with an interest in mineral art, mineral books, and the history of mineral collecting would very much enjoy this work. We have obtained 15 copies from the Fersman Museum. One copy we will retain for the Mineralogical Record Library, and the others are available now, while they last, **at the price of $55 postpaid**. You may order a copy through the Bookstore section of our website at www.MineralogicalRecord.com, or by e-mailing us directly at minrec@aol.com.

Label Archive

We continue to load more dealers' and collectors' biographies and label images onto the Label Archive portion of our website at www.MineralogicalRecord.com. Remember, if readers can add any information to what we have for any of those dealers and collectors, please click on the e-mail link at the bottom of each page and let us know.

Here's another example where we could use some help: Most mineral collectors are at least familiar with the name of the legendary Galena, Kansas mineral dealer Boodle Lane. He sold countless tons of fine Tri-state calcite, galena, dolomite and sphalerite specimens, and was said to always provide detailed locality data (since he personally collected many of the minerals he sold). But, surprisingly, we have never seen a Boodle Lane mineral label; did he give the locality data only verbally, if asked? Or does a reader have a Boodle label he could scan for us?

Here is another mystery that perhaps readers can help us with. Is there anyone who still remembers Lucian M. Zell, a New York City mineral dealer specializing in the highest quality specimens for elite collectors? He was born in Pennsylvania in 1873. As of 1900 Zell was working as an importer of precious stones, and eventually expanded into mineral specimens, which he first advertised in the



Fred "Boodle" Lane (1892–1962)

September 1932 issue of *Rocks & Minerals*. He never mentioned specific minerals in his ads, but stated simply that "I have for sale rare crystals and specimens suitable only for the better collections." Zell's office was at 522 Fifth Avenue in New York—a pricey neighborhood. He sounds like he must have been an important high-end dealer, and yet we have never seen or heard of a mineral label with his name on it. Does anyone have one? Larry Conklin recalls that his uncle, Anthony Schumacher, once bought a fine Klein Spitzkoppe aquamarine crystal from Zell, but that's all we've heard. Zell's ads stopped in 1938, though he may have continued selling into the 1940's (his death date is unknown).

The following dealers and collectors are among those that have been added to the Label Archive web pages during the previous couple of months. There are some interesting stories here.

Bausman, Joseph E.
Berryman Menage
Cassirer, Fred
Chamberlain, Arthur
Clinton, H.G.
Crim, A.B.
Davis, Estella Robbins Perry
Deck, Isaiah
Delagrave, Charles
Ehrmann, Martin
Elwell, Wilbur J.
Everitt, Albert
Filer, Russell
Fiss, George Washington
Frazar, George B.
Frič, Václav (Wenzel)
Gagarin, Prince Gregory
Gehman, George W.
Gunnell, E. Mitchell
Harstad, Alfred J. (The Gem Shop)
Haven, Herbert M.W.
Henson, Samuel
Hillman, F.G.
Hirsch, Willy
Hoadley, Charles W.
Keith, Martin L.
Lamb, Thomas F.
Lane, "Boodle"
Lattin, Frank H.
Lewis, W. Scott
Maucher, Wilhelm (expanded)
Melhase, John
McCrillis, Dean A.
Merrill, Amy A.
Merrill, Loren B.
Montgomery, Arthur
Newberry, J.S.
Over, Edwin

Palumbo, Roberto
Perham, Stanley I.
Perry, Nathaniel H.
Reamer, Louis
Rushton, Edward W.
Russell, Thomas D.
Sæmann, Louis
Schortmann's Minerals
Sering, Harry
Shepard, Nettie
Simmons, George O.
Skillin, I.S.
Southwick & Jencks
Southwick, Earnest A.
Southwick, James M.
St. Ignatius College
Stillwell, Harry
Stürtz, B.
Tammen, H.H.
Taylor, William G.
Tennant, James
The Gem Shop
Tuthill, R.W.
Tym, John
Vésignié, Louis
von Lothring, Stephan
Wilke, R.M.
Wilton, Newton E.
Withers, Gilbert W.
Woodman, R.G.
Wright, Bryce M. Jr.
Wright, Bryce M. Sr.
Zell, Lucian M.

As we continue to update old entries and add new ones, remember that you will need to periodically hit the "refresh" button for the Label Archive pages (especially the drop-down menu listing) on your computer. Otherwise you will see only an earlier version saved by your computer from a previous visit.

Died, Frederick H. Pough, 99

Frederick H. Pough was born in Brooklyn, New York on June 26, 1906, the son of Francis H. Pough, a chemist and manager of the Union Sulfur Company's refinery, and Alice Hooper Backler. His parents had met at the Massachusetts Institute of Technology where Francis taught chemistry and Alice was a student in 1899.

Fred enrolled at Washington University in 1934, and transferred to Harvard the following year, graduating *cum laude* in 1928. His family moved to St. Louis, Missouri around 1930, and Fred worked there briefly as an insurance salesman, then returned to Washington University for graduate school; he did his Master's work at the Rueppele iron mine in Stanton, Missouri. He spent the years 1931–1932 in Heidelberg, Germany studying mineralogy under Victor Goldschmidt (he was Goldschmidt's last American student). He was awarded his M.S. (1934) and PhD (1935) degrees by Harvard, on the basis of his studies on phenakite morphology and paragenesis with Goldschmidt.

Fred taught mineralogy for a while at Harvard, then took a position as Assistant Curator at the American Museum of Natural History in New York. During the war he worked as a field mineralogist for the Manhattan Project in Brazil in 1941, and served in the Army Signal Corp in 1943. Returning to his post in the American Museum following the war, he was promoted to chairman of the Department of Geology and Mineralogy in 1952. From 1955 to 1964 he was President of Gem Irradiation Laboratories in New York, doing pioneering work on the irradiation of diamonds.

From 1964 to 1967 Fred served as Director of the Santa Barbara Museum of Natural History. He then worked as an organizer of mineral-oriented tours for a San Francisco travel agency, and as consulting mineralogist for such companies as Harry Winston and Bulova, and was thereafter self-employed as a consultant under the company name of Mineralogy, Inc.

Fred served as gem expert for *Jewelers' Circular-Keystone*, contributing editor for *Lapidary Journal* (since 1945), and a consultant for the Gemmological Association of Japan. He was a Life Fellow of the Mineralogical Society of America and the Geological Society of America, and an honored member of many other professional organizations. He was awarded the Derby Medal by the Brazilian Geological Survey (1945), a Bronze Medal by the Royal Geographical Society of Belgium (1948), the Chilton Editorial Achievement Award (1972), the Hanneman Award (1988), and the Carnegie Mineralogical Award (1989).

Fred's principal fame as an author rests on his *Field Guide to Rocks and Minerals*, first published in 1953 and numerous subsequent editions, total sales of which have exceeded one million copies. Generations of mineral collectors grew up with this book at their side. Fred also wrote hundreds of popular magazine articles, and numerous articles in technical mineralogy journals; he published the first descriptions of the new minerals brazilianite, mackayite and blakeite. He also supplied the mineralogical, gemological and geological definitions of terms for various dictionaries and encyclopedias, and has even produced educational films.

Fred Pough was a virtual legend in mineralogy and mineral collecting, his name and works universally known. He remained active, energetic and feisty in his old age, traveled and lectured widely, and was attending the Rochester Mineralogical Symposium at the time of his death on April 7, 2006.

Mineralogical Record Forum:

Internet Mineral Sales

John S. White
Jordi Fabre
Wendell W. Wilson
Thomas P. Moore

Introduction

This year marks the tenth anniversary of Internet mineral sales, that is, of the founding of the first three websites devoted primarily to the direct sale of mineral specimens to the public. The pioneering three dealers were Jordi Fabre, Rob Lavinsky, and John Veevaert, and all three are still going strong despite the extensive competition that has since grown up around them in cyberspace. The Internet market is now a major force in the mineral world, and we thought it would be interesting at this point to take a look at its pluses and minuses. Below are some thoughts on this subject from four different viewpoints, provided by an impromptu panel: (1) an outsider to the phenomenon, **John S. White**, (2) an Internet dealer, **Jordi Fabre**, (3) an Internet buyer, **Wendell E. Wilson**, and (4) an Internet researcher, **Thomas P. Moore.** Comments from readers are welcome (by e-mail to minrec@earthlink.net).

John S. White

It was suggested to me that a commentary about Internet sales of minerals might be timely, so I have taken up the challenge, even though I have very little first-hand experience on the buying end and almost none on the selling end. I will confess that, as with many other radical changes in marketing (see my editorial on preshow selling in vol. 3, 1972), I was a skeptic when this phenomenon first gained a tentative foothold.

I have long perceived the mineral business as precarious, and on the evidence from my observations of actual purchasing I could never justify in my own mind the increase in the numbers of dealers and the breathtaking escalation of prices. That most dealers at shows pack up and take home the vast majority of what they arrive with cannot be disputed, so one must wonder how, for many dealers, the seemingly modest number of sales at shows can support the rest of the inventory, especially factoring in the considerable costs that show participation entails. So, it was my concern over the perceived precariousness of the trade that caused me to fear that non-show-related Internet sales of minerals could seriously impinge on sales by more historically conventional means. I seriously entertained the idea that Internet sales could have a devastating effect on the marketing of minerals at shows which, in turn, could have a devastating effect on shows which, in turn, would have a devastating effect on the hobby, the science and acquisitions by museums.

I mention here only show sales in contrast with Internet sales, because I believe that sales in shops represent an insubstantial segment of the business, at least in terms of the marketing of good to fine-quality material. When it comes to very large amounts of money changing hands for a relatively small number of specimens, I tend to regard this as door-to-door selling, wherein the dealer gets on the road and visits favored customers with a small inventory of very expensive pieces. It is impossible to imagine what the volume of such sales might be, but it is clear that this form of selling is unlikely to be affected by Internet sales in any significant way.

In any case, my fears that Internet sales would adversely affect shows were, apparently, unfounded. Attendance at major shows, and even lesser ones, has not shown a decline since the advent of the Internet. The number of dealers continues to grow, suggesting that profits are being won by many, if not most.

It was, and still is, hard to ignore the reality that the money which would be saved by not attending the Tucson Show, for example, could more profitably be utilized for purchasing mineral specimens on the Internet. Why blow in excess of $1,000 traveling to, eating and sleeping in Tucson in order to acquire a couple of $50 to $100 specimens, when one could spend that $1,000(+) on better specimens selected on the computer, assuming that one is an astute buyer? On the surface this appears to make great sense. However, from a lifetime of buying minerals I have always felt that there is no substitute for examining specimens firsthand before making the decision to purchase. What if you don't like the specimen selected over the computer? If you send it back, you have to pack it, ship it and hope that it arrived in the same condition as when originally shipped. And who pays for the postage each way? What about insurance? If the price is not too high, won't the recipient be inclined to keep a less than satisfactory specimen rather than go to the trouble of repacking and shipping it? I imagine that he or she is likely to just consider it an inexpensive lesson learned, keep the disappointing specimen, and forget about further Internet purchases. I am sure that there are far more specimens that disappointed the buyer among those purchased through Internet sales than at mineral shows. Just the same, Internet sales appear to be flourishing as witnessed by the breathtaking growth in the number of Internet dealers.

One of the many advantages of attending shows, and something that Internet buying can never compete with, is comparison shopping. At shows one is likely to see many specimens of a particular mineral from a certain locality, or even from multiple localities, and that provides the prospective buyer with the chance

to compare quality and price. Often a single dealer at a show may have flats and flats of different specimens of the same mineral, so there is a very good chance of finding the one piece that really pleases you. An Internet dealer may post several specimens of the same species, but seldom is there a great selection to pick from, and there is almost never the chance to go to other Internet dealers to see what they may have, short of investing huge chunks of time downloading and searching various websites. There are so many mineral sales websites out there now that one must be willing to sit for hours in front of a computer viewing them.

Another advantage of attending shows is that collectors often establish special relationships with certain dealers and these dealers are apt to have specimens that they know are preferred by these collectors. In many cases they will set such samples aside until preferred customers have a chance to see them. It would be very difficult to manage this form of preferred customer service via Internet selling. When browsing inventories on the Internet I very

spend $1000 and up are disinclined to buy from the net. Number two, the vast majority of "trophy" specimens are marketed through personal contacts with favored customers, often as a result of personal visits (door-to-door selling) or they change hands at shows where they are "kept back" until certain buyers have had a chance to see them. Many are "tail-gated," *i.e.* sold out of vehicles in adjacent parking lots near the show. The general public seldom gets the chance to see trophy specimens, but is even less likely to see them on the Internet than to see them at shows.

Europe is a relatively small continent and I entertain the image that just before each major show, such as Munich and now Sainte-Marie-aux-Mines in France, all of the major dealers, and not just European ones, are racing around the continent showing the big spenders their best material. The vast majority of it does not make it to the show, and what does is only seen at the show by a limited number of special customers. This aspect of the mineral business cannot have an Internet counterpart.

often find that the one or two pieces that might interest me have already been sold. At least a dealer at a show might be willing to put a specimen aside for a while for a potential buyer, but I suspect that this consideration would be highly unlikely with Internet dealers.

I must confess that overall I have been unimpressed with most of the minerals that I have seen being offered for sale over the Internet. The vast majority are minerals that I would not even stop to look at if displayed at a dealer's stand at a show. But, then, that is also largely true of the vast majority of minerals at a show. In fact, there are some similarities between show sales and Internet sales. Experienced buyers tend to gravitate toward favorite dealers where expectations of finding suitable specimens are high. Experienced buyers scout unfamiliar dealers in the hope of finding happy surprises or "sleepers;" *i.e.*, great specimens undervalued by the seller.

Then there are the "trophy specimens." When discussing Internet sales of minerals it must be said, I believe, that we are not talking about the marketing of "trophy specimens" – those very special "killer" pieces that are priced from several thousand dollars up. For the most part, the vast majority of Internet specimen prices begin around $50 and seldom exceed $500 or maybe $1000. This is probably the result of two factors. Number one, collectors who

Finally, I must say that the prices that Internet dealers are asking appear excessive overall. I admit that this is a very tough comparison to make, in part because I cannot examine the specimens closely; I have to rely on the photographs and what descriptions are provided. Also, I often find that the descriptions which accompany the photographs are full of hyperbole, commonly stressing features that one would not even consider important if viewing a dealer's inventory at a show. But they have to say something about them, don't they? Internet dealers do have an advantage in being able to show each specimen at its best, properly oriented and flatteringly lit, whereas specimens at shows are often lying in open boxes or standing on shelves and inadequately lit.

Jordi Fabre

John S. White's views about Internet sales, expressed above, are somewhat at odds with mine, possibly because we have quite different roles: he is a potential buyer and outside observer whereas I am a seller. In his commentary John made the comparison between sales at mineral shows and sales over the Internet. I think that I am able to give another point of view about these two worlds, as I have had significant experience as a dealer at shows before starting to sell over the Internet in 1996, and I am still a major show dealer.

Overall the view I hold about Internet sales is that they add to other sales. That is to say that the Internet does not remove clients from the show market, as many people believe, but rather the Internet adds new buyers and collectors to the overall market.

When we talk about a mineral show we think of rows of stands on which minerals are displayed, each with its price, illuminated by different types of light, and normally in large rooms through which many people pass to see and eventually buy specimens. Most of the visitors are adults and in good health (a mineral show can be exhausting), and the great majority of them are male (for reasons which remain unclear, the hobby of mineral collecting is, and always has been, very much a male preserve.) So what happens to people who are less able, because of ill health or other physical issues, to attend the big shows? And what about people who find such an environment stressful, especially the stress of the start of the show when everyone is trying to get the piece they desire? And let's not forget the very large number of people who simply find it difficult to decide what they want in such a busy place, with no time to look carefully and with the worry that the lighting might mean that the specimen may not look the same in daylight or in their display cases.

What about the color-blind, people with visual impairment, small children, or simply the shy who find it hard to approach a dealer to get more information? All of these groups represent a large number of potential buyers who are, in one way or another, cut off from the world of shows.

For those people who would like to create a mineral collection but for one reason or another find shows difficult, the appearance of sales over the Internet has given them the chance to see new minerals in the comfort of their home through the screen of their computer. They can enlarge the image to see defects and good points. They will not forget where they saw the specimen, which often happens in large shows where, given the number of stands and specimens, it is quite hard for people to remember where a particularly admired specimen was seen.

So, will the Internet create lesser or greater numbers of buyers at shows, taking into account that shows are the major meeting places between collectors and minerals? I think that the chance the Internet gives to various groups of people to collect minerals is substantially increasing the number of buyers. If they start by buying over the Internet, sooner or later they may want to go to a show, having read on the dealer websites all about the shows and what happened or was new there. Many of these new buyers are already attending some shows where, logically, they first go to see the dealers they know from the Internet. Over time, though, they will expand their interest and buy from other dealers who have specimens they want and can afford.

It is clear that this is the "nice" side and that there is another less "nice" side. It is true that there is nothing like holding the specimen in your hands, and that some photos and descriptions can be deceptive because of the seller's excessive enthusiasm or lack of knowledge. It is also true that to save the effort of returning a cheapish specimen, people might not return it, even though they do not like it. It is also clear that there is a risk of damage occurring during the process of shipping/returning. But these risks also exist when you buy a specimen at a show. Who hasn't at least once got a specimen back home from a show and realized that they made a mistake? And let's not talk about the difficulty nowadays of getting a specimen through airports in hand luggage, with all the checks, unwrapping and rewrapping, each with its risk of damage. And then one has the problem of minerals with suspicious-looking silhouettes when they go through the X-ray machine, such as metallic ones or crystals that are long and dagger-like, and the need to explain what they are.

Another possible problem is the perceived difficulty in finding good specimens on the Internet; and when one is found, there is the prospect that the horrible little "sold" sign may already be attached. One might think that one has a far greater chance of getting an exceptional specimen at a show, as there are so many more specimens available, and one may know a number of dealers well. My opinion is that in fact the things that occur on the Internet also occur during shows. Many fine specimens sell very quickly at shows, but instead of being frustrated by the little "sold" sign, we simply never get to see them because the purchasers have already taken them away. The frustration caused by the Internet is not that the best ones are always sold, but that everyone knows they have been sold and can still see what they looked like, whereas at a show one never gets to see the better specimens that sold early. The ones seen at the show might be *assumed* to be the best ones, when in fact the *real* best ones are no longer there to be seen. This can also be the case with the specimens that have been reserved for someone else, and that you therefore never get to see. And even though the dealer may have set aside the specimen *for you* which he thinks is best for your particular taste, everyone has their own view and everyone looks at minerals differently. You may never get to see the specimen you would have liked better. If you had seen the other specimens that were sold to other people, you might be just as frustrated as you were on the Internet. Furthermore, it is well known that many notable specimens are sold before a show even opens, either privately, by reserve, or out in the parking lot, and visitors to a show may never get to see what was the best from a pocket, or how a particular specimen compares to others from the same find. On the Internet you can still see everything that has been sold, at least for a while.

Another thing that the Internet has going for it is that it is "democratic." It is well known that many notable specimens are never sold at shows, because they were sold beforehand, either privately or out in the parking lot. So most of the visitors to shows never get to see what was the best from a pocket, or to what degree a particular specimen is spectacular, because they have never seen all the others. On the Internet (price and quality aside), most specimens are offered "democratically." By this I mean that the specimens are available when first added to the web, either to everyone or to a smaller group of people that have asked to be notified of updates.

From the moment that specimens are first put on sale on an Internet site there is a period (although it is true that this is often very brief) during which everyone has the chance to buy them. This chance may be small, and I do not dispute this, but it is a chance, whereas at a show this chance may not have existed because the specimens may have been sold beforehand to a few privileged people who (through economic power or special contacts) are able to access things not seen by other collectors. I am not against elite groups, as I think that they are necessary. Many elite collectors have a very good knowledge of minerals; they are building marvelous collections that one day may form the basis of public foundations, or may be given to public museums, or may be sold and thus dispersed. Elite sales aside, though, the Internet gives a level of hope to all collectors that they may one day get to a site at just the right moment for the right specimen and therefore have the chance to actually buy it.

Another interesting area of debate is the general feeling that specimens pictured on the Internet appear to be better than they really are. By viewing them in more detail, under ideal lighting, one can best see their virtues. But sharp close-up photography is a

two-edged sword: it also makes defects in the specimens stand out. Small fractures, contacts, breaks, crack lines, or little relief from the matrix are all types of minor defects that can be magnified by a photo. A specimen that would have sold quickly at a show, because the buyer would not have really focused on these small details, becomes more difficult to sell over the Internet because the image shown amplifies the defects.

Mineral photography can be deceptive in other ways. Specimens which have little brilliance or a dull luster, but which have some transparency and color, can be strongly back-lit and thereby appear extraordinary. At shows one does not see specimens presented in this manner (though a collector may hold a crystal up to the light or check its internal color with a penlight), whereas on the Internet it is quite common to see images showing transparency via back-lighting. This is a valid way of viewing a specimen, so one cannot really accuse the seller of falsehood, but the specimen may really disappoint when we receive it. Without the special illumination it looks nothing like the wonderful photo we saw, and we find it difficult to provide backlighting of individual specimens in our display cases. In this case the honesty of the dealer must play a role. If the buyer is warned of this and told that it is lit from the rear by intense light and that without this it would be opaque or dark, then the buyer can decide whether to buy it depending on his real interest in such material. Ideally the seller will provide a second photo of the specimen using more conventional illumination, showing what the specimen will actually look like in your display case.

It is logical to suggest that over time the degree of honesty or dishonesty of an Internet dealer will gain him correspondingly more or fewer clients, and that these customers will be more or less trusting of the truthfulness of the photos and descriptions. This is also the case at shows, where the level of honesty of a dealer will affect the truthfulness of the information given on a specimen, and it will become well known whether the dealer exaggerates the virtues and ignores the defects in his specimens. So there is nothing new under the sun there!

In summary I would say that, like all new things, the sale of minerals over the Internet is generating many questions and can upset those who perceive that they are adversely affected by this new phenomenon. As is normal in periods of change, we all have a lot to learn as new rules appear, there are new people to get to know, and we have to decide about things which are not yet totally clear.

There will be people who are against this new system because they have experienced problems with it, but there will be others who are pleased by the ease and the new possibilities that it gives them, and there are those who are not yet sure. We hope that this forum will stimulate further discussion of this issue, so that everyone who has something to say says it and all the pluses and minuses are debated openly.

I would like to thank John White for his help and encouragement; James Catmur for translating my text and helping me to set up and maintain my Internet site back in 1996; and finally all of the mineral dealers of the world, both those who use the Internet as well as those who sell in shows, without whom there would be no mineral market.

Wendell E. Wilson

At first I was, like John White, skeptical of the Internet as a source of decent specimens to buy for my collection. I felt that I really needed to handle a specimen, look at it from all angles, and compare it to the other specimens in the lot before I could be sure that I wanted it. I also remembered occasions, many years before the Internet, when a dealer would send me a photo of a specimen (which looked great as a slide), but I would then find that the actual specimen, once it was in hand, did not live up to the expectations created by the photo. In recent years, however, I have become a convert to buying on the Internet.

Most of all I like the egalitarian quality of Internet offerings. As Jordi points out, the instant that a specimen is posted, everyone in the world has an equal chance to buy it, even the housebound invalids who have never been to a show and never met a dealer in person. The advantage goes to the person who is at his computer and can check immediately when new specimens are posted, or when a notice of new postings has arrived.

It must be admitted, though, that not *every* specimen is offered "democratically"—even by Internet dealers. This is a seeming contradiction involving the "democratic" aspect of sales, which is simply a reflection of the complexity of the situation. Even Jordi mentions the "elite" buyers who are shown things the rest of us don't get to see, a practice which clearly compromises the "democracy" of the other offerings. The fact is, we *still* never know if what we're seeing on the Internet is the best or if it's what is left after the top pieces have been sold. All we know is that what *is* posted on the Internet is offered democratically at that moment. And what isn't, isn't. We don't even know whether or not some special customer has already privately turned down something offered on the Internet. Nevertheless, more people now have an even chance at more fine specimens than ever before in history, and this is a tremendous improvement in the fundamental structure of the worldwide mineral market. And even if you can't afford some specimen which you would like to own, and a better funded collector buys it instead, at least you got to see it, and you can add the knowledge of that specimen and its price to your mental database.

I am not especially fond of travel, and generally only attend two or three shows a year, so my show-buying opportunities are limited. And even at the vaunted Tucson Show, you need the energy of a 20-year-old to race around to every dealer likely to have something you might want, in order to see it before someone else beats you to it. The older I get, the less inclined I am to race around on the hunt. In recent years I have found myself purchasing an increasing percentage of my specimens off the Internet, from the comfort of my cushy office chair. And if I have to return something, it's a small price to pay for the convenience of not having to attend some distant show.

Of course one must physically examine a specimen before committing to buy it, and the Internet dealers all know this, so they take returns in stride. If a show is coming up relatively soon, you can usually have them set aside for you a specimen that you saw on their website, and you can then examine it in person at the show. That saves the dangers and difficulties of mailing.

Another advantage of Internet sales is facilitated by search engines. If I should suddenly get a hankering for an Old Yuma mine wulfenite (yes, it happens!), I can Google my way instantly through the stocks of every online dealer. Wouldn't it be great if you could do that at the Tucson Show?

Yet another advantage is timeliness. You get to see new discoveries as soon as the dealers receive and photograph them, rather than having to wait for the next show, by which time the lot could be picked over.

As to the matter of quality perception, the buyer must take some responsibility for this and develop a little skill in imagining accurately the real specimen based on its screen image. That's another price you pay for the convenience, and you do get better at

it with experience. It's the reverse exercise from that of the photographer looking at a specimen and trying to determine how photogenic it will be, imagining the photo that might be produced from it. The main adjustment you have to make is to be sure to check the size measurement given and visualize the specimen accurately at that size, sketching a measured outline on paper if necessary, or printing out an actual-size print using Photoshop. It's all too easy to imagine a beautiful specimen as being somewhat larger (and therefore more impressive) than it really is. The Internet dealers these days are getting fairly good at producing specimen photos which neither exaggerate nor diminish the true quality of the specimen. And, as Jordi Fabre points out, it is sometimes easier to spot blemishes and minor damage on a small specimen when blown up to screen size than it is in person, especially for someone who must struggle with reading glasses in various magnifications and under less than optimum lighting conditions at shows.

I used to hear the complaint that selling on the Internet eliminates the dealer's ability to work his salesmanship skills on the customer and to educate the customer about the finer points and advantages of a certain specimen. That objection was certainly unfounded. The Internet dealers simply type out their full presentation about each piece (however accurate or exaggerated that may be) when they post its image, and *everyone* can then learn from it—taken with the usual grains of salt—rather than just the few individuals who heard the sales pitch in person. The dealer can't tailor the pitch to an individual collector, but that may not necessarily be a bad thing. The fact that the whole world will read the description should make the dealer less likely to deviate too far from reality in his descriptions. The posting is "on the record," so to speak, and may be critiqued by the most knowledgeable collectors, so it had better be right or his reputation will suffer.

The practice of leaving postings online after the specimens have been sold is unique to the Internet and of great potential educational value to many people. A specimen doesn't just disappear from the face of the earth a few minutes after it's offered, as at a mineral show; its image and its description remain accessible indefinitely, and I would encourage dealers to leave postings up permanently for future reference.

With regard to the suggestion that you don't get to pick from a lot on the Internet, that may be true in many cases but I have seen entire lots posted, giving everyone the chance to see every specimen the dealer obtained, sometimes dozens of them. It happens. And why not? If a dealer has 20 or 30 good pieces, why only post a few of them? It costs nothing to add more specimens to a posting.

Are prices higher on the Internet? I suspect that prices may be somewhat higher these days *because of* the Internet, simply because a dealer can show a specimen to far more people in order to find the most motivated buyer. How many times in the pre-Internet years did you see a specimen purchased by a friend and grumble to yourself that you would have paid twice as much for it if you had known about it? Now, at least in theory, everyone knows about it. And even if the dealer offers a specimen at a show, he knows what he can get for it on the Internet later if necessary, and that knowledge determines the price. It's like buying gem crystal priced at its cutting value as rough—why should the dealer charge any less, when he knows very well what he could get for it in a different venue?

Despite all the advantages of buying minerals over the Internet, I still greatly enjoy attending shows. You get to see more minerals more easily—you'd certainly get carpal tunnel syndrome if you had to mouse-click you way through the several million specimens offered at the Tucson Show. You get to see, accidentally, all sorts of things you would never purposely seek out on the Internet. And there is no substitute for the social aspect, meeting people, making friends, comparing purchases, chatting up the dealers, and enjoying the overall excitement. Shows are a part of our mineral culture, and probably always will be. But now the Internet is, too, so we might as well accept it on its own terms and add it to our specimen-acquisition tools. You can never have too many specimen-acquisition tools.

Thomas P. Moore

Like Wendell Wilson, I can recall feeling a certain initial aversion to the notion of shopping for minerals on the Internet. In fact, in my case it was worse: I felt a deep Luddite distrust of all the phenomena of cyberspace (note: I have just had my sixtieth birthday). Now, of course, that first dark suspicion has been largely enlightened away by experience. However, I note with interest that, of the 1700+ specimens in my collection, I have thus far acquired fewer than ten by Internet purchase. I still don't quite *like* shopping in this way, and it's fair to ask why.

Everyone in the mineral world feels the basic truth of the statement (which all three writers above make in different ways) that there is no substitute for examining a prospective purchase "in person"—indeed, many Internet dealers themselves seem eager to use the phrase when apologizing for a poor on-line photograph ("better in person"). The prevalent feeling that "in person" shopping is best is really, I think, a disquieting feeling that Internet images represent one too many jumps away from the natural world, towards artificial or "virtual" realms of being. When I look at a drawer of specimens in my collection, those that I've bought on the Internet seem in a vague way less "real" to me than those I have bought at shows, much as the latter, in turn, seem less "real" than those very special few which I have dug in the field. Of course it may always be for such personal reasons that one may persist in squeamishness about Internet shopping—"the heart has its reasons," to quote Faulkner shamelessly out of context. For this reason some collectors may—and will, and best of luck to them—decide to steer clear of Internet buying entirely, just as other collectors may choose to limit their experience to field collecting alone.

However, it seems clear that shopping on-line refines and enhances the buyer's decision-making process in ways which are both intellectually satisfying and practically beneficial. As a practical matter, first, browsing the Internet tends to slow down the deliberative process to the great advantage of the collector, especially if his budget is tight. At shows, where the senses get overstimulated and where a holiday atmosphere rules, we often make buying decisions that are too impulsive and that we later regret. But because Internet shopping is usually done in solitude, and also because it is more of a hassle (as John and Jordi both note) to return unsatisfactory purchases, on-line shoppers learn to exert more care in making buying decisions, and they may perhaps carry this habit over into their show-shopping practices too.

More broadly, keeping in touch with the Internet (whether one actually ends up buying specimens on-line or not) can be a powerful knowledge-enhancer, and this enhanced knowledge will be valuable when we go to shows. Unlike Wendell, I *do* like to travel, and I find that my desire to buy "in person" at shows is intensified merely by the fun of being there, and my sense that I may not get there again very soon—but good travelers know that the best trips are those which we have prepared for by studying relevant books, printed guides, and, yes, nowadays, websites. Browsing regularly among mineral dealers' Internet sites imparts a kind of erudition which even constant, compulsive attendance at shows worldwide could not hope to rival. This web-enhanced

knowledge is to be garnered as much from the sites of specialized and "local" people who report on their own field collecting and on the neighborhood localities they know best, as it is from the sites of the major international dealers.

A large project that I am now busy with involves gathering data on mineral occurrences discovered worldwide over the last 50 years. In my working bibliography as it now exists, many, many more sources are websites, including "local" ones, than I foresaw before beginning the project: the Internet is an increasingly wide information-gathering net. Even if, for idiosyncratic reasons, one doesn't actually buy many specimens on-line, it makes wonderful sense to keep in touch with a healthy number of sites, if we want to be smart customers in *any* mineral-shopping milieu. The big caveat, of course, is analogous to the one that Pete Dunn once pointed out about mineral labels: the information on a label is only what one person chose to write there, no more, no less. The mere fact that a label, or a website, presents some piece of information does not guarantee that the information is correct. But often the Internet is the *only* place where certain data are reported, and it can therefore be a valuable starting point for further research.

It's obvious that "the web is here to stay," and it's a commonplace only a bit loftier to say that acquiring knowledge is an intrinsic good. But to combine these truisms in one's collecting practice is to feel more truly in charge of one's love of minerals and of the wonderfully satisfying activity which is mineral collecting.

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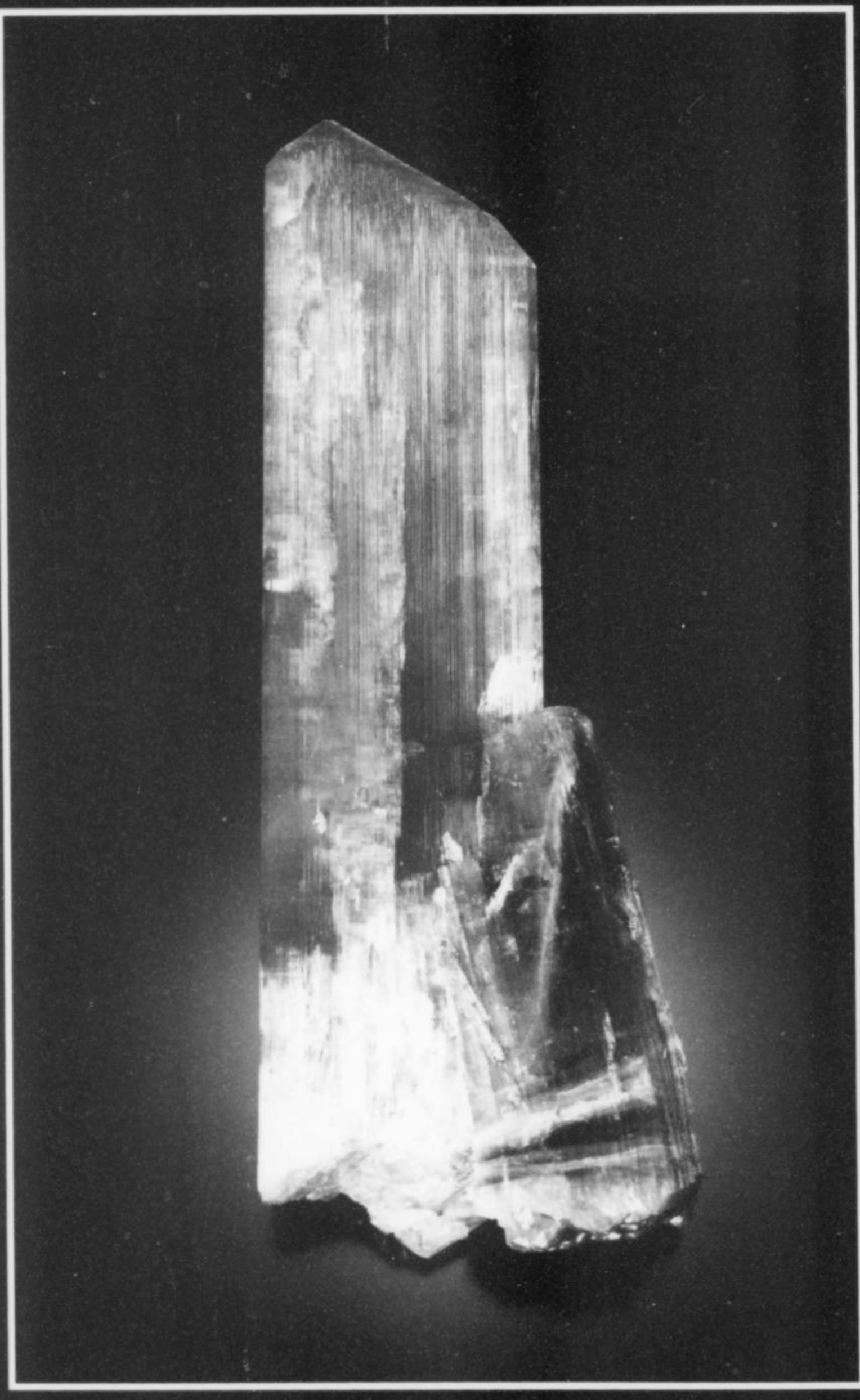
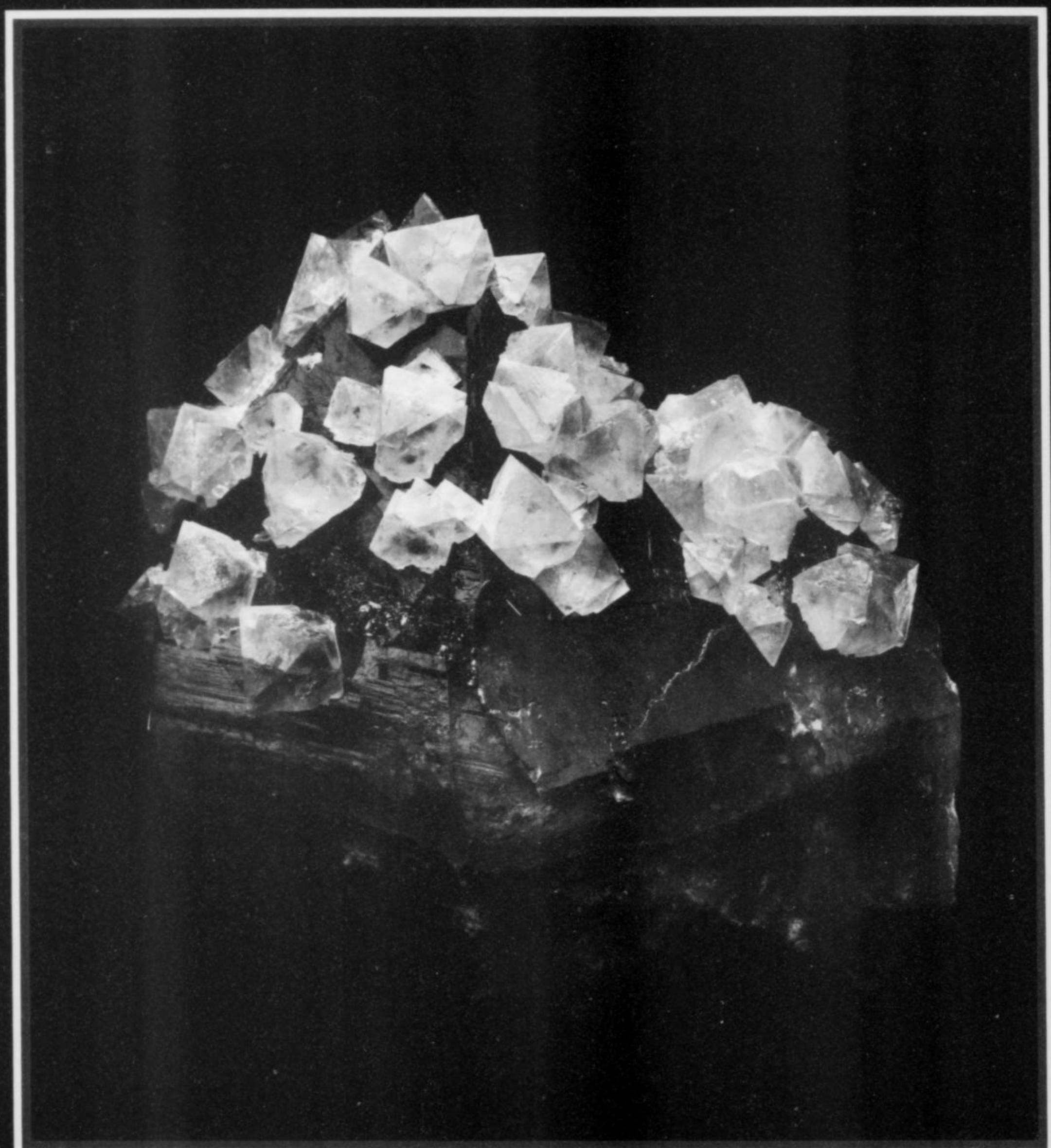


Kunzite with Tourmaline, 24.4 cm, from Pech, Afghanistan. Obtained from James Horner in September 1998. Wayne Thompson had bought this piece in Pakistan in 1993 and sold it to Horner. Jeff Scovil photo.

Clara and Steve Smale

COLLECTORS

PHOTO BY STEVE SMALE



FLOURITE & QUARTZ, 22.3 CM, CHAMONIX, FRANCE

Memoirs of a Mineral Collector—Part 2:

Fifty-Nine Treasure Hunts in Minas Gerais, 1969–2005

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The author has been visiting mines and mineral occurrences in Brazil for 36 years, and has seen many now-famous discoveries. Fifty-nine (and counting) mineralogical tours have taken him from his home in Austria to such enticing localities as the Virgem da Lapa, Golconda, Santa Rosa, Jonas, Sapo and Morganite mines and the Ouro Preto topaz fields, as well as the warehouses, shops and homes of numerous Brazilian mineral miners and dealers. We continue here with the second and concluding part of the author's memoirs.

2000

Recent discoveries, Segredo mine, Morganite mine

In May of 2000, on my 52nd trip to the gemstone mines and marketing centers of Minas Gerais, I sought first to learn about recent discoveries and about the present mineral market. As usual, I wanted to find out what the really significant recent discoveries had been.

Although I spent more than a week in the warehouses and at the mines, as well as with private people I knew, looking over the mineral production of the preceding decade, I found very little that was truly "precious." Quite frankly I was somewhat disappointed, particularly when recalling how I had felt on earlier crystal safaris and study trips. With regard to the prosperity of the mines, well, most of the mine owners lacked the money to maintain cost-intensive production. Mined material was going almost exclusively to local dealers, most of whom were also mine owners, and these same people were buying up discoveries made by individual *garimpeiros* as soon as they appeared.

Very little tourmaline was on hand; only one dealer in Valadares, Wilson Tomich, offered (as always) multicolored single crystals and a few crystal groups, but at exorbitantly high prices. They had been lying there unsold for a year, I was convinced. There had been absolutely no production of good-quality aquamarine, only a limited number of small, pale, bizarrely shaped crystals. I saw no clue of further production of 1999's very large, deep blue crystals

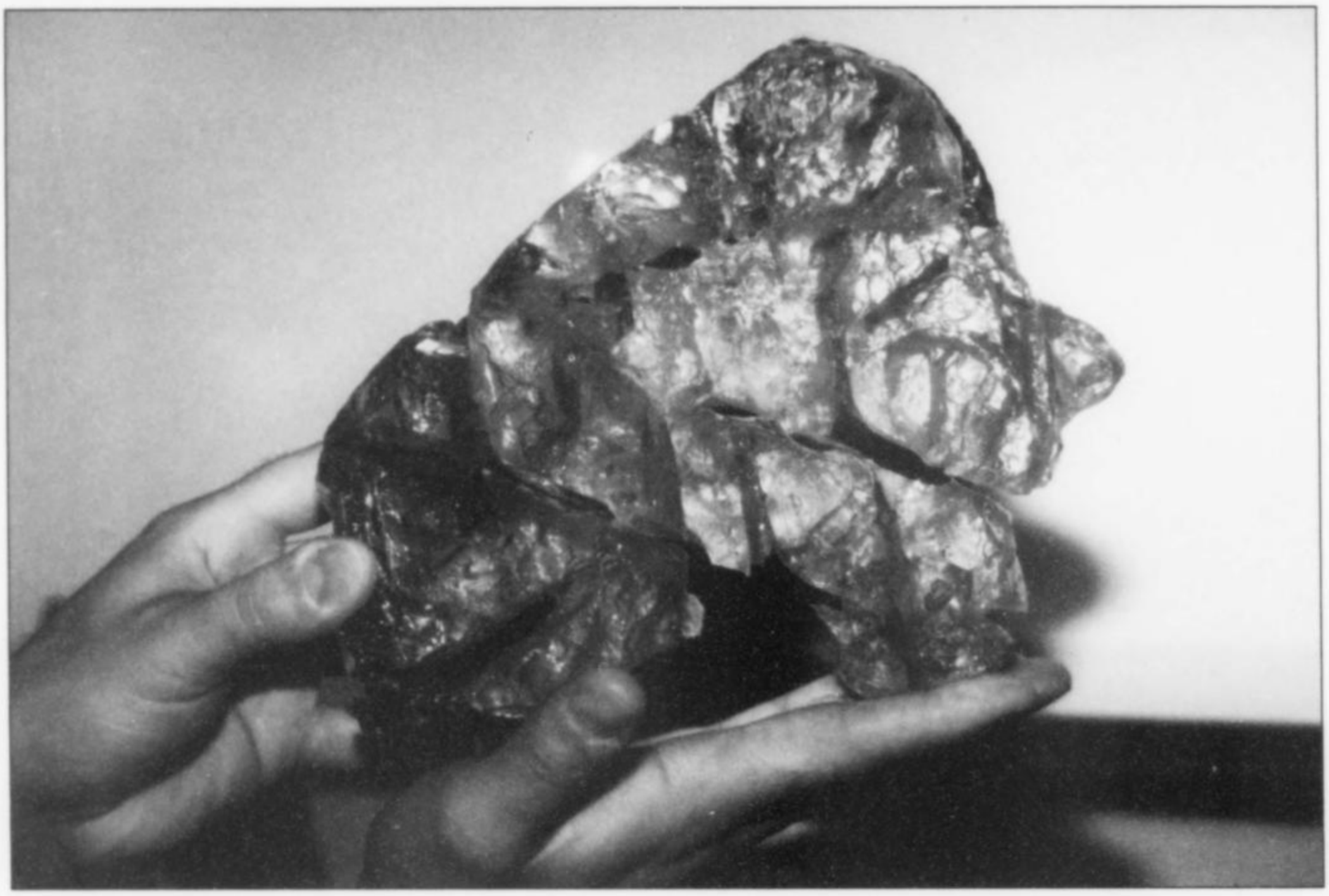

Figure 1. **Aquamarine beryl, 20 cm, a solution fragment from a large crystal; from Pedra Azul, Minas Gerais, Brazil. Displayed at the home of Wilson Tomich, Governador Valadares, in 1995. Guido Steger photo.**

from Pedra Azul. Emeralds were available only as isolated, poor-quality specimens. The great quantities of material from Carnaiba were a thing of the past. The cassiterite specimens which came in 1999 from Itatiaia—brilliantly lustrous twinned crystals—had all been sold.

But now to much more encouraging facts: João "das Moças" Candido Ferreio had a few unbelievably huge brown hydroxyl-herderite crystals, some on matrix, from the Sapo mine near Galiléia/Conselheiro Pena. One of these specimens weighs 98 kg, with the hydroxyl-herderite crystal itself comprising the greater part of the specimen. Also, great quantities of intensely blue kyanite had come from the workings of Evaldo dos Santos at São José de Safira.

Capelinha, the long-established titanite locality, sent greetings! Unfortunately, most of the large titanite twins (to 10 cm!) which were emerging were broken or damaged, and their quality varied considerably. Particularly interesting was an isolated occurrence of large, colorless, transparent quartz crystals with epidote crystals to 15 cm included in them or resting on them, associated with large titanite crystals. And there was no dearth of quartz, of course.

The Segredo mine, near Conselheiro Pena, is located 80 km east of Governador Valadares and 1.5 km north of the blacktop road which leads to Vitoria, Espirito Santo. The owner in 2000 was Paulo Vasconcelos, one of the sons of the long-established, tradition-minded Vasconcelos family, who have been pioneers in all things relating to the development of gemstone mines.

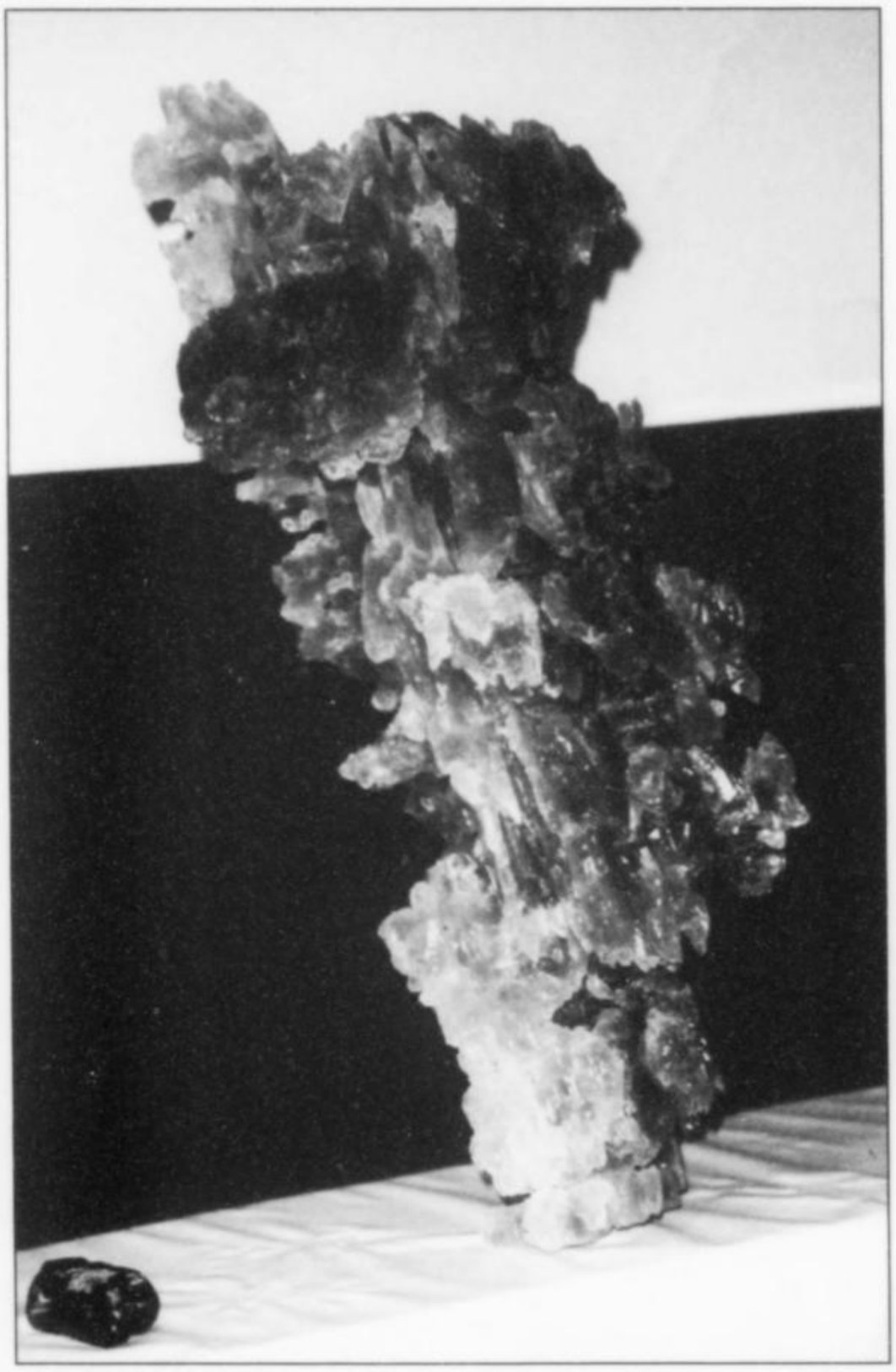

Figure 2. **Aquamarine beryl, 30 cm, a solution fragment from a large crystal; from Pedra Azul, Minas Gerais, Brazil. Displayed in the shop of Evaldo dos Santos, Governador Valadares. Guido Steger photo.**

Figure 3. **Paolo Vasconcelos with a large citrine quartz crystal in 1999. Guido Steger photo.**

In 2000 the mine was actively producing quartz in a variety of habits and colors: scepter quartz, "crocodile" quartz, "fenster" quartz (either colorless or smoky), and above all the stepped parallel aggregates called "cathedral" quartz, in many cases with phantoms. Particularly remarkable recent discoveries included transparent "cathedral" quartz crystals to 200 kg and superlative colorless crystals to 1,000 kg. Apatite, beryl, columbite-group minerals, albite and various minerals were also being found.

Mining at the Segredo mine was performed, not with large implements and machines such as caterpillars, but primarily with hand tools. Dynamite was, of course, essential for laying open and working the pegmatite. Besides free accommodations, the miners received just $100 per month and a 5% share in profits.

We headed out of Valadares and towards the Segredo mine. Soon enough we had left the blacktop and were "dusting" along a rust-brown road as Paulo Vasconcelos, whose specimen warehouse we had just left, stepped heavily on the gas. Suddenly, though, he stopped at a farmhouse whose wooden archway greeted us with the inscription "Alexandrita." Surrounded by bare hills, this place was an oasis, with a manor house, swimming pool and well-tended lawn. Beautiful plants grew luxuriantly, and tropical trees enlivened the grounds. Looking downhill from here, we could see the high buildings of Governador Valadares composed in a modest skyline.

The mistress of the house greeted us graciously, took me on a tour of the establishment, and was pleased by my delight with everything. Then the *Padrão* appeared. He had built this home by dealing in alexandrite. Generously he donated to us a small truck which, of course, would be much more suitable than our vehicle for the trip into the mining area. Soon afterwards we were cruising smoothly eastward. Paolo was constrained to admit that his driving style bears some similarity to that of the world-renowned Formula One racer Ayrton Senna. After my suggestion to this effect, he stoically hid the corners of his mouth behind his thick moustache and pressed his walking cane still more firmly downwards on the creaking gas pedal. Five years before, in the Morganite mine, Paolo had suffered a terrible accident: he had fallen 15 meters into a dark chasm and had suffered multiple injuries from the sharp rock edges and corners. His right leg had been amputated above the knee, thus his cane on the gas pedal.

Gaps in the high roadside grass occasionally permitted a view of the sluggishly flowing Rio Doce. The Serra Boa Sorte hills came nearer, and after 90 km, leaving the fairly good asphalt road, we labored on into the valley along a roadway full of deep holes and bordered by earthen embankments. We halted. A caterpillar was restoring the passability of the mine road, which was marked everywhere by potholes, mire and chunks of rock, the effects of a recent rainstorm.

A young fellow on horseback came into view and commenced riding in front of us; after one more kilometer the wickedly dirty tires of our truck came to rest at last. Before us lay the maintenance sheds of the Segredo mine. Scattered everywhere around the simple mining camp—formed up on parade, on the ground and on tables—were quartz crystals, still uncleaned, from the finds of recent days. The crystals weighed between 1 and 30 kg, and we saw many that were doubly terminated.

Carpe diem: we felt the need to make the most of this beautiful sunny day! Paulo swung onto the steep, curving, sheetmetal-paved road to the mine workings above us, keeping his walking stick on the gas pedal. Abruptly the road widened, but our progress upwards was blocked by a gigantic, towering, semicircular wall of debris. We had reached our goal. The worked-out flank of the hill confronted us like a smoking volcano. Bright, sunlit bands of color in the huge amphitheater seemed to contend against the blue arch of the sky. The dark holes of the workings showed the way into the hill's interior. Piles of sand and rock fragments, puddles and ponds hindered access to the pegmatite being worked. Mining tools lay about everywhere; compressors chugged. The sight of countless quartz crystals fresh from the mine, still covered with mud and clay, suggested a munitions dump.

The *garimpeiros* suspended their work and came over to socialize with us; they had been directed to pose so that we could take a

Figure 4. **The cavernous entrance to the Mina Morganita, source of superb morganite beryl crystals, in Conselheiro Pena, Brazil.**

group photo of them. One *garimpeiro* had been designated to take me into a nearby tunnel and show me the site of a spectacular morganite discovery that had once occurred there. He led me in and then out again quickly, as if trying to set a speed record.

The sun was already low. It was time to head for the Morganite mine. When, in the late 1970's, hunters had found loose pink crystals in weathered feldspar and brought them to the mineral dealer Constantino Vasconcelas in Governador Valadares, he had recognized them as gem-quality morganite beryl, and soon the Morganite mine was born. The locality lies near the Fazenda Dardanelos, in Barra de Cuieté district, 5 km from the town of Conselheiro Pena. Only 2 air-kilometers west of it, on the opposite bank of the Rio Doce, lies the famous Jonas mine at Itatiaia, where the world-famous rubellite specimens were discovered in 1978. The Jonas and Morganite deposits belong to the same zone of pegmatites, which runs for 10 km east to west and only crops out occasionally. The nearby town of Galiléia is sometimes given as the locality for Morganite mine specimens.

In 1980 mining began on a vertically plunging pegmatite vein 5 meters wide and verifiably at least 80 meters deep. Little by little the shaft was driven to a depth of 40 meters. Excellent morganite clusters and single crystals came to light. Collector pieces of highest quality and outstanding aesthetics were produced, among them the finest pink beryl crystals ever found in Brazil. Associated species included colorless beryl, cassiterite, green apatite, colorless and citrine quartz, platy white albite, and lepidolite—to name only a few. Of special interest were the wonderful specimens of rubellite almost equal to those of the Jonas mine, of which, however, only 12 kg altogether emerged. I am convinced of their quality, as Paolo Vasconcelos once showed me a representative sample of these fantastic tourmalines, red with a violet cast, from his treasury.

In 1993 a great pocket in the Morganite mine produced 100 kg of top-quality morganite, 48 wonderfully crystallized rose beryl specimens in all. By that date the mine's total production of cutting-quality morganite stood at 150 kg, of citrine at 500 kg. Specimens from the mine today are the highlights of world-renowned museums and private collections.

In 1995, unfortunately, the exploitation of this mineral-rich pegmatite had to be discontinued for financial reasons. The costs of Paolo's surgeries after his accident, and of his protracted rehabilitation, meant that the financial outlays required to continue working the mine could no longer be made. When operations ceased, Paolo was more than willing to go on with the work if someone was prepared to invest $5,000 per month to cover costs, including held-over costs, and to pay seven *garimpeiros*. All necessary tools and equipment, as well as facilities for the miners, were already on hand.

Now, in 2000, Paolo and I approached the mine site. We enjoyed an asphalt road for only 5 kilometers; then our truck was rushing forwards on a road-metal surface, surmounting two hillocks, and going downwards, braking, for 40 meters. We had reached the idle Morganite mine, which looked like a ghost town. A deep crevice plunged into darkness where 40 meters of pegmatite had been removed; at the bottom, 80 meters above the Rio Doce, Brazil's finest pink beryl specimens had once come to light. I was deeply impressed, but darkness was already spreading over the river, the last light reflections playing over the current. We left the mine site, tanked up in Galiléia, and roared off in the night toward the trusty city of crystals, Governador Valadares.

2001

Sapo mine; Recent discoveries

During the first half of 2001, mine owner Martins Clovis Coelho, nicknamed "Baiano," extracted specimens of blue elbaite resting on and intergrown with crystals of colorless quartz and citrine quartz from the pegmatite of his Sapo tourmaline mine. Thanks to his enormous personal, financial and technological investment, this "lavra" was becoming productive again in 2001.

No sooner had Baiano told me on the telephone that his mine was again producing blue tourmaline, "cathedral" quartz and citrine quartz, and diverse associated minerals, than I was on my way to Brazil.

The long flight to Rio, followed by an eight-hour wait at a bus station, then a nine-hour trip to Governador Valadares, left me completely exhausted. But in the morning, good as new, I was taken by my friend to his warehouse, and here I saw newly found colorless quartz crystals more than a meter long, top-quality citrine, and aggregates of skeletal quartz. The specimens lay on long tables and on the concrete floor, as did crystals of blue tourmaline, many of them terminated. Huge platy albite rosettes garlanded many complete crystal groups of domed, stepped quartz crystals of the "cathedral" type—a fantastic sight. "Crocodile" quartz, with mostly brown, doubly terminated crystals in parallel growth, many of these also with clear "fensters" (windows), further adorned the scene. Beaming with pleasure, Baiano showed me other particularly unusual forms of quartz which occurred not at all uncommonly in his mine.

In his office, surrounded by more of his new specimens, he recounted to me in a friendly way that on December 16, 2000, a landslide had blocked the entryways to his mine, the rubble sealing

Figure 5. **A rose quartz crystal cluster on smoky quartz from the Sapucaia (Berilo Branco) mine, shown at the home of José Baiano. Guido Steger photo.**

off the mouths of the tunnels, and that it had taken five months of hard work by his *garimpeiros* to unblock the entrances again. It was when the mining crews could once more work in the tunnels with dynamite that the first of the new finds was brought to light.

Since then—at intervals, but on many occasions— fine crystal groups and single crystals had been discovered, mostly of quartz in diverse sizes, habits, and variations of color, from water-clear through citrine, smoky quartz and black quartz. On a few specimens, blue tourmaline crystals sit up like Christmas candles. About 20% of the blue tourmaline crystals are of the best cutting quality. The most fortunate fact of all, Baiano told me, was that work in the mine could now continue; still, enormous efforts would be required to cover costs and still show a profit. I was able to see that for myself on the next day, when I went to the mine. Baiano had invited me to record the situation there, not only in words, but also with still photos and videotape.

A brisk ride of an hour and a half in a small truck brought me to the mine area: I hardly recognized the place! The openings of brand-new tunnel entrances gaped at me. Bulldozers, caterpillars, and enormous heavy trucks such as are used in the mining of great ore deposits clattered and thundered deafeningly over earth torn open by blast holes. A brick structure—very unusual—had been built. *Garimpeiros* toiled in the mine, and wheelbarrow loads of debris which would later be searched for gems were being brought out into the shimmering heat of daylight. The sweat-soaked miners often adjourned to shady places where water bottles awaited them.

Likewise with me: I was sopping wet, although I had been only watching, filming, taking still photos, and moving around the area acquiring information. I escaped the burning heat when I entered the extremely narrow entrance to the main tunnel—but the 100% humidity there, and a sultry oppressiveness, hindered breathing. The mud necessitated great caution, and the sharply projecting rocks irregularly spaced along the overhang threatened my head. Before long I was standing just in front of a contorted, steep ledge of wet clay. The effects of a serious injury to my left leg two years ago in the Thomas Range made themselves keenly felt at this point, and made a further advance in the tunnel seem unwise.

Outside again, in the daylight, I watched as a blast was being prepared. Debris was being removed from a hollow to expose bedrock. Two *garimpeiros* were laboring by turns with the drill to make a blast hole at depth, but with little success. The drill rod broke, and time was consumed in changing it. The attempt to drill the hole resumed, but the process took a long time. Meanwhile I climbed over earthworks and filmed the primitive habitations, the laboring miners, the look of the land, the vegetation. I retreated again to the shade, closely watched by a variegated Amazonian parrot.

By now the blast had been prepared, the fuse readied. The fuse was lit, and miners left the area. I wanted to film the explosion, and so I placed myself fairly close, behind a small wall of earth. A tripod supported the camera, and both would be exposed to the coming hail of stones. The *garimpeiros* nervously watched me from a safe distance. I let the film run . . . and now came the mighty explosion. Lightning-fast, I ducked behind the earth wall. Rock fragments flew over and around me, landing behind me in the underbrush. A few of the witnesses murmured respectfully, but others laughed out loud, having been extremely impressed by my evident great affection for that protective earth wall.

About 18 *garimpeiros* were subjecting themselves to the drudgery of work at the mine; the fact that they were being given a share of the profits added, perhaps, some savor. Clearly it was owing to the untiring activity and strategic planning of *Padrão* Baiano and his partners that precious stones were being successfully coaxed from the depths at this place.

In November 2001 I came again, as I had so often before, to Minas Gerais, the mineral El Dorado of South America, to investigate new discoveries . . . was it still an El Dorado? Still a dreamland for mineral collectors?

For decades my basic itinerary had been the same: from one mine to another, one crystal warehouse to another, from one to the next of the mine owners, nearly all of them my long-time acquaintances, in the sultry, oppressive heat of Brazil. Street merchants invariably would accost me to offer their specimens, always of modest quality but at ever-higher prices. "Guido, I have precious stones for you . . . ."

New finds were scarce this time, and prices, as always, were climbing. The local dealers who buy up the crystals won from the mines were disspirited; many of them were unable even to keep buying raw cutting material.

Generally the preference was to sell for American dollars; most Americans paid many times more than European "clients" did for comparable material. Brazilian dealers were interested in the selling price, not in the nationality of the buyer. One went innocently to the big shows in Tucson and Denver to get a look at the bloated price structure. Many Brazilian dealers had gone for years now to these shows, and knew how to use the price inflation, not only while in the U.S., but here in Brazil as well.

In Minas Gerais one had to reckon with selling prices on the order of $50,000 for really good specimens. The few exceptional discoveries of the "stone producers" would very quickly be marketed, too, on the Internet. Speculation would then set in, and—it must be said plainly—the lucrative efficiency of this new medium would be taken full advantage of.

Tourmaline specimens, green or russet brown, with elongated crystals, were coming now from the Pederneira mine. Many of these crystals were broken when found and had been repaired and re-attached to their matrix with glue, although these facts did not seem to bring down the prices.

The Sapo mine was producing dark blue, in many cases completely gemmy, tourmaline crystals. In many specimens the crystals rest (for a beautiful color contrast) on large crystals of citrine quartz, most showing the cathedral habit. Albite rosettes, tantalite and lepidolite are common as attractive accessory species. Specimens of doubly terminated, colorless quartz crystals with all these associations were relatively common in Brazil late in 2001.

Charming little crystal groups of brazilianite from the Marcel Telirio mine near Linopolis, as well as very good single crystals, were being offered by various dealers.

Large, transparent crystals of citrine quartz from the Medina mine threw their brilliant reflections in sunlight all through the warehouse of young Ruys in Valadares. The margins of this roomy space were lined by quartz crystals, including doubly terminated ones to a meter long, with thick, reddish black tourmaline crystals resembling organ pipes.

Fantastic, enormous specimens of finest-quality "crocodile" quartz and rutilated quartz from Lavra do Morrão near São José de Safira were to be admired in the warehouse of Nesio Sales. White and colorless-transparent quartz crystals to 1.5 meters with a distinctive habit—tapering to a point—were the special offering of João Moças from Valadares.

In Teofilo Otoni I discovered doubly terminated, bi-colored yellow beryl crystals to 20 cm long. The asking prices were not for normal mortals.

One more important fact was that the Heleno Cipriano mine near Itacambira had produced a few flat euclase crystals with spearpoint terminations, the crystals reaching 6 × 10 cm, a few being doubly terminated. All of these crystals are uniformly tinted brownish by included sandy sediment.

When in Brazil I often ask hopefully about the possibility of specimens from the Lavra da Ilha, near Taquaral. In the early 1970's, wonderful specimens of rose quartz crystals from Lavra da Ilha created a sensation. The coxcomb-like arrangement of the crystals, combined with their pale to deep rose-pink color, makes these unusual specimens very appealing. In some cases a white or clear quartz crystal is garlanded by the rose quartz crystals. Two commonly associated species are eosphorite-childrenite, in well-formed, transparent crystal aggregates, and spheres of brown roscherite and green zanazziite, both perched on the rose quartz.

The locality is on a little island in the Jequitinhonha River which is flooded most of the time. When the water is low—only a few weeks out of the year—the digging site is exposed, and then the owner can try to extract the elusive rose quartz crystals, which are rare and are highly valued as gemstones.

Unfortunately major finds had grown rare by the early 1980's, and top-quality specimens almost vanished from the market. The island may be reached from Taquaral, a very small village between Itaobim and Araçuai, in Minas Gerais

Another site worth checking on was the Lavra da Matina. At the end of the 1990's the Matina mine had become the most productive of the mines owned by Evaldo dos Santos. It is near São José de Safira, in the municipio of Divino das Laranjeiras, about two hours by car from Governador Valadares; the first prospecting work began in July 1977. As of the year 2000 the mine had consistently been worked without employing large machines and implements. Crystal pockets ("Calderons") in the pegmatite were laid open with explosives. Good tourmaline in all colors, including blue, was found rarely. However, rock suitable for making decorative stone was commonly mined, as were all kinds of quartz crystals weighing up to 1,000 kg. Fourteen tons of quartz were extracted in September 1999. In the early 2000's, great quantities of intensely colored kyanite were produced, and sapphire had been found as lustrous, transparent, iridescent crystals with changeable colors, to 1 cm. In 2000–2001, eight *garimpeiros* were laboring to discover still more fruitful pockets in the pegmatite.

This tour to Minas Gerais not only afforded me a look at the present situation in the Brazilian mineral world; it also gave me the chance to see many rare and wonderul "superpieces." But then, why would anyone sojourning in El Dorado expect otherwise?

COLLECTING AND MARKETING MINERALS IN BRAZIL

Finding good minerals and gemstones in Minas Gerais has always been hard for wandering Europeans. In general, discovery sites remain firmly in the hands of property owners who lease out promising areas. Newly discovered localities often pose difficulties of special kinds: for one thing, hordes of treasure-seekers stream into the sites of important finds, and for another, the State claims rights (sometimes radical rights) to profit from highly productive mines.

Of course, the occurrence of gemstones has particular geologic prerequisites. Most of the hilly Brazilian landscape is overlain by erosional debris consisting of iron-bearing, reddish brown to violet laterite, to thicknesses of up to 90 meters. This layer must be removed to expose the pegmatites in which gemstones are found.

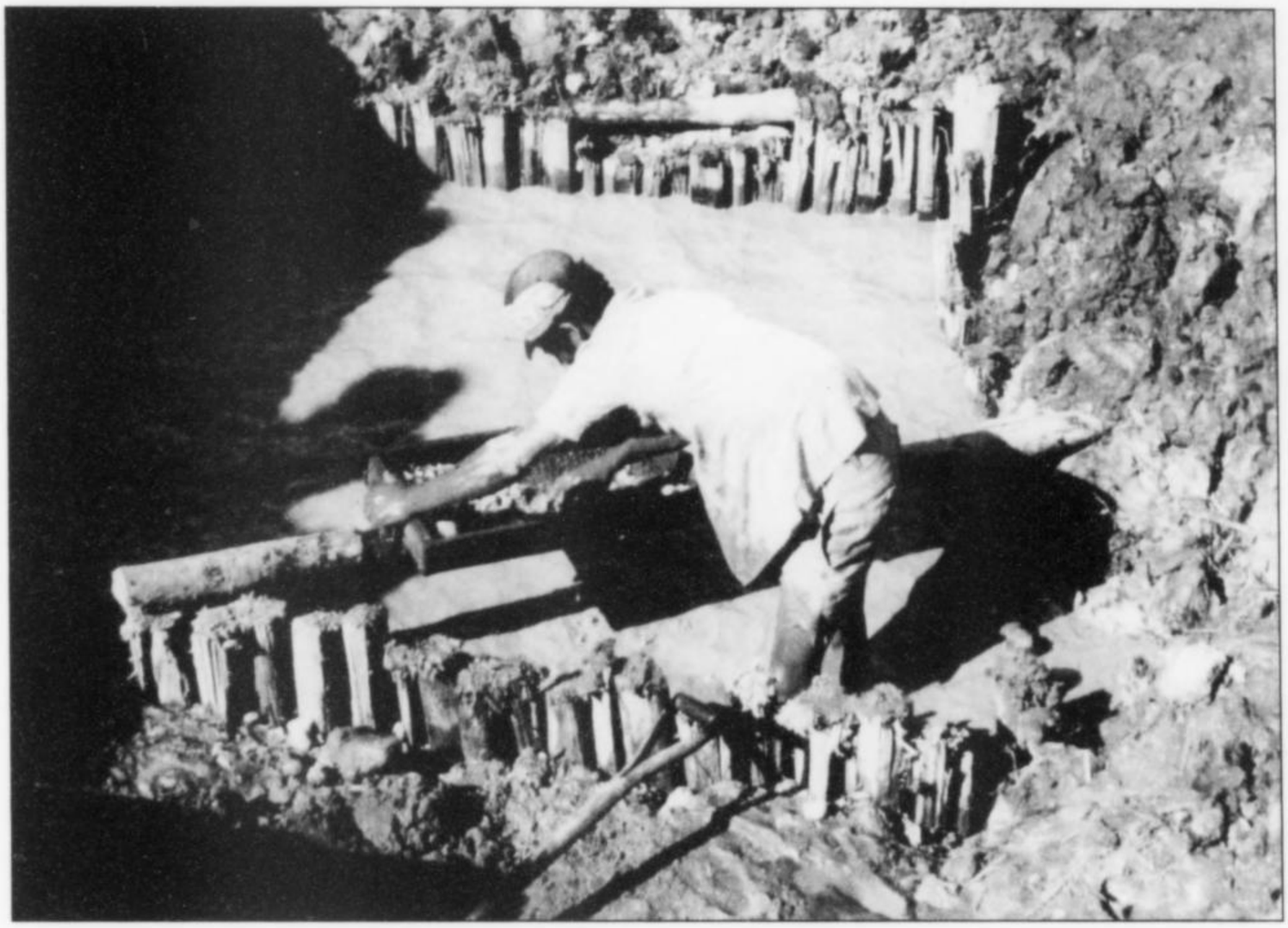

Figure 6. Seiving excavated crystal-bearing mud at the Malacacheta alexandrite and aquamarine mine. Guido Steger photo.

The pegmatites range in thickness from a few centimeters to many meters, and some have surface exposures of several kilometers, with interruptions (for instance, the Itatiaia pegmatite extends under the Rio Doce in the direction of Resplendor). Crystal pockets harbor very well crystallized minerals in diverse assemblages; also, the contact zones between the pegmatites and surrounding rocks are quite likely to be mineralized.

The itinerant *garimpeiros* follow showings of lepidolite, which glisten brightly in the sun; this "indicator" mineral quite commonly leads to productive occurrences. The *garimpeiros*, if they are working on their own account and not for a mine owner, are almost never interested in publicizing a find. If they did, crowds of other prospectors would all too quickly appear to dispute the claim to the treasures and make other problems as well.

It is very seldom that the mine owner can bear by himself the expenses of financing even moderate work to gather his "product." He looks for a partner with whom to share both costs and profits, to an extent depending, of course, on the partner's resources. And the costs are enormous; they include lease payments to the landowner, salaries for the *garimpeiros*, vehicles and excavating equipment (including caterpillars), tools, electrical power and air supply for the tunnels, drilling machines, transformers, fuel and explosives, warehousing, offices, office equipment (including computers), and taxes . . . just to name a few.

The times when the miners saw routine raises in their pitiful wages are long past. If the miners cannot furnish themselves with life's necessities and demand more than starvation wages, they are not employed.

Two methods of paying the *garimpeiros* are customarily practiced. Either they earn a relatively high, flat weekly wage, or they are paid less but are entitled to a share of mine profits. In order to ensure that no one is cheated, the mine owner (*Padrão*) stores the costliest gems in his vault, and then looks for buyers; the *garimpeiros* keep a key to the vault. In this way each party relies on the other, and co-operative control of the business is assured—a very sensible system.

The best specimens are laid out in showrooms and offered to interested parties there. In light of the high production costs, the *Padrão* is seldom willing to give special discounts. Of course there is a wholesale discount for those who buy large numbers of pieces—in this way the middle-value material finds buyers. The more work that has gone into the production of specimens, and the more time that has been required, the higher the prices. Thus, prices often soar immediately at the sites of the finds, particularly if the work of driving the tunnel and of harvesting specimens from the rock has been arduous and has required much dynamiting. And commonly in such circumstances the crystal treasures are damaged or even completely destroyed.

The *garimpeiros* often are not careful enough in the mining or transport of specimens, much to the despair of interested Europeans and Americans. But damage to specimens troubles Brazilians fairly little, and influences prices only moderately. Pricing of specimens by Brazilians tends, in general, to be quixotic, depending on factors not always apparent to outsiders. Comparable specimens may have wildly different prices, and the sums asked for unremarkable ones may be wildly inflated.

The detachment and extraction of crystal groups in the pockets proceeds by crude physical methods. To gather crystal groups from overhead, mattresses, automobile tires and similar materials are spread out under them, and the difficult trip to daylight calls up the most farfetched improvisations.

By no means do all sellers of minerals have their own mines. Many dealers procure their wares from distant mines or crystal warehouses, sometimes in other Brazilian states thousands of

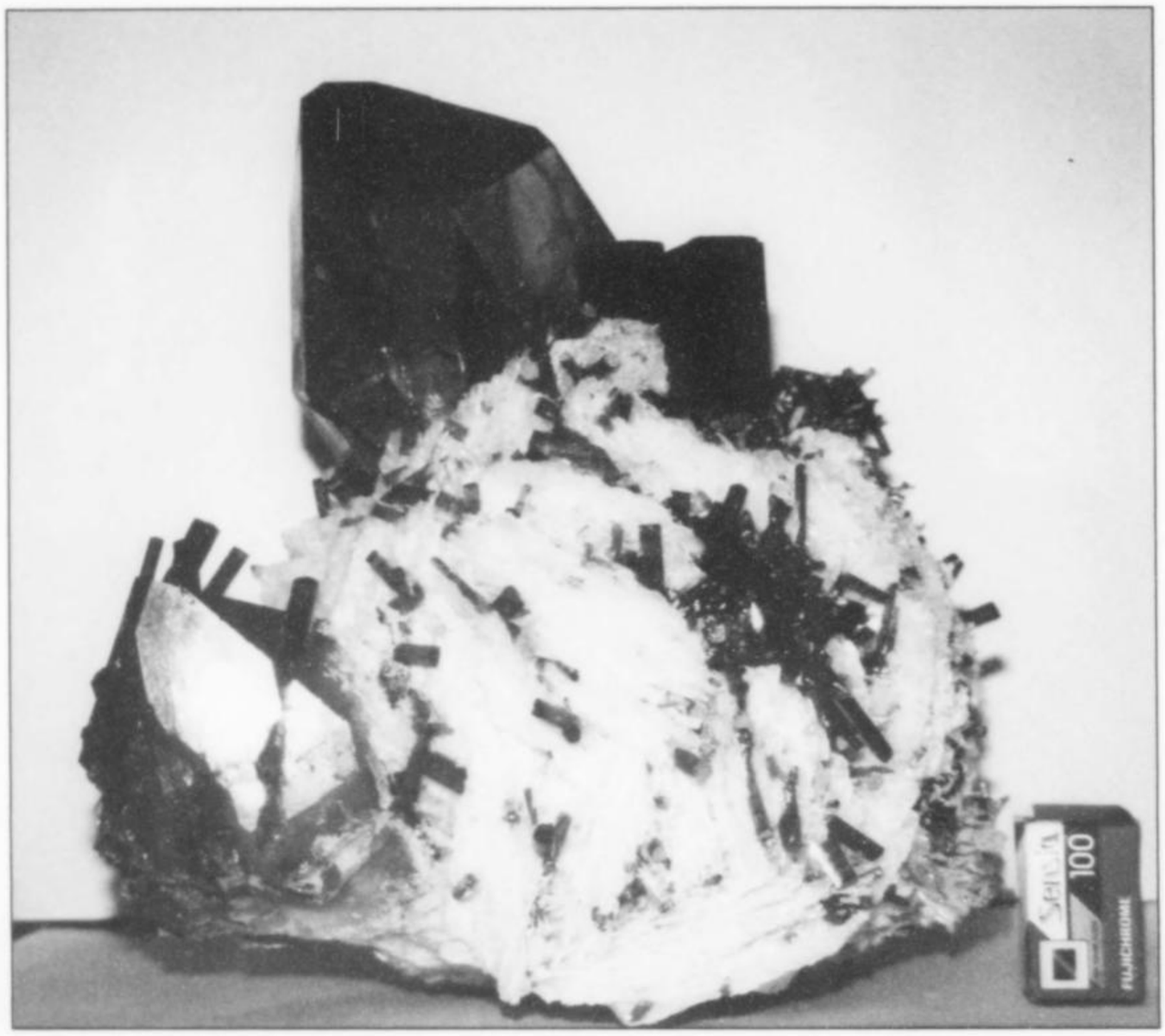

Figure 7. **Blue-green to pale blue elbaite crystals with smoky/citrine quartz on albite, 40 cm, from the Pederneira mine, Minas Gerais, Brazil. Guido Steger photo.**

kilometers away. For instance, four tons of quartz crystals were taken from the earth and laboriously transported from the state of Goais to Minas Gerais . . . one can imagine how tedious it must be to handle such giants.

At the time when I undertook my first Brazilian trip, about 35 years ago, only a few dealers from elsewhere in the world, and even fewer collectors, came to buy minerals in Minas Gerais, the Promised Land of gems. Those few dealers wanted something interesting with which to broaden their stocks, and had to be well-funded. Later, when the mineral boom began, the Brazilian dealers found it easier to sell their products in their own country, and many now have followed an even more lucrative practice for many years: they personally take their specimens over the ocean, since they have discovered that wealthy Americans in particular are their best customers. Prices are asked and gotten which are unimaginable for normal European customers! For world-class specimens, prices of several million dollars may be paid. Whoever visits big American shows, such as those in Tucson and Denver, is shocked by the price structure on the American market. The situation has developed to fit the needs of the high-finance world of American museums and institutions, and Croesus-like collectors.

IMPORTANT BRAZILIANS IN THE GEM AND MINERAL BUSINESS

Jacinto Ganem Neto

Not merely by reputation, but for the substance of his contributions, Jacinto Ganem Neto was a dominant presence in the Brazilian gem and mineral world: the Brazilian "Pope of Minerals." What significant mineralogical museum or private collection does not have specimens which have come from him? He did not welcome masses of visitors, only interested and truly well-versed people. Trained as a dentist (hence the title of "Dr."), he sold mineral specimens for decades. His German-speaking wife helped him entertain his guests and watched carefully over the treasures amassed by her energetic, efficient, methodical husband. In his courtyard, great quartz crystals surrounded the visitor like garden dwarfs, and business dealings commenced only after familiar rituals were played out. Tirelessly Jacinto brought out precious things wrapped in cloth, building a little island of treasures on the simple tabletop. With his many brothers—likewise well-funded—he built an interest group in Teofilo Otoni, constituting a strong influence over the life of this city, a gemcutters' paradise. Because of a heart condition and other problems, this elderly but still vigorous man in the evening of his life was taking his leave of his beloved gem and mineral business when I last saw him. His heart operations were to prove unsuccessful, and a few years ago he died in the midst of his treasures, and thus came to an end the era of one of the most important Brazilian mineral dealers, who had provided gemstones to the whole world.

Agenor Tavares

Senhor Tavares also lived in Teofilo Otoni, city of gemstones; he died last year. This quiet but exceptionally engaging Grand Old Man always staged a friendly reception. In past years his aquamarine mine in the state of Bahia, which remains productive today, delivered great quantities of the best cutting material. Not very long ago, *pistoleros* appeared on his property and robbed it of everything fine and valuable, including giant cut stones, then vanished without a trace. His friendliness was not diminished, but he grew melancholy when he thought of this event; he resolved (as have many other *pedristas*) to install a monitoring system in his stately house.

Paolo Vasconcelos

Paulo's accident in the Morganite mine was a severe blow, but he and his brothers are still carrying on their parents' mineral business in Governador Valadares. At one time, quartz crystals nearly 3 meters high stood at the entrance to their place of business. Considerable numbers of rough crystals from the dealership are on

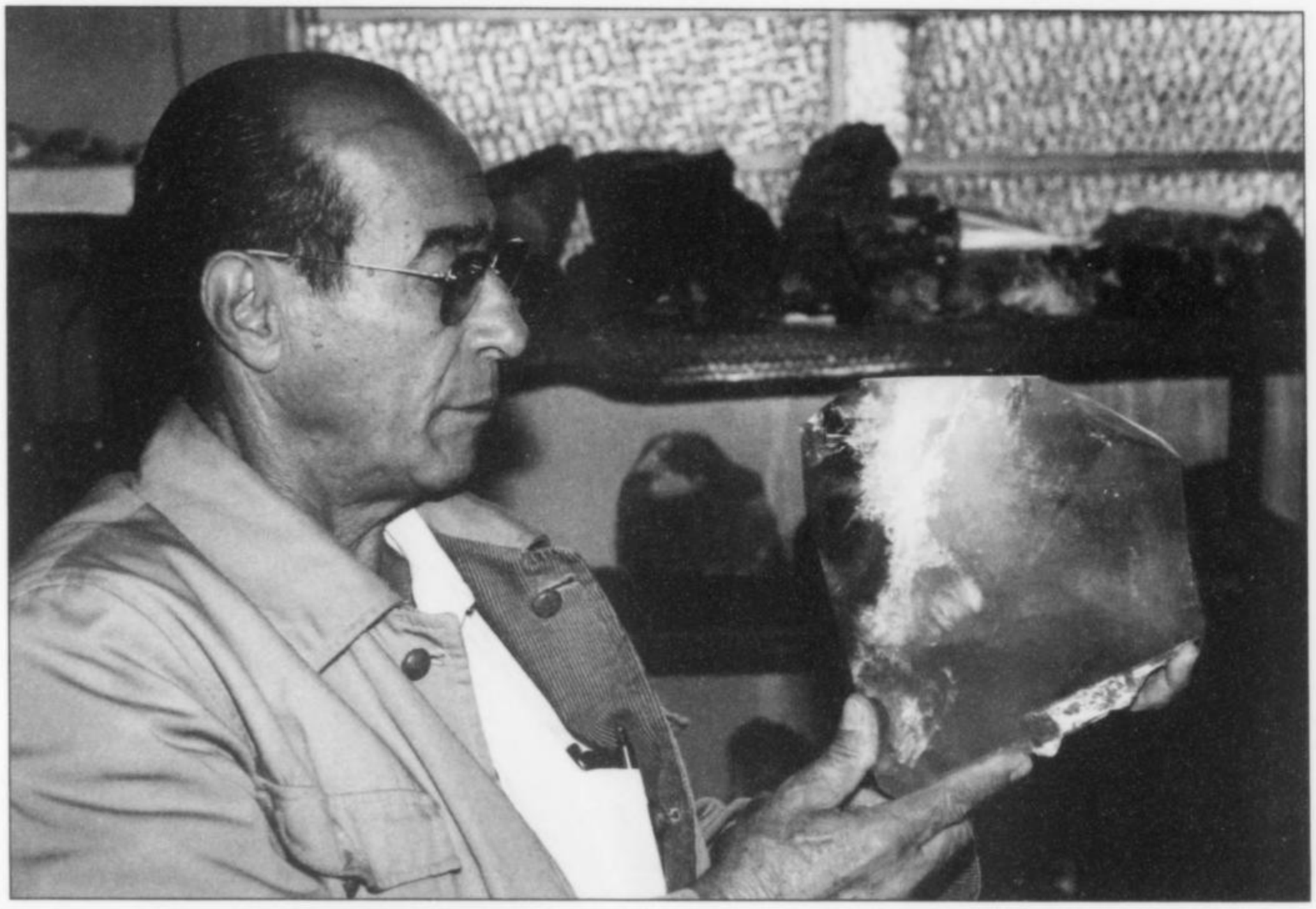

Figure 8. **Dr. Jacinto Ganem Neto, well-known Brazilian mineral dealer in Teofilo Otoni, holding a 9-kg topaz crystal from Virgem da Lapa, Minas Gerais, Brazil. Guido Steger photo.**

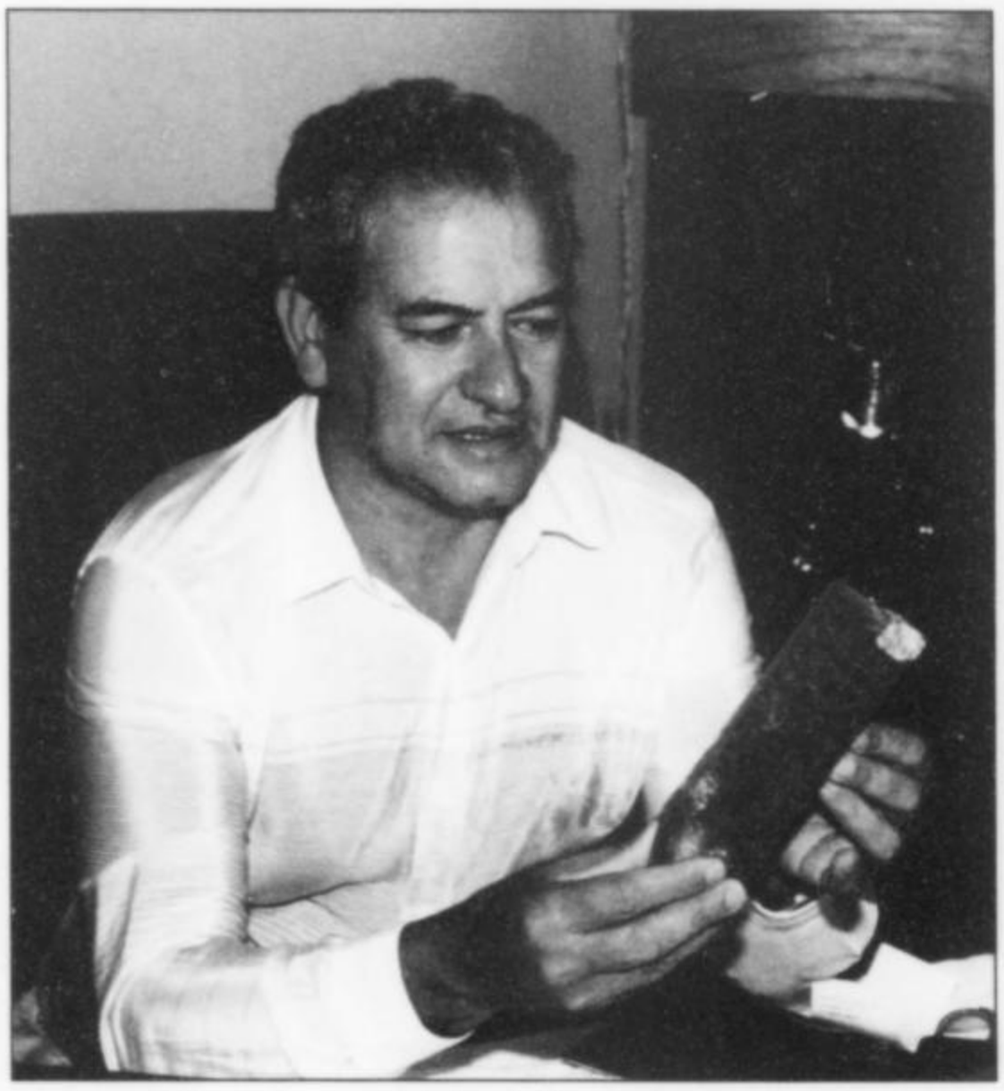

Figure 9. **Brazilian mine owner Agenor Tavares in his office, holding a fine aquamarine crystal from the Teofilo Otoni area. Guido Steger photo.**

show in other places around the city. The company owns several mines, but it became internationally known as a consequence of the sensational find of morganite at the Morganite mine near Conselheiro Pena. Today it is Paulo particularly who is an active exporter of quartz crystals.

João "das Moças" Candido Ferreira

Wine, women and song are the important things in João Ferreira's life. His many sons—especially Vinicius—help him with the demands, especially the physical ones, of his robust business. Most of his specimens are brought from distant places. Whoever sees this dark-haired, bearded, bull-like Brazilian with the velvety eyes, and remarks with what devotion and virtuosity he can call up the wistful tones of the guitar as he sings, recognizes his artistic sensibility.

Ailton Rodrigez Barbosa

One remembers the late Ailton Barbosa in terms of his liveliness: he was quick, helpful, affable, somewhat vain—in all, likable. We have him to thank, as a *garimpeiro* and specimen preparator, for the sensational find of red rubellite at the Jonas mine, Itatiaia. As a consequence of this find he was able to establish himself as a dealer, becoming part-owner of the Golconda mine and extracting many fine collector pieces. An altercation in a relationship ended lethally for him, and dealers and collectors miss in him not only a successful specimen-producer but also a good friend.

Nesio Vicente Sales

This very sympathetic dealer with an Indian-looking face has become widely known as reliable, kind and obliging. A huge specimen of black quartz greets visitors to his home on a hill near the Hotel Mirantes on the outskirts of Governador Valadares. He specializes in quartz of diverse kinds and in especially attractive specimens.

José Estrada

The brusque, bearded José Estrada, a mine owner and dealer, moves very forcefully (when he wants to) to acquire good material. The fine blue-capped tourmaline of the Cruzeiro mine was handled

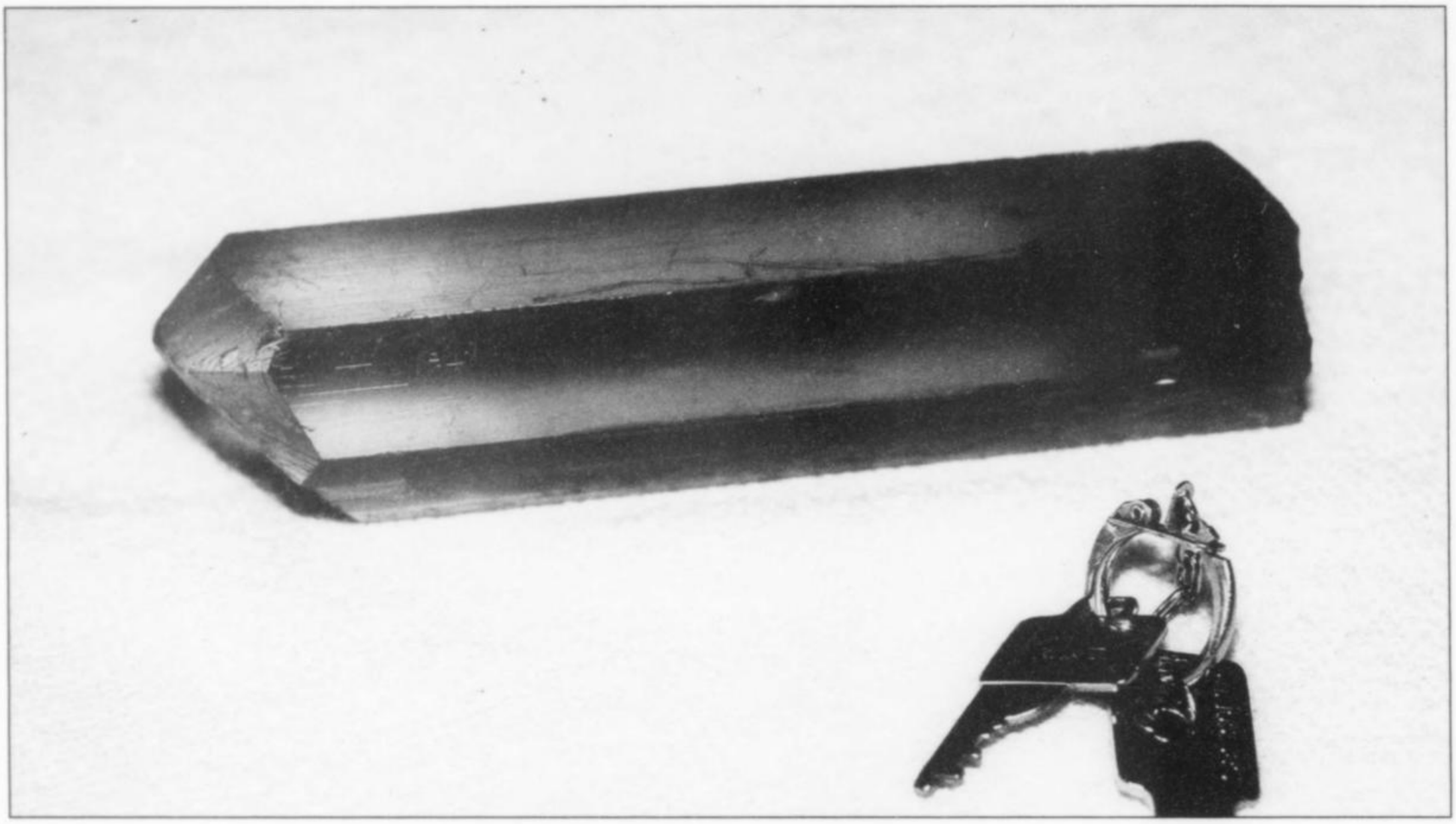

Figure 10. **An exceptionally large and fine crystal of aquamarine in the house of Agenor Tavares in Teofilo Otoni. The owner pointed out two phantoms in the crystal, and upon close examination I saw a third phantom. Tavares said, "Good, that makes it more expensive!"**

Figure 11. **Brazilian mineral dealer João "das Moças" Candido Ferriera in his Governador Valadares shop, 2001. Guido Steger photo.**

Figure 12. Brazilian mineral dealer José Estrada from Taquaral, holding a large blue-cap green elbaite with quartz and albite from the Cruzeiro mine, 1982. Guido Steger photo.

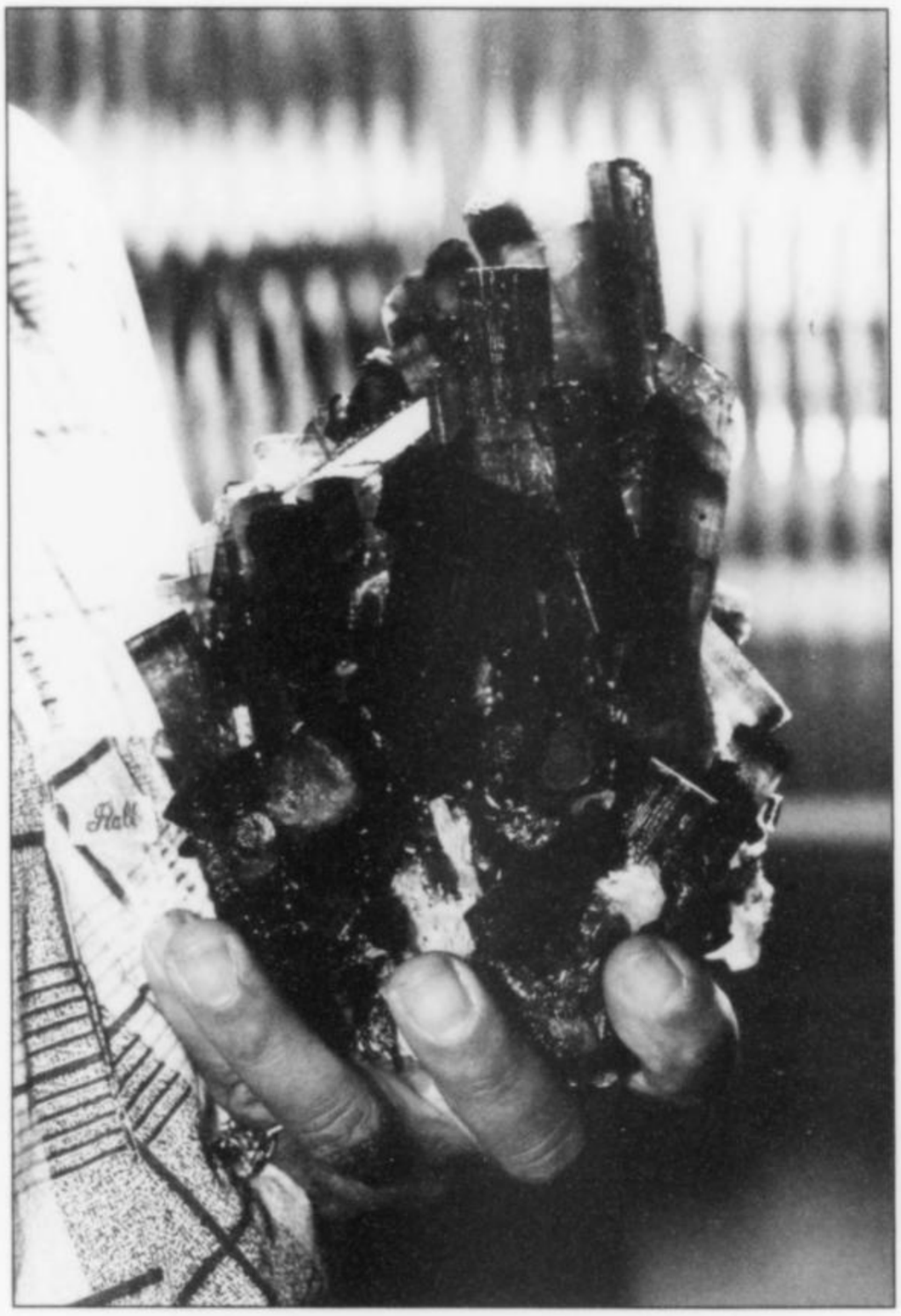

Figure 13. **A fine cluster of green elbaite crystals from the Cruzeiro mine; José Estrada specimen, 1982. Guido Steger photo.**

by him in its time, and it was through him that excellent yellow beryl crystals found their way into worldwide collections from the simple house he had at the time in Taquaral. This house lay very near to the island in the Jequitinhonha River, which is one of the few localities for rose quartz crystals, and likewise of special importance for him. He moved to another house, this one in Araçuai, but still works his mine in a well-known mineral-bearing region.

Wilson Tomich

The tall, lanky presence, the sharp glance, and the laugh overpowering the strong countenance of Wilson Tomich are well known. His beautiful wife looks after his beautifully furnished "Residenz" on an "Ilha" (island) in the Rio Doce, in Governador Valadares. His son Julio works in the business office, and an ancient porter administers and watches over the warehouse. Whoever comes to the city seeking special gemstones does not omit a visit to Tomich. His prices are spectacular, but good things, as everyone knows, are by nature expensive. As owner of the Chia mine and part-owner of the Pederneira, he has very fruitful supply sources. He relaxes in his villa by the beach at Porto Seguro, in Bahia.

Martins Clovis Coelho ("Baiano")

Baiano is a vital, life-loving *produtor das pederas*, as he is called. He is worldly and sports elegant clothes, but does not shun the hard work of gem and mineral mining. He owns a big warehouse in Valadares, and is the driving force of the Sapo tourmaline mine, which he runs with his partner. His discoveries of watermelon tourmaline, and later of blue tourmaline, excelled all his earlier finds. He is one of the best of the group of indigenous Brazilian dealers.

Ruy

Ruy is a young, strong, aspiring dealer who occupies a middle place in his family. Crystals are piled high in the courtyard and over the lawn of his small house; the more valuable specimens are stored in a neighboring room. He travels often to his Medina mine

Figure 14. **Brazilian mineral dealer Wilson Tomich in his shop in Governador Valadares, 1998. Tomich owns the Jaqueto mine and the Schia mine, and is part-owner of the Pederneira mine. Guido Steger photo.**

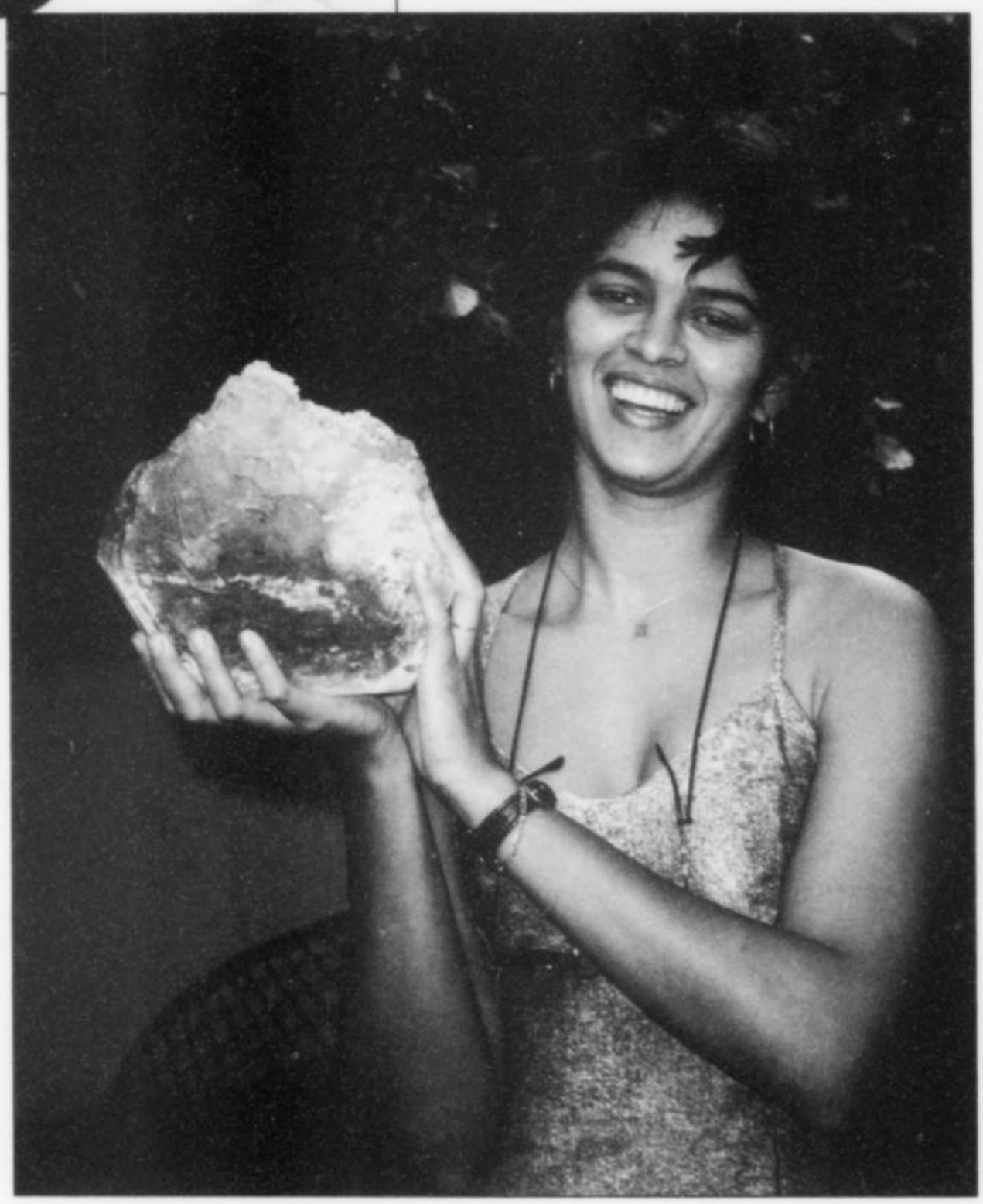

Figure 15. **Wilson Tomich's wife, Maria Tereza, displaying a large morganite beryl crystal outside their warehouse in Governador Valadares. Guido Steger photo.**

to bring up supplies, issue instructions, and pick up large, transparent citrine crystals. Customers feel comfortable with him; he is a pleasant man with whom to do business.

Don José Gomez da Rocha

Gomez, owner of the Santa Rosa mine, in its time the most prolific tourmaline mine in Brazil, lives in Itambacuri, 30 km south of Teofilo Otoni. His manor house near the mine is equipped with a bar. José's ascent from *garimpeiro* to "Don" is like an archetypal story of an ascent from dishwasher to millionaire, inseparable from the stories of some of the most beautiful tourmalines in the world, and of the most attractive large calcite rosettes in the world, which he has marketed.

CONCLUDING OBSERVATIONS

One of my major motives for personally visiting the Brazilian gem mines was to assure myself of the correctness of the locality data given for many specimens. To do this it was necessary to go to the places in question as often as possible, since the minerals quite commonly varied in habit, color, associations, etc. over the periods when the localities were productive. These facts were of special significance for me in light of my special interest in tourmaline.

Locality information provided by dealers was commonly vague, arbitrary or false; it did not seem important to them to provide accurate information, as they did not realize that serious collectors required it. For those shopping for minerals in distant places it was difficult to find out where, exactly, the hodgepodge of crystals or

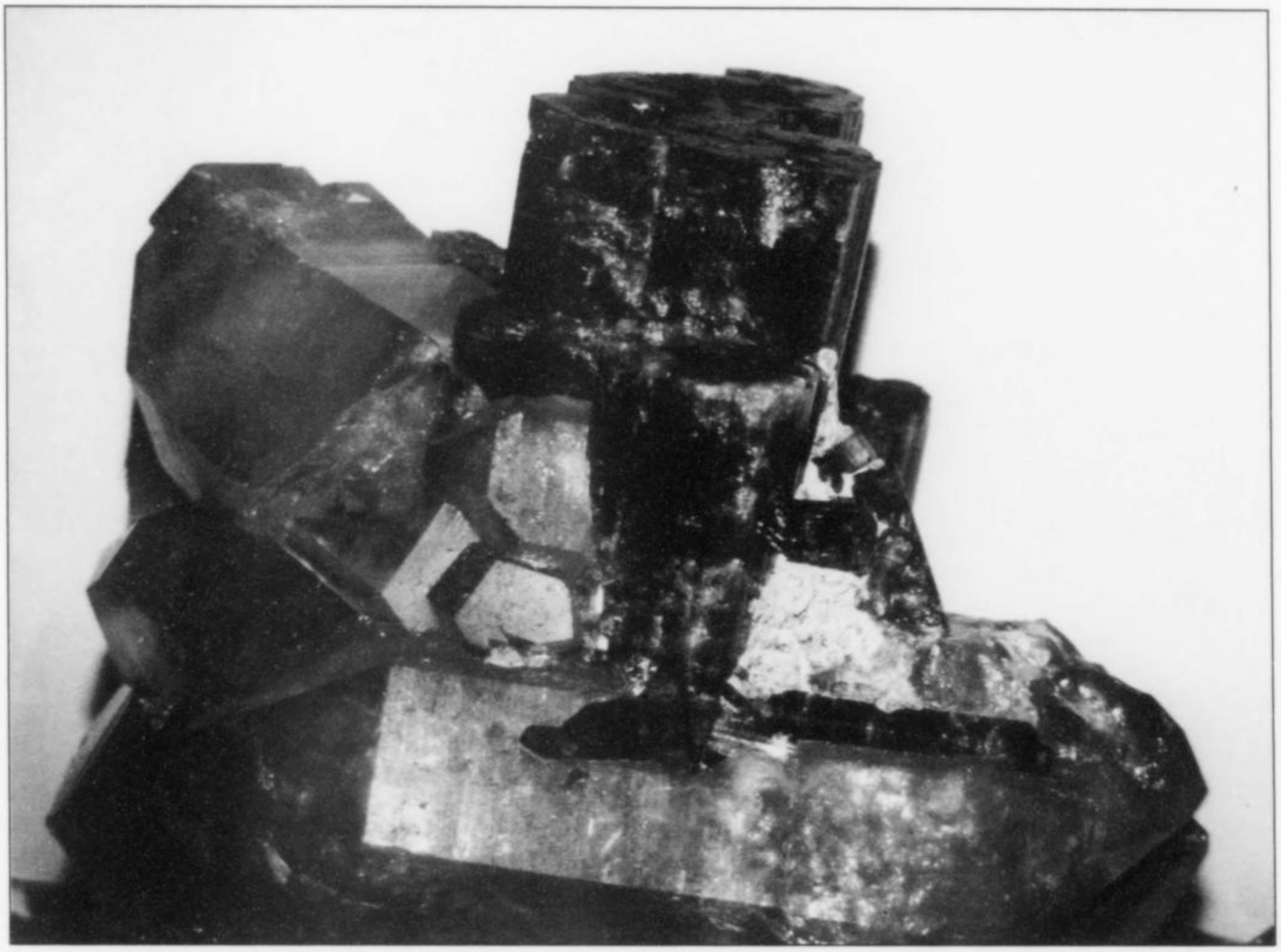

Figure 16. **A 30-cm specimen of blue-capped red elbaite on doubly terminated quartz from the Cruzeiro mine, on display in the home of Governador Valadares mineral dealer Wilson Tomich. Guido Steger photo.**

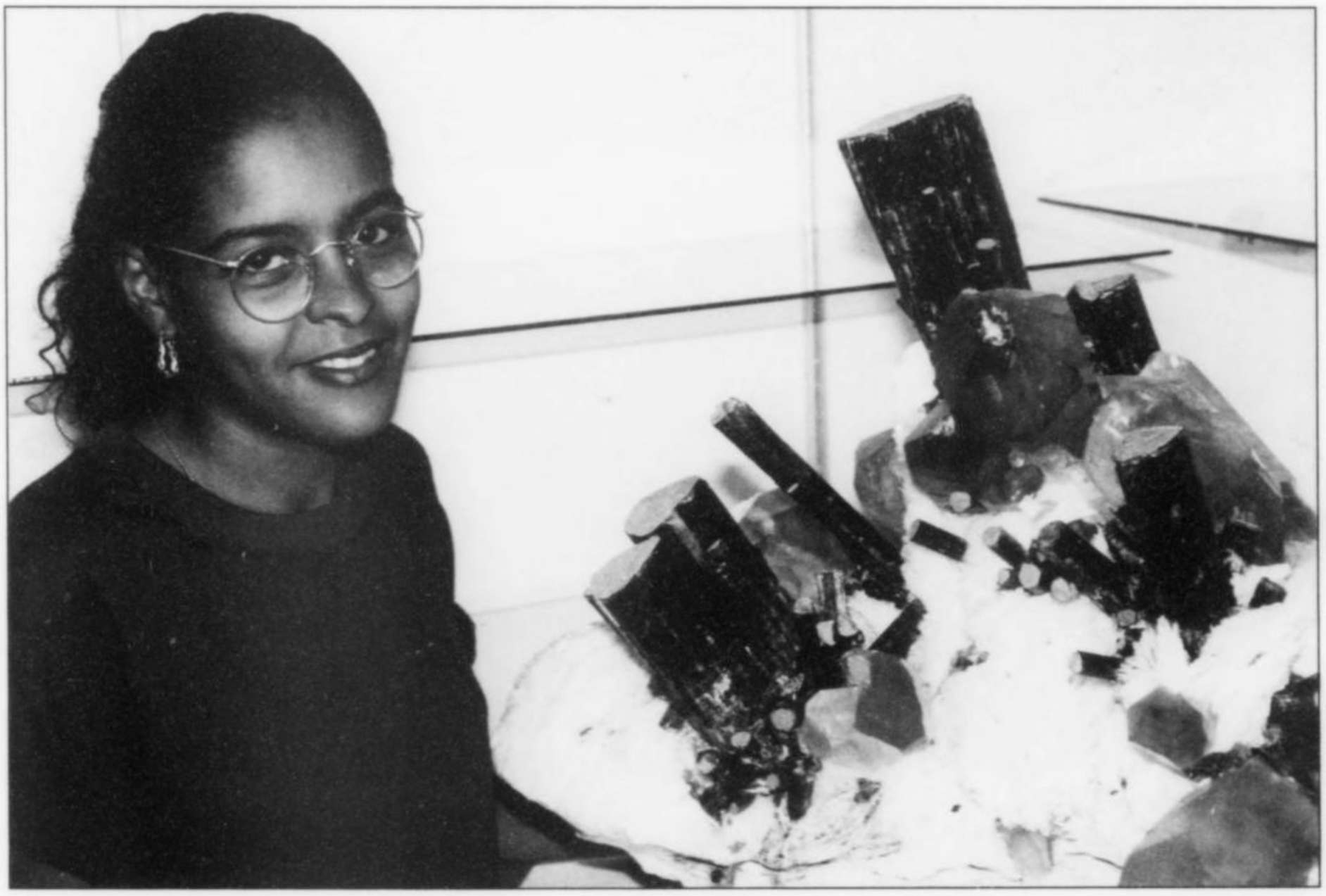

Figure 17. **A very large specimen of blue-green elbaite (with red cores) and quartz on albite from the Pederneira mine, on display in the office of Dilermando Rodrigues, a part-owner in the mine. Guido Steger photo.**

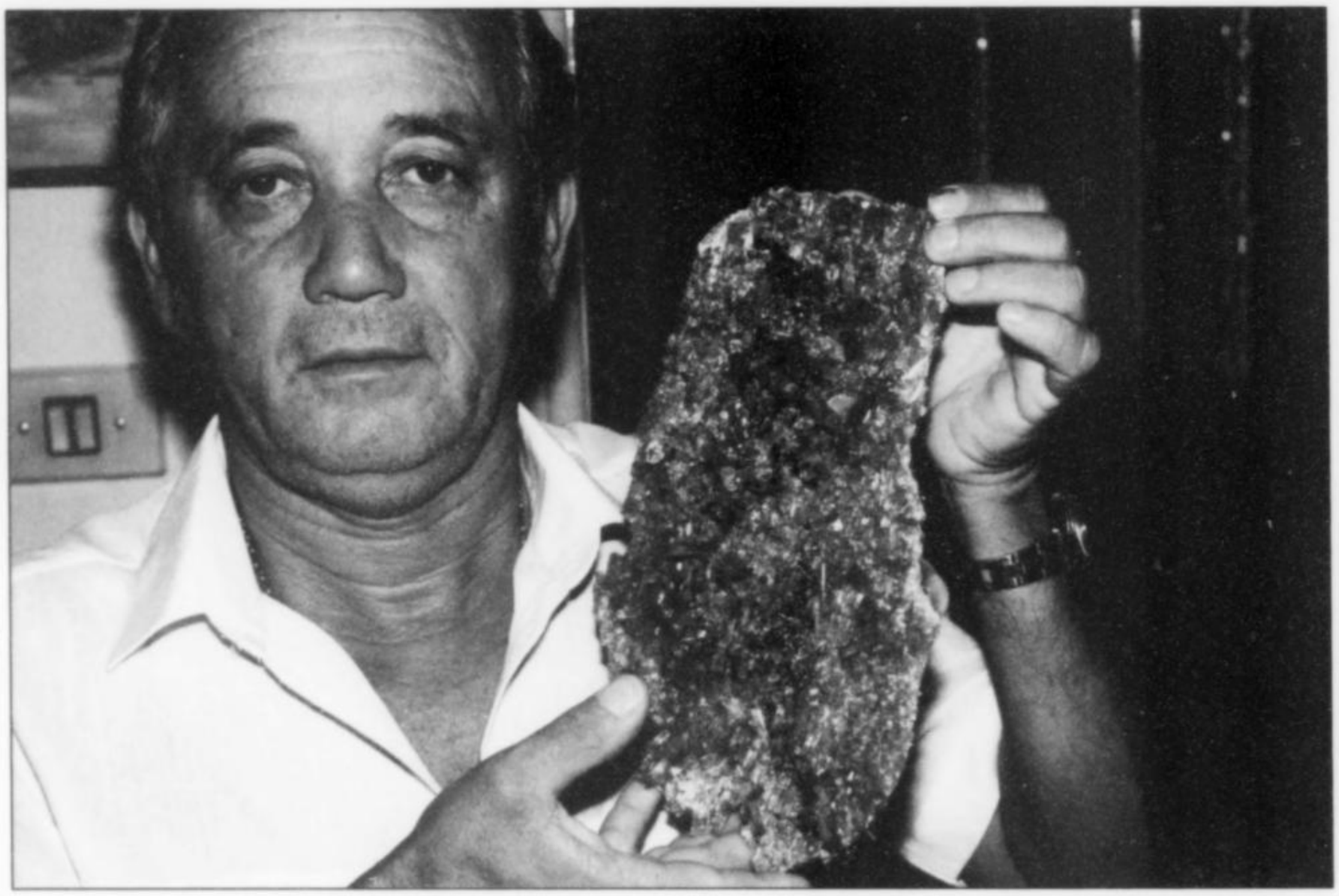

Figure 18. **"Don" José Gomez, an owner of one of the tourmaline mines at Santa Rosa, in his home in Itambacuri, showing a fine cluster of greenish blue tourmaline from Santa Rosa.**

crystal groups being offered had come from. Many of the *garimpeiros* concealed their knowledge, or willfully misrepresented it, out of competitive motives or out of fear that others could use the information in their own interests. The effects of these habits of concealment were perpetuated worldwide.

I have one urgent request to communicate to the "stone producers": *please, be more careful and conscientious while mining, transporting and storing crystal specimens.* Very often, these jewels of our Mother Earth are handled in such negligent or even brutal ways that they sustain damage even in what should be the sheltered conditions of packing and transport. In short, to put the financial bottom line first in one's reckoning is irresponsible and loveless. Time and again, while visiting the localities and storage facilities, I have explained that it is of highest importance to collectors that damage to crystals and crystal groups be minimized (and that undamaged specimens will bring higher prices in any case). It is urgently important that this be made clear to those who deal in specimens from the mineral localities of Brazil—and elsewhere.

ACKNOWLEDGMENTS

My heartfelt thanks to all of the people and organizations who have been helpful to me and who have provided me with good contacts in the course of my 59 mineralogical study and collecting trips, including the tours which I have led, to Brazil. I extend special gratitude to Julius Sauer/Amsterdam; Hermann and Theophil Badofszky of Rio de Janeiro; Nezio Vicente Sales, Martin Clovis Coelho ("Baiano"), José Baiano, Paulo and Carlos Vasconcelos, Wilson Tomich, Dilermando Rodrigues, Evaldo dos Santos, João "das Moças" Candido Ferreio, Vinicius Costa Ferreira, Eustaccio Neves, José Pinto, Ruy Leite Perreira, Ailton Barbosa, and Emilio Frois, all of Governador Valadares; Fernando Cesar Onofri of Teofilo Otoni; Don Gomez of Itambacuri; José Estrada of Taquaral; and Luis Menezes of Belo Horizonte. Thanks, too, to Tom Moore of Tucson, translator of my adventures.

ABOUT THE AUTHOR

Guido Steger has been interested in minerals and the world of mining since childhood. In 1944, during the chaos of war, his school class was moved from the downtown section of the bombed city of Wiener Neustadt into a wooded quarter, and then to the Ötztal, a spectacular valley in Tyrol, and it was then that he was awakened to the beauty of the high mountains. During his wanderings he climbed to the garnet localities at Rotmoostal and Gaisbergtal; this first field experience gave shape to his desire to involve himself in the fascinating world of crystals.

In 1947, drawn back to the Alps, he took a mountaineering tour. Afterwards, with his school friend Hans Hirsch, he sought out the well-known emerald locality in Habachtal and the fluorite-producing mines of the Achselalm in Hollersbachtal. The following year he began a series of bicycle trips to localities far and near in his native Austria, including the Untersulzbachtal, Knappenwand epidote locality, the Schlaining antimony mine, the Bernstein opal locality, the siderite-bearing dumps at Grillenstein, and the old mine workings at Schendlegg, Preiner Gschaidt. But it was always the localities of the high Alps that most inspired him, for here he could make exciting discoveries among the high peaks.

By 1950 he was able to fill his first mineral showcase—a graduation present. Neither family obligations nor the need to prepare for a profession hindered him from making regular trips into the mountains to search for minerals. As a railway superintendent in Vorarlberg he found himself, happily, still near mineralogically productive regions. But his impulse to impart knowledge inspired him, after his return to Lower Austria, to train as a schoolteacher. After a year of study in St. Pölten he won certification, and began teaching. A hard blow to him, overcome only with difficulty, was the death of his wife, the mother of his three children. Luckily, in his second wife he found someone understanding of his devotion to mountain climbing and minerals. He was transferred to the region of his native city, Wiener Neustadt, where he discharged

Figure 19. **Guido Steger with a 4-ton quartz specimen from the state of Goias, Governador Valadares, 1990.**

his professional duties for the next 25 years, until being pensioned. He guided many nature lovers and collectors of all ages into the mountains, his intention being always to inspire people to appreciate nature and the world of minerals.

Beginning in 1969, he undertook a series of mineralogical study and collecting trips to European and international mineral localities, with special emphasis on Brazil. In the years which followed, he published an association newsletter and contributed articles to well-known collector journals. During the same period, expeditions to the Andes, Himalayas and Karakorums were high points in his life as a mountaineer.

Guido Steger founded, organized and administered the first club for mineral collectors in the Austrian capital of Vienna, bringing membership in this Organization of Alpine Mineral Collectors from 0 to 750 within three years.

His 150 free lectures, courses, guided tours to South America and Africa, and connections established with mineralogists throughout the world, as well as his organization of the first mineral shows (of commercial character and otherwise) in Vienna, were Guido Steger's main pioneering activities in spreading interest in mineralogy and mineral collecting in eastern Austria. There came about a mineral "boom" in this region, which in turn inspired further and wider activities.

At the same time, he devoted much attention to building the collection of his mineralogical museum in Wiener Neustadt. Unsteady health at last compelled him to dissolve the collectors' association, since no one could be found to carry it on with the same energy. His museum, open from 1975 through 1995, at last ran out of space; in November 2003, as the Wiener Neustadt Mineralogical Museum, a big part of the collection went on view in its new home, a former Carmelite church.

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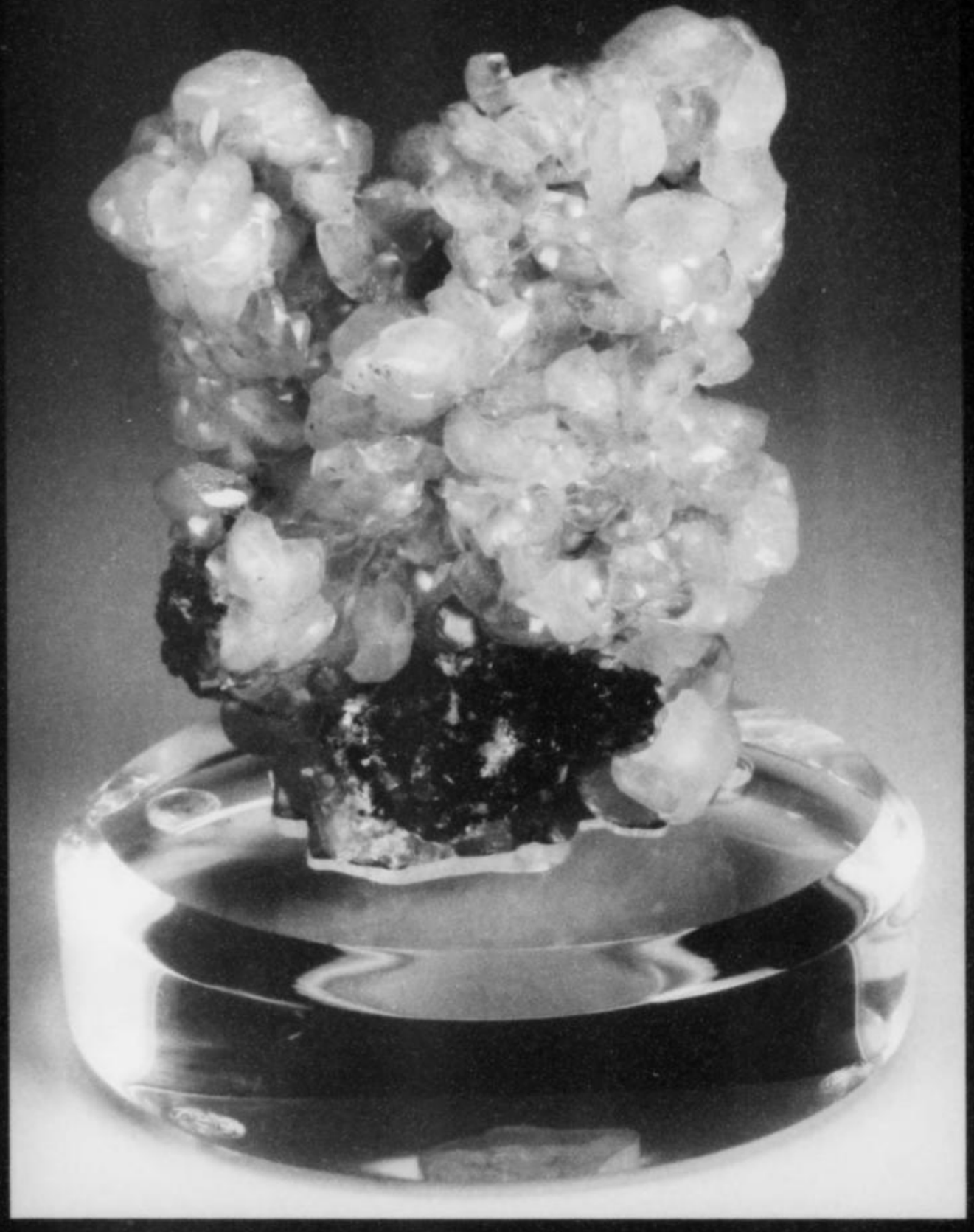

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The Sapphire and Spinel Deposit of An Phu Luc Yen Mining District, Yenbai Province, Vietnam

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The An Phu mine near An Phu village in the Luc Yen mining district, Vietnam has been the source of attractive specimens of ruby corundum and large purple to red spinel crystals, as well as phlogopite, pyrite, dravite and green edenite crystals embedded in white marble matrix. However, the pegmatitic tourmaline and beryl that have also been labeled as coming from An Phu are actually from the nearby Minh Tien pegmatite.

INTRODUCTION

Goooood morning, Vietnam! This time it was not Robin Williams in the movie; it was the Voice of Vietnam. It was 5:00 a.m. and I was in the far north of Vietnam in the small town of Luc Yen. The village loudspeaker blasted the national anthem, followed by a robust dirge, and then by a thumping martial beat, akin to marching boots, which I am sure celebrated the merits of their socialist system. I smiled as the morning exercise followed: *mot, hai, ba, b'on*, etc. ("One, two, three, four"). This time I recognized the spoken numbers after yesterday's crash course in Vietnamese. The previous day I had guessed the routine from the sheer repetition of the words. Though, I doubted whether anyone in this sleepy village on a cool fog-shrouded morning was aggressively following the exercise routine.

I lingered in bed for a moment and then donned my clothes and a sweater and walked down the stairs of the small five-room family-owned hotel. The owners had not yet arisen, but within a few minutes the elderly woman in charge of the household entered from the family's living quarters, and I motioned to an insulated flask so that she would heat some water to make some instant coffee. She fired up a natural gas burner for the water and then proceeded to start a wood fire in the large fireplace in the back of the kitchen, the traditional way for her to heat up a breakfast of sticky rice and yellow peas, to be topped with roasted peanuts. I mixed some Nescafe with hot water and a sludge of sweetened condensed milk, trying to drop the acidity of the bitter liquid, and then contemplated how such an improbable trip had turned out so well.

HANOI TO LUC YEN

When I had arrived in Hanoi I was taken to an expensive gem and jewelry shop, but the few really nice specimens there were either not for sale or too expensive. I was told that the owner was a mine manager, but I think that he may have been in a partnership for mining ruby and sapphire rough, and sold most of his faceted material (mounted in gold jewelry) to wealthy Vietnamese who wanted to own some precious stones found in their own country. My mission, however, was to reach the source.

On Thursday the 24th of November, 2005, I left Hanoi at about 7:15 a.m. to travel to Luc Yen by way of Yen Bai, a well-known name among gem and mineral enthusiasts. This year in the Tucson Show write-up in the *Mineralogical Record*, a photograph of a tourmaline attributed to this area (Yen Bai is the name of a city and of a province) had been published. I had initially planned to travel to Vietnam for a short holiday in between work sessions in Southwest to Southeast Asia, but my friend Jesse Fisher, who owned the Vietnamese specimen, told me the locality was only about 100 km from Hanoi, so I decided to go there to take a look.

I was promised by my American-educated Vietnamese friend that her father or the shop owner would find someone who knew

the mine locations and would be available the following morning to take me directly to that area. But when the 25-year-old woman arrived, she was alone except for the driver. She said that the man had to cancel at the last minute due to a family crisis (after the trip was finished, I guessed the man had not wanted to put himself through such an ordeal) and I was left with Huyen, the fiancé of a family friend, to help me find the location. Bright, intelligent, and charming, she made for a fun travel mate. Her father had supplied us with a nice Toyota Crown and a driver, and so we rolled north on a cool and clear, but slightly foggy morning.

We were told that Yen Bai was about a three-hour drive and I guessed that we would be able to visit the mine, tour the local gem market and return to Hanoi in the same day. Instead it was about five hours before we even reached the outskirts of Yen Bai. The time had passed quickly with Huyen talking about her country, and her stay in the United States, and then asking me questions about my travels and work. We were stopped once about two hours out of Hanoi and some people dressed in some protective gear sprayed some type of antiseptic around the base of our car, apparently to decontaminate any Avian bird flu virus hitching a ride with us.

We passed through Yen Bai, and about 10 km on we stopped for a huge lunch of lake fish, rice and vegetables, and enquired as to how much farther it was to Luc Yen. They told us it was *another* 100 km. This I hadn't planned on, and I immediately realized that we were facing a very long day to complete our goal, and some changes in the plan would be necessary.

As soon as we had left Yen Bai we entered the mountains, and the road narrowed and twisted like a snake. The houses we passed appeared to be of an older style, with thatched roofs instead of tile, and looked decidedly smaller and poorer, no doubt because available flat land for productive farming was as limited around there as good employment. The roads, topography and vegetation reminded me of Northern Burma and the road to Mogok. Strangely enough, the geological formation of the ruby and spinel deposits here in Vietnam is incredibly similar to some of its Burmese counterparts.

Huyen had never been to this part of Vietnam, nor had the driver, and we stopped numerous times to reconfirm the directions. Gradually we emerged from the narrow valley to one that was a bit broader and we could see dozens of protruding karst formations, emerging erratically from the flat valley floor like the heads of dragons, further adding a bit to the exotic feel of the place.

LUC YEN

Finally, shortly after 3:00 p.m., we arrived in Luc Yen, at about the time I had been initially intending to return to Hanoi. Already I had started to form new plans. We stopped at a small fruit market next to a vacant square and asked about the gem market, and we were told it was held at that site, but from only 6:30 a.m. until 9:30 a.m. every morning. I told Huyen that I would have to stay here, as it was worthless for me to come this far and turn around and return to Hanoi with nothing accomplished. So we traveled further into the small town and I spotted a hotel, the only word in English in the entire village. I told her that I would stay there. Originally she thought that there was not an adequate place to stay in the entire region, and we had not seen one hotel in the tiny scattered villages in the past 100 km from Yen Bai. I assured her, however, that I had spent many a night in incredibly dilapidated hotels in Asia and Africa and that I would be fine.

We pulled into the small parking area in front of the hotel and walked inside and asked to see a room. We were ushered upstairs and given a choice of five, all of which were more than adequate and were very clean, with hot running water, and all for a price of less than $8 a night. Huyen was nearly beside herself as I told her that she should return to Hanoi, as she had made plans for only one day and the driver probably had obligations the following morning. Nothing had gone as planned, and she felt that she had failed me and could not leave me alone. I assured her that I would be fine, and that I would catch a public bus to Yen Bai or one directly to Hanoi. I could sense another adventure in the making. (I am one of those people who thrive on being thrust into unknown circumstances and then having to use my wits to survive.) I was more concerned about her having to face another eight-hour drive late into the night than any inconvenience for me, and was secretly thrilled to have the opportunity to travel alone without the protective cocoon of a good car and bi-lingual guide.

She called her father and they finally decided that she and the driver should stay in Luc Yen too, because the driver would become too tired to safely return all of the way back that night. So they each took a room and I told them that I would pay for all of the expenses, dinner included. She was full of apologies about how the day had not turned out as expected, but I kept reassuring her that a good adventure was in store, and this was becoming far more interesting for me.

In any case, I was happy to be out of the car, and have a chance to relax. I decided to go for a run in the intervening hour before darkness set in and went to my room to change into some running clothes. I ran down the main street past astonished stares from locals and by the vacant gem market, and turned left to run along the side of a small lake. I continued onto a rural road and within a minute I had spotted some broad white scars on a mountainside, the unmistakable sign of white marble. Could I have been so lucky as to stumble unto the ruby mine by sheer chance? Within minutes I was at the base of the quarry, but I quickly noticed large square blocks of numbered marble slabs and I realized that I had been too hopeful. Nonetheless, I walked and jogged up the steep trail to where the miners were working to reconfirm my guess. I was not that disappointed, because the site offered an excellent view of the town and great views of the aesthetically artistic limestone karst spires jutting up from the flat valleys below, reminding me of the river tour below Guilin, China, one of the most beautiful spots in that country.

I returned to the hotel to shower and have a spartan dinner of raw tofu, rice and a Chinese cabbage soup. I had intended to have dinner with Huyen and the driver, but I had told Huyen to order food for me before she had changed her plans to stay in Luc Yen, and the non-English speaking owners had promptly cooked it. I did go out with them to their dinner to experience the local scene, and they settled on an open fronted local restaurant with a television set loudly broadcasting Vietnam's soccer game with Malaysia. The elderly matron enquired about me, curious as to where my silk-wool safari suit had been made, and where I was from. Huyen asked me in a whisper what country she should tell her I was from, as she was afraid to say "American." (I supposed that, with the older generation, there might still be some lingering animosities from the war, although I surely encountered none on my trip. Later she told me that her reason was that she was afraid that the owner would charge more for the food because I was one of those "rich Americans."). I told her to say "Belgian," as that was where my father's family had originated. The matron was satisfied and stated that she had been to France to visit relatives living in Nice and Leon. The restaurant and the adjoining shops then erupted into a mighty roar as Vietnam had blocked an almost sure goal by Malaysia, and then less than 30 seconds later an even more ecstatic roar emerged as Vietnam scored to take a 1–0 lead.

We decided to go for a short walk and walked into a shop where some artisans were making some gemstone paintings. They were using ground-up corundum and other crushed gemstones, which

were carefully applied with a tiny tapered metal dowel and secured with glue. The gallery had some magnificent portraits of landscapes and scenes of nature, especially of birds. There even was a portrait of Napoleon Bonaparte on a horse. But the most impressive portrait of all was that of Ho Chi Minh, their revered nationalist leader, sitting on a wicker chair, dressed in traditional clothes. He appeared absolutely lifelike. In Mogok in Burma, artisans were doing similar artwork, but I honestly thought that the Luc Yen people were better at this peculiar art form.

We walked back to the hotel and I noticed three mineral specimens in a case. Two were spinel in marble, the third was green amphibole in similar matrix, virtually identical to the pargasites from Ganesh in Hunza in the Northern Areas of Pakistan. We enquired about the price and talked a bit to the hotel owner, who had them on consignment, and he told us that a man just down the street had some special specimens. We walked a half dozen doors down into a partially opened shop and saw similar samples to those at the hotel. All of them had excessive amounts of matrix, with each of the marble matrixes nearly identically chiseled into somewhat artistic flows like a sculpture. I asked to see something special and he led me into the backroom and tugged a large box from beneath the bed. He removed the cloth covering to reveal a 75-cm specimen of marble, studded with spinel crystals. The piece was huge and must have weighed 50 kg, but there were a fair number of reddish spinel crystals to 2.5 cm scattered unevenly throughout. The asking price was also huge, so I asked to take a photo, thinking that I could show the image to a museum or decorator first before making a commitment. The owner claimed that he was going to Hanoi in the morning and wanted me to guarantee that I would purchase something from him, if he stayed. I did not succumb to his pressure tactics, and told him that it was a gamble for him, as well as for me, and then I indicated that I wanted to return the following morning when the light was better and I was rested. I also really wanted to survey the local morning gem market to see what else was available.

With little else to do in this quiet backwater, I went to bed shortly after 10:00 p.m., forgetting that it was Thanksgiving Day back home in the United States, and that I had eaten a rather bland, meager dinner that evening. Next morning the Voice of Vietnam awakened me, and I half-dozed until 6:00 a.m., when I went downstairs for some instant coffee. I waved off breakfast, eager to go to the gem market for the opening start. It was a very hazy, foggy morning with poor light, and I thought that it was a bit early for the market to open, and apparently all of the dealers thought so as well, because the place was vacant. I returned to the hotel for a breakfast of sticky rice and yellow peas, topped once again with roasted peanuts, and since Huyen had not yet left her room, I returned to the marketplace alone.

By then, several women had set up some half-meter by half-meter wooden tables, and had some offerings of local gemstones, rough, and crystals. They immediately showed me some gemstones, assuming that would be what a foreigner is interested in. However, I did not care for the size, color, or quality very much, and started scavenging for some crystals. In no time at all, a small crowd had gathered around me, and people were handing me a mix of corundum and spinel crystals. I finally motioned for a very tiny 30-cm-high plastic stool to sit on and someone brought a small wooden table to set in front of me.

Nobody in the market spoke any English, but it was easy enough to produce a calculator with which people could show me a price. I responded with very low offers to the owner's original requests, just to determine where the local market was with respect to mark-ups, and was able to bargain a woman down to a very reasonable price on some very sharp, single, 2 to 2.5-cm ruby crystals. Not only did the rubies look nearly identical to the ones from Ga Doke Tat in Burma, but another similarity was that the majority of the sellers were women and they seemed to control the wheeling and dealing.

I tried to enquire about locality information and was not understood. I looked up to see that Huyen had quietly joined me at the table, and now I would be able to use her translation skills. I immediately had her ask the location of the crystals and the answer invariably came back "An Phu," a village about 20 km from Luc Yen.

The crowd had enlarged to 15 or 20 people around me and I started to joke and smile and have Huyen translate what I was saying to the locals. I found in these new circumstances that everyone always appreciated a light-hearted approach, rather than a very serious, somber business demeanor, and that it would endear me to some of them and probably produce some better prices.

Then a newcomer approached, a shy and rather attractive woman whom I guessed to be in her late twenties. The others started to point at her and me, and were laughing. I thought that they were trying to line me up with a single woman in the village, but when I asked Huyen about it, she said that it was because the woman had a touch of Western blood in her lineage, and they were comparing me to her. The greenish-yellow tint in her hazel eyes and slightly sharper nose suggested perhaps an eighth or sixteenth of some Caucasian blood. Her face started to redden, and when I asked Huyen about this, she replied that the others were teasing her about her Caucasian features and that she was shy and red with embarrassment. I indicated in a joking matter that I would call her Miss Ruby, with her face being as red as a ruby. After the translation, she reddened a few more shades, approaching the color of the stones lying on the table, but still kept a shy smile on her face, and I had an instinctively good feeling about her.

And then someone mentioned that she was from An Phu! I immediately asked Huyen to ask if she could take me to the mine. She responded affirmatively and indicated that her brother-in-law would take me to the mine, and that their family members were working at the site. What a lucky break! The goal of my trip was within reach, and only hours before it had been looking like a disaster in the making!

I purchased some etched corundum crystals and then was offered a huge flat twinned spinel crystal that was over 15 cm across. I had never seen such a large twin from any other place in the world, including the legendary Mogok deposit in Burma. It was virtually damage-free and had small overgrowths of some mica, possibly margarite, on the reddish pink brown surface. I asked the price and it was not unreasonable, even though the numbers seemed huge (prices were quoted in millions of *dongs*, but there were about 15,800 dongs to the dollar). I started to negotiate with the owner but she was one of the older women in the crowd and was a seasoned bargainer. We reached an impasse with only a small difference between us. As I was trying to negotiate the price on some bi-colored tourmaline owned by another dealer, a local woman in the crowd paid the older lady the price that she wanted and the twin spinel piece was gone. I thought that it was a selling ploy and said that I wanted the piece back. But now I would have to pay even more for it, because the new owner wanted to make a profit! I kept enquiring about the piece and heard a variety of responses. Each time that I asked, I knew that they knew that I really wanted the piece and that the price negotiations would be very difficult. Finally we heard that the woman who had purchased the piece was intending to take it to Hanoi to sell to some dealers. She was likely to get a good price there, as the few really nice things that I had seen in the those shops were priced at a full U.S. retail.

I turned my attention elsewhere. The An Phu lady had a pinkish brown ruby in a matrix that appeared to consist of magnetite. I was able to purchase it without too much bargaining. I tried to buy some of the tourmaline, but was surprised at how expensive the quoted price was. Huyen said that since I had specifically asked for tourmaline, the locals assumed that I had a lot of interest and would pay a good price. I saw some interesting single crystals that were green and bi-colored pink and green, but the price was as high as the overpriced Afghan material that I had seen a month previously. Luckily, I managed to make the price on a 4.5-cm hot-pink rubellite crystal and a single green crystal, after the owner saw me looking at two better specimens from a different dealer, and he was afraid that I would lose interest in his pieces, so he quickly agreed to my last offer. Unfortunately I was not able to reach an agreement on a 5-cm-plus bi-colored prism.

I learned several good lessons that day. The dealers here would negotiate on and off for ten minutes and then would drift off and try to sell the pieces elsewhere. And if I hoped that the pieces would appear the next day for a second try, I was mistaken. On the previous night the shop owner had stated that one tourmaline had been purchased a month earlier by a Vietnamese dealer from the "South" for in excess of $60,000, and it seemed that the locals valued the tourmaline more than rubies or spinel.

Suddenly, as I looked up, I noticed that the crowd around me had melted away and by 9:30 a.m. the market was effectively over. The An Phu lady told Huyen that we should go to her place, and so I climbed on the back of a motor scooter with her brother-in-law and Huyen mounted behind Miss Ruby on hers.

It turns out that the An Phu people had constructed a long, narrow, open-ended house along the very same road that I had run on the previous evening. The tin roof of the structure was supported by wooden poles, but the sides were made of a heavy canvass cloth, and it was open at both ends. In the entry room there was a table with a small teapot and tiny porcelain cups for the slightly bitter green tea that was consumed all day by the locals, along with a half-meter bamboo waterpipe for smoking some rough tobacco, placed in a bucket. A partial cloth divider revealed two beds in the next room, with the kitchen located slightly farther away beyond the beds. There were about 10–12 members of the extended family living there, with a single older man and three couples and some children.

Miss Ruby introduced me to her teenaged son and I was stunned when I found that she was 36 years old. Also in the first entry room were two glass-fronted cabinets that were locked, one filled with spinel in marble, and a second with some rubies in similar matrix. Every piece had been chiseled into a curving, flowing, artistic form. Apparently someone had developed that style, thinking there to be a good demand for it, or it was simply the way that it was done and nobody had suggested anything different. I started to wonder whether some wealthy Vietnamese might be purchasing these for decoration pieces.

I spied an excellent double spinel on a large piece of matrix, with each crystal over 2.5 cm and having the red color of a good Burmese spinel. I asked the price and was quoted in the many millions of dongs. I started to negotiate with the An Phu lady whom I had nicknamed Miss Ruby, and was able to move the price to an acceptable level, at which point I agreed to buy it, provided that someone would cut the crystals out of the 2/3 meter long piece of marble that probably weighed more than 20 kg, and reduce the matrix to fist size. I took a black ink marker and drew lines where I wanted it sawed.

They then showed me some fairly good rubies in matrix, but I wanted to go to the mine first, before I made decisions on those pieces, and told them to wait until I returned. I would then make some offers.

Figure 1. **The An Phu mine, visible on the steep hillside overlooking primitive houses. Dudley Blauwet photo.**

AN PHU VILLAGE

It was nearing 11:00 a.m., so I told Huyen that it was time for her to return to Hanoi and it was time for me to go to An Phu. We doubled up on motor scooters and returned the short distance to the hotel, where I raced to my room and stuffed my backpack with several bottles of water, some bananas, oranges, and cashews, extra clothes, an umbrella, my camera and video camera and a Global Positioning device to mount on my wrist.

I returned to the lobby to bid farewell to Huyen, who still seemed very worried about me and the change of plans. I reassured her that things could not have turned out better, and I was thrilled to be going to the mine. She recorded the telephone numbers of Miss Ruby and of the hotel and promised to call in the evening to check up on me, or to see if I needed to have any translation done.

I mounted myself behind Miss Ruby's brother-in-law, Chung, zeroed my GPS device to determine the distance that we would travel, and then both scooters left on the main road that ran through the town, headed roughly in a southeasterly direction. I had removed my Coolpix digital camera from its case and started to shoot some incredible scenes of the exotic landscape, where the limestone karst formations rose abruptly from the flat valley floor, like the Loch Ness monster rearing his head from the lake. There was a small mountain range to our right and I had a feeling that we would be heading in that direction, which proved to be correct. After about 6 km, we turned right off the gravel road unto a smaller narrow rural road that quickly turned to a double-track

dirt road. We immediately had to cross several streams, shallow enough that we did not get our feet wet. What a difference: Two days before I was riding in a chauffeur-driven Mercedes sedan in Hanoi, owned by Huyen's father; today I was bouncing on the back of a Taiwanese motor-scooter. I wondered how bad the road would get, and then suddenly we emerged onto a narrow, white concrete road. Its 2.5-meter width reminded me of a bike path in the U.S., and it seemed strangely incongruous in the rural countryside.

The road generally headed due south, but snaked back and forth, up and down over the rolling, partially forested countryside, past scattered patties from which rice had recently been harvested. Occasionally the pavement would end, replaced by a dirt and sand double track, and then reappear again. Progress was slow, with us averaging about 20 km per hour. Gradually the road started to swing in an easterly direction, and then slowly started to form into a "U," and double back and start to head north again up a different valley.

Finally, at 17.5 km from Luc Yen, we pulled into a one-lane village stretched out along a narrow valley, and rolled to a stop. This was An Phu. We dismounted and walked to a nearby shop, and Miss Ruby called out to several other people in the village, asking them to bring specimens. A wiry thin man came out with a large specimen wrapped in some paper. It was a huge group of purple-colored spinels with individual crystals to more than 3 cm. The crystals appeared to have an odd type of twinning, but the piece was very dirty and I could not determine how much of it was sheer dirt on the surface, and how much was embedded into the crystals. However, considering that the size was more than 15 cm across and it looked free of damage, it was worth taking the risk that it could be cleaned.

I asked the price and pulled out a calculator. The huge number quoted was burdensome, as I had to count the zeros, and sometimes the locals would add or subtract one, as they recounted, raising or decreasing the price by tenfold. The price proved to be relatively expensive. No matter how far into the middle of nowhere you travel, the asking price at the mine never seems to be cheap. I made some offers, but found the owner to be rather stubborn and unwilling to budge much. I left the piece in his hands and went with Miss Ruby to another shop/house where the owner appeared to be a relative. He had a number of large, bluish to reddish brown spinel crystals, and I found it easy to purchase all of the ones that I liked.

The owner of the original spinel then came by and saw the transaction and decided that he wanted to sell for cash also. Miss Ruby helped us to agree on a price after we reached an impasse, and I was happy to add this large and potentially excellent piece to my purchases. Miss Ruby also helped me to wrap the specimens and started to put them into my bag. I indicated that the extra weight was not practical to take with us to the mine, and motioned to them to leave the pieces in the shop. The owner opened a cabinet and put the pieces inside and locked the wooden door and handed me the key. My gut feeling on him and Miss Ruby was that I could trust them completely, and I would have been willing to leave the pieces with him in an unlocked cabinet if a lock had not been available.

THE AN PHU MINE

It was by then approaching 1:00 p.m., and Chung indicated that it was time to go to the mine. I was not sure if we were going to walk from the village or what was in store. He motioned to me to give him my heavy backpack, and he took it and started to firmly tie it with rubber straps to an ancient, dark blue Russian motorcycle called a Minsk. He motioned for me to mount behind him and we were off. The fact that he strapped the bag down very securely and did not have me wear it on my back was a good warning for what was lying ahead.

As we left the small village, the road rapidly deteriorated to a two-lane path that was studded with rocks to allow passage during the rainy season. This teeth-rattling trail was so bad that I was afraid that he would bounce out of control and I would be injured, and I thought that I really would much rather walk this stretch, rather than ride. Occasionally the trail improved and became a set of parallel water buffalo paths through grassy pastures. We bounced and jostled through 2.6 miles in a half hour, and finally reached a hill steep enough that the bike could not pull both of us up. I dismounted and Chung motored up the trail, both legs flaying on the sides to push and keep his balance so that he would not tip over. I walked up behind him and he pulled under a wood and bamboo house on stilts and killed the engine. This was the end of the road.

Two young women stuck their heads out from the upper floors. One appeared to be from one of the minority ethnic hill tribes and

Figure 2. **Chiseling embedded corundum and spinel crystals out of the marble at An Phu. Dudley Blauwet photo.**

Figure 3. **The view from the An Phu workings. Dudley Blauwet photo.**

Figure 4. **Miners' shelter perched precariously by the workings. Dudley Blauwet photo.**

had utterly blackened teeth. They appeared to be coated with something, but with no English spoken here, I was unable to ask. (Huyen later told me that the sticky black coating was derived from a plant and was used to prevent tooth decay.) My guide spoke to them for a minute, and I removed my pullover, preparing to be warmed up on a hard climb. He removed his jacket and I helped him to mount it on the outside of my full pack. He grunted as he slung the pack onto his back and I showed him that it had two straps so that he could evenly balance the weight.

We took off on a single dirt trail, worn into the ground by water buffalo and human feet, and very soon veered left and he pointed with an exclamation. There was the An Phu mine! Almost an entire hillside had been worked, about 200 meters across and about 250 to 300 meters in elevation. The incredibly white marble scars stood in stark contrast to the weathered, dark gray karst formations and lush, subtropical jungle foliage. I was thrilled, but also wondered if I would be able to reach the top, where the miners would most likely be currently working, as it appeared to be very, very steep.

Shortly thereafter, we met two miners coming down the trail. An enquiry produced a group of lavender spinel crystals, in white marble, newly extracted. I asked the price and after receiving it on a calculator made a counter offer. It was not acceptable to them, but I indicated that I wanted to climb up to the mine and then look at the piece when I had returned to the village. (I again learned a

Figure 5. **Ruby corundum crystal, 3.9 cm, from An Phu, partially freed from enclosing marble. Dudley Blauwet specimen; Wendell Wilson photo.**

lesson in that I should have bought the piece and carried it with me, because when I returned to An Phu village the piece and the owners were nowhere to be found.)

The path entered into thicker vegetation and wound back and forth, and eventually joined a stream bed with intermittent flowing water. It was a bit slippery on the wet rocks, and the trail started to move up in elevation. My guide started to pant and perspire and stopped for a breather. I felt fine, and he noticed that, and motioned for me to take the heavy backpack, considering that I was apparently in better shape than he was (true enough—I had raced a hard half-marathon in Angkor Wat in Cambodia only five days before).

The trail steepened further, and was several meters wide and shrouded by thick growths of bamboo. Chung suddenly stopped by a small pool with a flat disk-shaped wicker basket lying next to it, and bent down and picked up a small piece of gem spinel, purplish blue and transparent, and a very small ruby fragment. Someone had been washing these gem gravels very recently. I pocketed the two samples and we continued upward, eventually emerging at a small cluster of primitive huts that appeared to be the mine's base camp. There were about 20 people milling around the dozen or so dwellings, including several who were picking very small pieces of pink-red corundum rough out of a small pile of alluvium identical to the material that we had seen by the pool side. They were depositing their selection into a small, dirty red plastic cup. Chung joked with several older women in the settlement, and teased one of them that I was going to take her photograph, and she turned her back on us and retreated into a bamboo hut with the menfolk chuckling at her.

The encampment was located on the last area of relatively flat ground before the trail climbed directly up the steep karst rock. I was intimidated by the steepness, but once I tackled the problem, it was relatively easy in that the undulating karst surface had innumerable handholds and footholds, and I never felt threatened by a fall. We seemed to be traveling as much vertically as horizontally, sticking to the right side of the worked area. (The ridge appeared to be running roughly north and south with the east face being worked. The steamy haze had blocked out the sun so it was difficult to tell directions.)

In places a small tree trunk with chopped handholds had been laid across the numerous deep pits typically found in these karst formations. Due to the heavy foliage, we were not able to judge our progress very often, but periodically a dull blast from a small dynamite charge could be heard from a bit above us, so we knew that we were nearing the top. I was thinking about the climb down already, and the fact that this may be the only time in my life that I would visit the site.

Finally a bright blue tarp appeared through the thinning trees, and I knew we were near the upper right side of mine that had been visible from far below. We emerged feeling relieved that the climb was over and I was happy to add one more difficult-to-reach mineral collecting site to my résumé.

According to PhamVan Long *et al.* (2004), the ruby, sapphire, and spinel deposits of the Luc Yen region, "are set in moderate to high-temperature recrystallized marble units of Upper Proterozoic-lower Cambrian age in the eastern side of the Red River shear zone of the Lo Gam tectonic zone." These authors, as well as Hoang Quang *et al.* (1999) and Garnier *et al.* (2003), mention that the primary ruby occurs at An Phu as disseminated crystals within

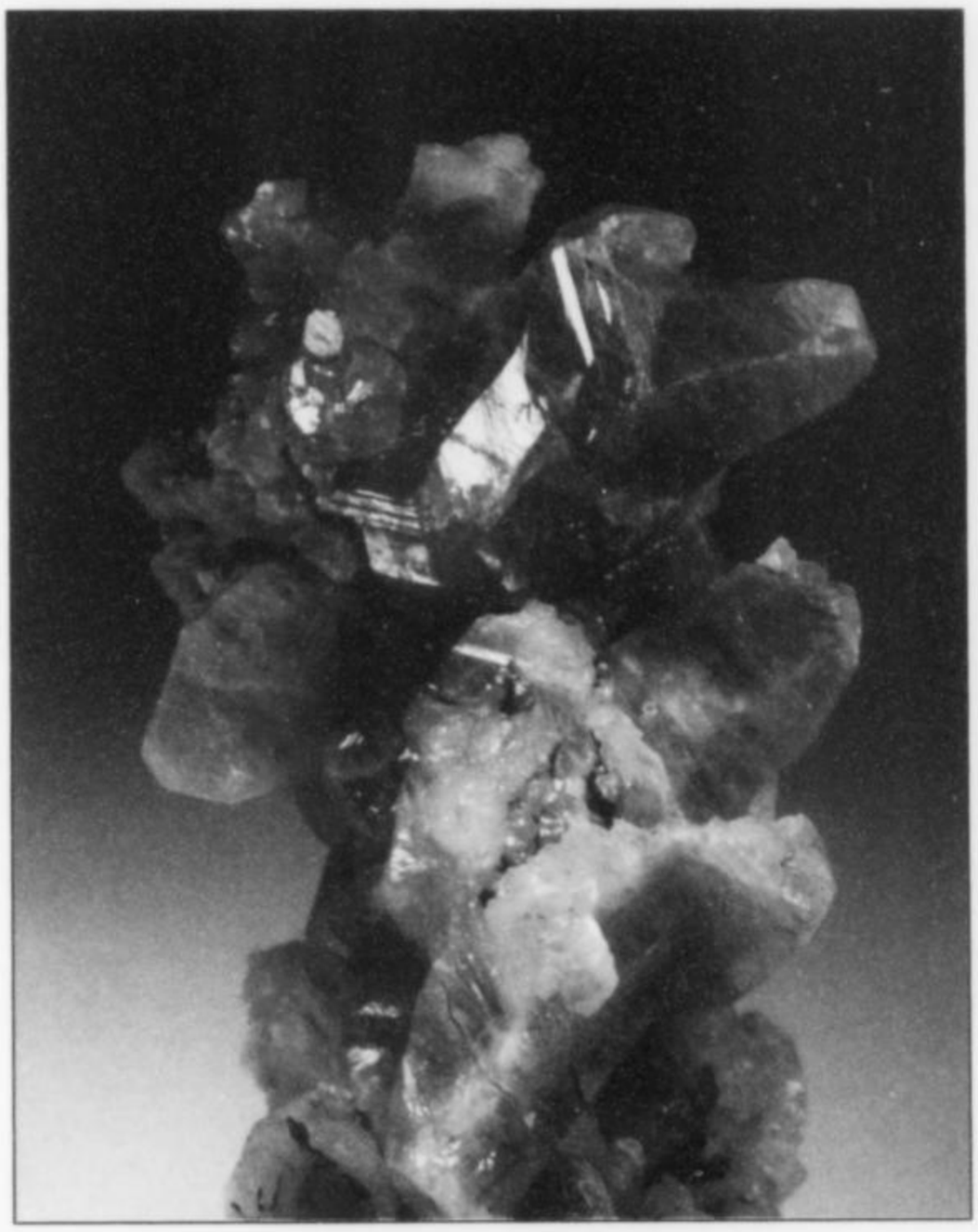
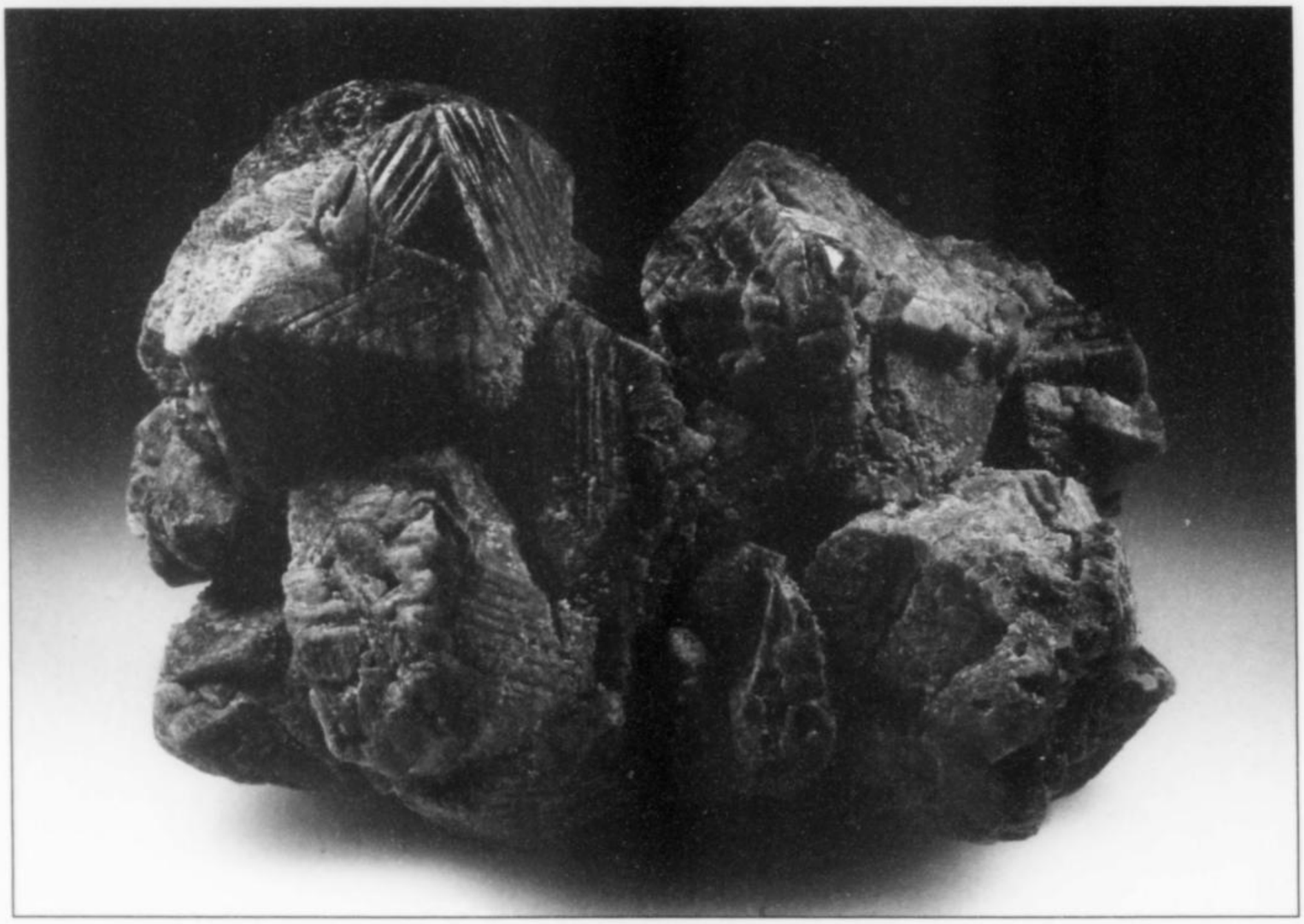


Figure 6. **Corundum crystal cluster, 2.5 cm wide, from An Phu. Dudley Blauwet specimen; Wendell Wilson photo.**

Figure 7. **Ruby corundum crystal cluster, 6 cm, from An Phu. Dudley Blauwet specimen; Wendell Wilson photo.**

Figure 8. **Large cluster of purple spinel crystals, 18 cm across and weighing 2.5 kg (over 5 pounds), from An Phu. Dudley Blauwet specimen; Wendell Wilson photo.**



marbles with phlogopite, dravite, margarite, pyrite, rutile, graphite and edenite as accessory minerals. On the specimens that I had examined over the course of the trip, I noticed all of the above species except for graphite. Some specimens of pinkish red ruby in marble with small brown phlogopite, pyrite and edenite crystals are virtually indistinguishable from the specimens found at Ganesh in Hunza in the Northern Areas of Pakistan, which I visited in November of 2003. From that locality the amphibole that was analyzed by Frank Hawthorne turned out to be a fluorine-rich pargasite. The edenite from this Vietnam local looks virtually identical in color, luster, and crystal form, although the crystals are generally somewhat larger.

I was offered one specimen with eight to ten crystals of this pale, lime-green amphibole in marble, where all of the crystals are about 2 by 2.5 cm. Unfortunately, the locals thought the specimen was peridot and were asking a peridot price. This, along with the fact that the 10 kg of marble matrix was a problem for transport, kept me from buying the piece. Lying in the upper camp at the mine was a specimen with ruby and a roughly crystallized, brownish orange mineral that had individual portions of over 3 cm. It appeared to be a member of the humite group. Once again, this newly extracted specimen was on a marble matrix of over 15 kg, and I did not want to have to carry it down for further analysis. I was offered single translucent crystals of dravite to 3 cm that had been removed from the host marble and the few crystals of pyrite that I saw embedded in the marble were less than 1.5 cm.

The spinel from this mine ranges in color from a pale lavender to a medium blue-purple, to dark purple, some in classic octahedron

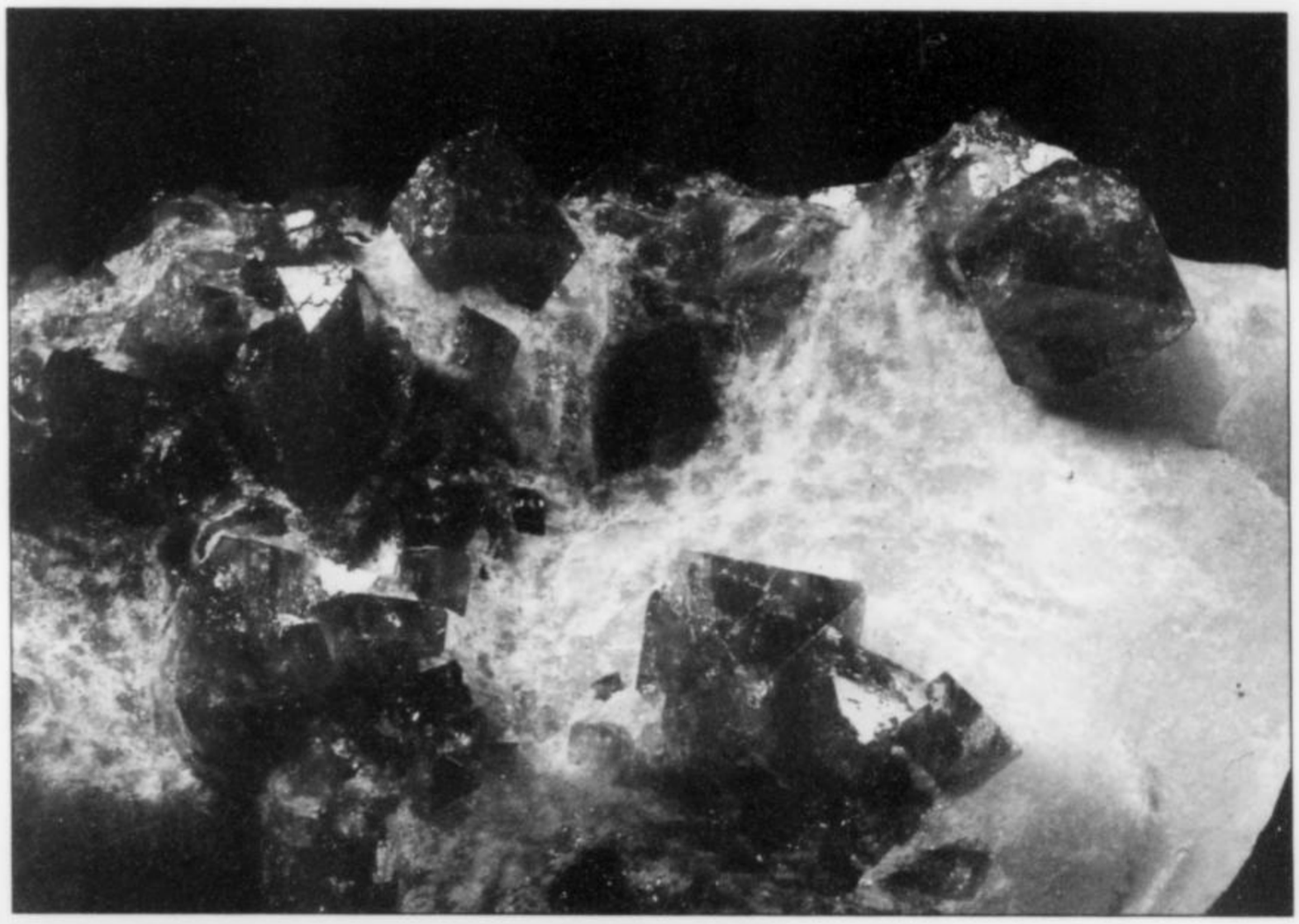


Figure 9. **Purple spinel crystals to 2.2 cm on edge, in white marble, from An Phu. Dudley Blauwet specimen; Wendell Wilson photo.**

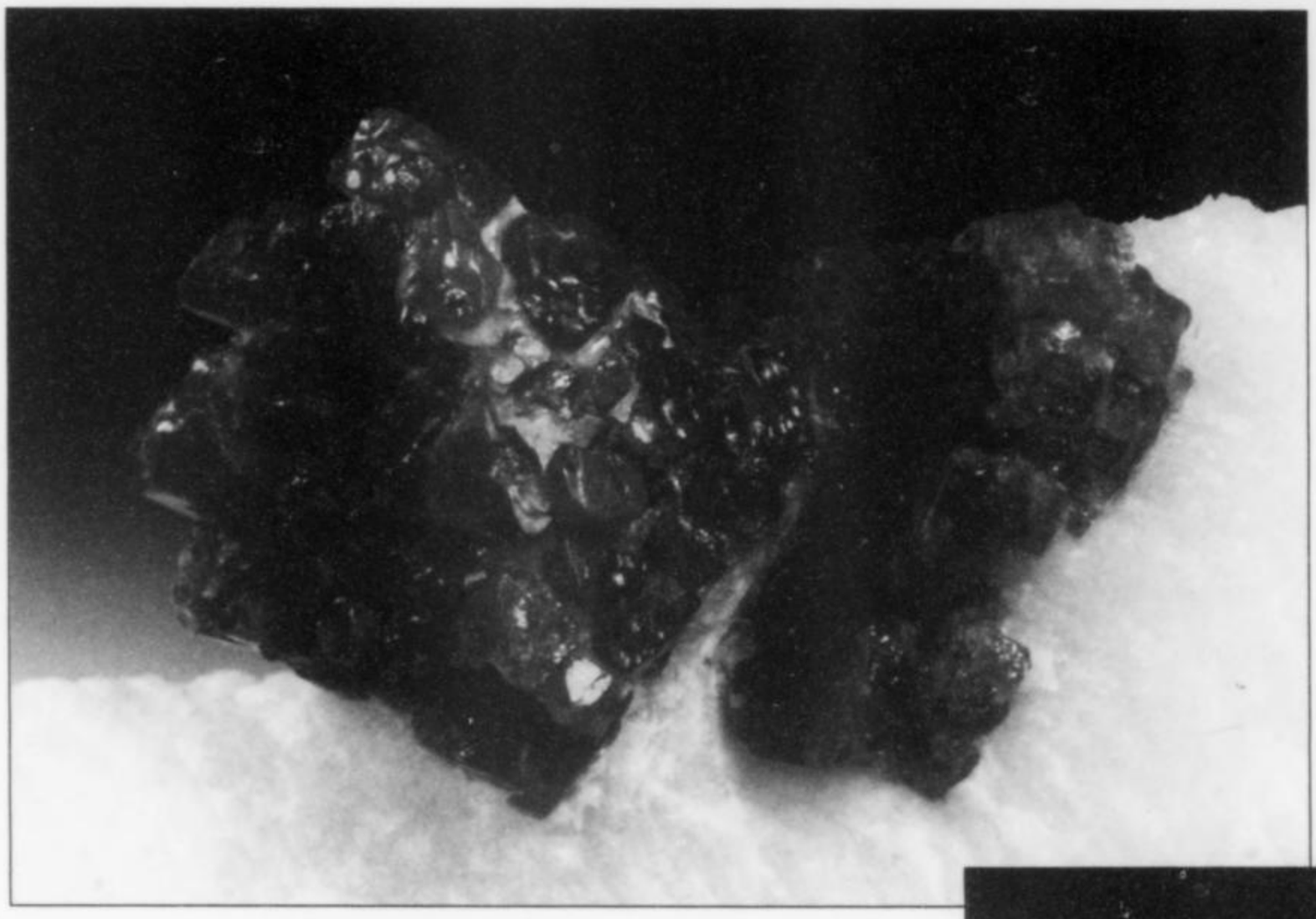
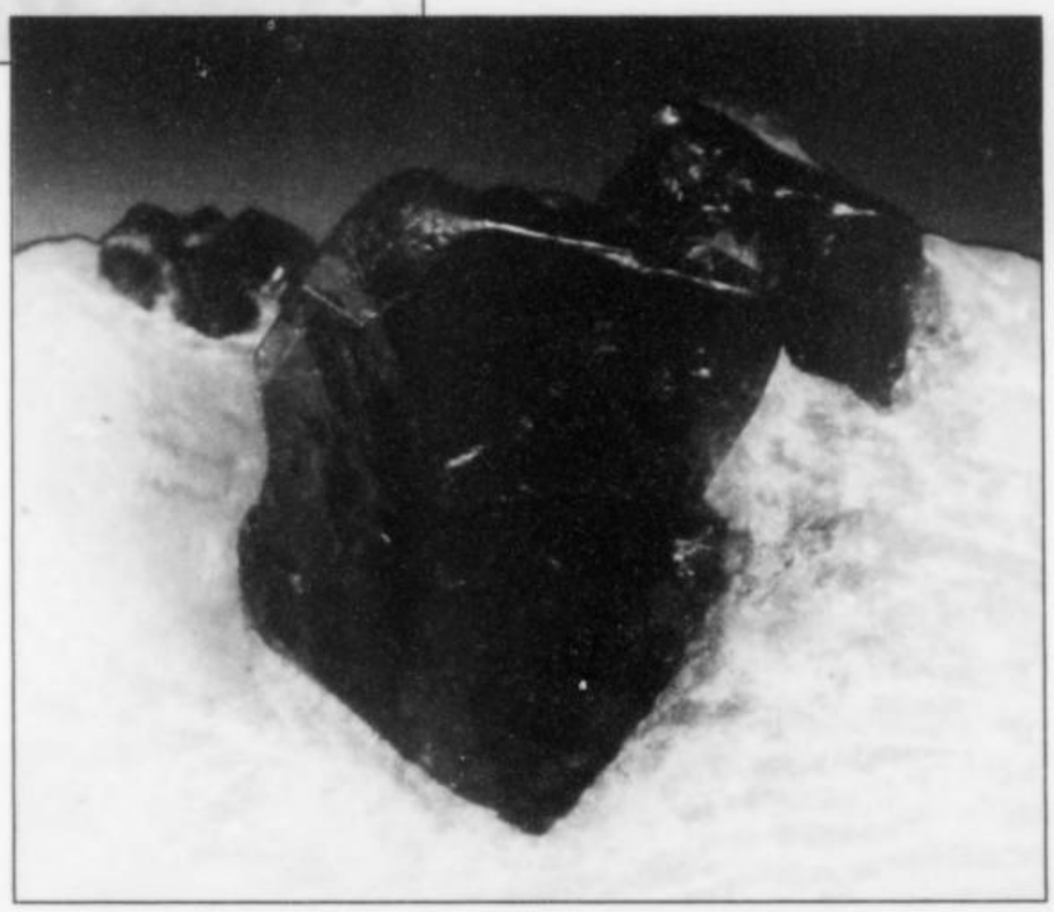


Figure 10. **Large composite crystals of red spinel in parallel growth, to 4 cm, on marble matrix, from An Phu. Dudley Blauwet specimen; Wendell Wilson photo.**

Figure 11. **Red spinel crystals to 3.1 cm on an edge, partially embedded in white marble, from An Phu. Dudley Blauwet specimen; Wendell Wilson photo.**



shapes, and others showing complex twinning. There were also the pinkish to pinkish brown varieties often containing maroonish hues. The rarest and most desirable is the bright "Burmese" red, of which I was fortunate to obtain a few excellent samples. I also purchased several sapphire crystals from this locality; they are medium to pale blue, very slightly stream-rounded, hexagonal bipyramids. The rubies are also generally hexagonal bipyramids, although I purchased one very sharp, red, flattened tabular crystal. Most of the single crystals that I purchased are a fine red with a nice luster and no alluvial damage. The matrix specimens are generally a pink-red and the largest is a hexagonal bipyramid measuring over 4 cm. I saw several ruby crystals to about 5 cm in matrix, but the crystal shape was not so good, so I passed.

The locals claim that the French removed large amounts of mineral wealth from the north of Vietnam during the colonial days of the late 19th century, until they were ousted after losing the decisive, now-legendary battle at Dien Bien Phu, a few hundred

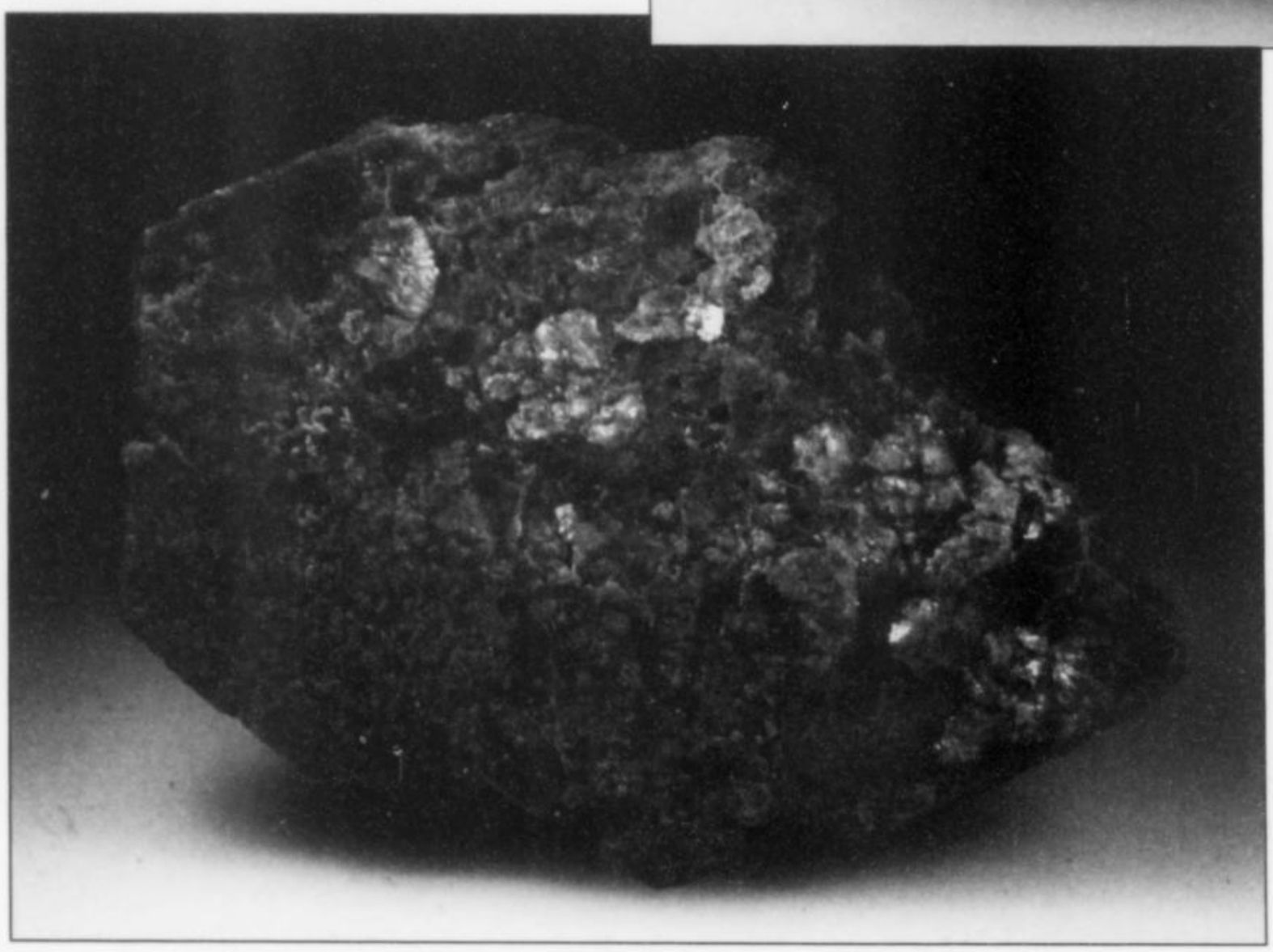
Figure 12. **A spinel-law twin of purple spinel, 6.3 cm, from An Phu. Dudley Blauwet specimen; Wendell Wilson photo.**

Figure 13. **A large, intergrown crystal of wine-red spinel 11 cm across, from An Phu. Dudley Blauwet specimen; Wendell Wilson photo.**

Figure 14. **A flattened spinel-law twin of dark red spinel, 17.8 cm across but only about 2 cm thick (the composition plane is parallel to the page surface), from An Phu. Dudley Blauwet specimen; Wendell Wilson photo.**

kilometers west of here, back in 1954. This area near the Red River is also only about 75 km from the Chinese border, and has been under Chinese rule or influence off and on since the 2nd century B.C., until as late as the mid-1940's. Some of the locals claim that the Chinese had marked off the major mineral deposits in the area, and the local Vietnamese knew where to look by finding these old markings.

Currently the overall production of corundum in the Luc Yen area is down from the peak years of the early 1990's through about 1995. The other active corundum site besides An Phu near Luc Yen is being worked by only a few miners and little has been found there recently. Both the locals and the large dealers in Hanoi all corroborated this fact. The An Phu mine started in the mid-1990's, according to Miss Ruby, and at this point about 90% of the hillside from the bottom to the top has been worked. Mining there is likely



to cease in the next several years unless the miners start to work farther to either side.

Extraction methods are relatively primitive and slow, with only one diesel-powered generator operating while I was there, and a few people drilling holes in the marble, with only sporadic blasting at one of about four separate areas currently being worked. One group was trying to use long pry bars and gravity to separate a 1 × 3-meter chunk of marble from the steep hillside. Some other people were using small hand chisels and hammers to manually work away the marble to expose the embedded crystals, while another group was attacking a 1 × 1-meter block of limestone with larger chisels and sledge hammers. An empty 10 × 20-cm pocket had already been exposed, and they were hoping to find a crystal-lined pocket somewhere within the block.

Some of the miners had set up living quarters at the top of the mine and had constructed rough wood and tarp dwellings on small flat excavated areas. There are two small water "reservoirs" that are about 2 × 4 meters, and consist of thick, blue plastic tarps draped over some rough wood railings and filled with about 3 cm of rain water. On the day that I visited there were about 20 people actively working on the upper stretch of the mine, and I had seen about 30 others in the mining camps below. Miss Ruby had told Huyen that about 60–70 people in total were actively involved in mining at the An Phu mine. I had loads of other questions to ask, but not a word of English was spoken here, and Huyen had returned to Hanoi, so I was left without a translator.

As we had seen earlier, there was placer mining being done here and apparently throughout the area, but this was done more for the recovery of gem rough than good crystals. By the time the alluvial specimens have reached these deposits, they have been tumbled to the point that all of the crystal faces have been lost. The gem-containing gravel concentrations occur both in karst pockets and alluvial fans, often in narrow valleys or depressions along seasonal streams draining into both the Chay and Red River systems.

THE MINH TIEN PEGMATITE

It was nearing 3:30 p.m., and time to return. I was not looking forward to the trip back down the steep trail, because climbing down can be more difficult than climbing upward. But the karst surface provided great handholds as before, and the initial steep section went relatively easily. Nevertheless, I kept wondering how the miners managed to move the 100-kg blocks down this steep mountainside to the shops in Luc Yen.

The second portion of the trail through the stream bed was actually worse, simply because of the wet rocks and slippery footing, and I fell completely on my backside once on the descent. I was happy to reach the hut where our Minsk was parked, and the inhabitants were hand-cranking some soya beans into a fresh watery tofu sludge. We mounted the Russian motorcycle and bounced back down the road, swerving around water buffalo being led home by their owners to the village. At one of the stream crossings, Chung tipped the bike over slightly and I soaked my left foot to above my ankle.

I arrived back in the village of An Phu, happy to have the worst of the trail behind me, and I was hoping to find more specimens to purchase, but none were offered to me. My backpack was removed from the Russian bike and I packed my specimens from the locked cabinet into my bag. Then Chung thoroughly strapped it onto another motor scooter that was owned by the man with whom I had stored my specimens. I slung my leg over the back of Chung's scooter and we left with the two other scooters, driven by Miss Ruby and the shop owner (whom I shall refer to as "Cutter"). I felt comfortable enough with these people that when the scooters became separated and my bag with my cameras disappeared from my sight, I did not become concerned.

An Phu is the locality name that has also been given for the pegmatitic tourmalines that have recently appeared in the United States, but that is wrong. The matrix rock at the An Phu mine is 100% marble, with no semblance of any pegmatite visible. The correct designation is actually the nearby town of Minh Tien, about 4 to 5 km from An Phu village on the dirt and concrete road leading back to Luc Yen.

I learned this as we were returning slowly down the road from the An Phu mine, and Chung pointed out a reddish brown scar on a hillside about 400 meters away from the village of Minh Tien as we passed through it. He kept pointing at the exposure and

Figure 15. **The gem market in Luc Yen village. Dudley Blauwet photo.**

Figure 16. **"Miss Ruby" and a showcase full of corundum-containing and spinel-containing marble blocks from An Phu, sculpted in the local fashion. Dudley Blauwet photo.**

repeating "*Minh Tien, Minh Tien*!" The following day when I was offered tourmaline, aquamarine, or green microcline crystals, I would point at them and if the owner said "An Phu," I would counter with "Minh Tien," and then would be rewarded with a broad smile and an indication that I had given the correct locality name, and the locals all seemed to be astounded by that. So the pegmatite minerals are, in fact from the Minh Tien mine, whereas the corundum and spinel are from the An Phu mine.

BACK TO LUC YEN

We pulled into Luc Yen as darkness fell and I was ready to retreat and rest my aching body at the hotel, but our trio of scooters all headed to Miss Ruby's house. I walked in with them and noticed that my spinel specimen had not been trimmed. When I pointed it out, they indicated that the third person on the scooters, the one bringing my backpack, would be the one to do it. I guessed then that he (Cutter) was the older brother-in-law to Miss Ruby.

They took the specimen to the furthest room in the back and showed me two electrical drills, each with a 3-inch-diameter diamond blade mounted on it. They brought in a lamp, set the specimen on a protective cloth and buzzed away, quickly cutting the marble along the black ink lines than I had drawn. It was finished in no time and looked great and transportable. I indicated that I wanted it smoothed from the abrupt sharp edges that had been left, and Cutter deftly reworked it in no time, turning the blade at a different angle than before. I realized then that he was the trimming expert in the village, and that almost all of the specimens in marble shown to me in Luc Yen that were from the An Phu mine had been reworked by this man. Once again I was reassured that I had made contact with one of the most important extended families involved in minerals in the area.

I looked at several other specimens and then indicated and found in my dictionary the word for "tomorrow" and had Chung drive me back to the hotel. Huyen called from Hanoi shortly after my return, again overly concerned about me, and I responded that the day had been incredibly productive and all of my hopes and dreams for this particular trip had been accomplished. I felt elated at such a good turn of events and sat down to a somewhat better meal of stir-fried tofu with local broccoli, along with rice and soup. I retired early, feeling tired from the climb and the cycle ride, and was awakened at 5:00 a.m. by the Voice of Vietnam.

Around 7 a.m. I walked down to the gem market once again. Two women dealers were there, but had mostly gemstones to show. They had an included ruby, but still a fine red, on which I made an offer. I looked at a few sapphires but they were a bit dark; I did not make an offer but did ask for location and they indicated that they were from a nearby village called Bai Da Lan, which agreed with what I had read in some gemstone articles about the area.

Once again the crowd started to swell around me and some people brought a short wooden table and placed it in front of me and gave me a small plastic stool to sit upon. And once again the cut ruby on which I had made an offer disappeared from sight and I lost a chance to buy it. In Vietnam it is so different from a lot of South Asia, where the dealers will relentlessly hound you to buy, buy, buy. In Luc Yen, if the deal is not reached in a few minutes, they put the specimen away or try to sell it to another under the assumption that you have lost interest.

There were a few new tourmalines and ruby crystals offered to me this second day, but nothing that was very overwhelming. Huyen had written out some translations for me, so I was able to shout out my offers in Vietnamese, which pleased the crowd. I continually cried "*Da't gua', da't gua*'" ("too expensive") and would get lots of smiles and a long response in Vietnamese explaining that it was not. It was all in good fun, and I and the crowd thoroughly enjoyed it.

Miss Ruby appeared with her sister-in-law in tow, who was an aggressive salesperson. Both of them wanted me to return to their house to look at their specimens, but I wanted to check the market

thoroughly. The two attractive women both helped me to settle some deals, acting as mediators.

About 9:00 a.m. I looked up to see that most of the crowd had quietly slipped away, so I packed my loup, calculator, flashlight and notebook and hopped on Chung's scooter to go the short distance to the family's house. The family again showed me some ruby and spinel samples, and I selected one well-crystallized ruby crystal over 4 cm in length, in the marble matrix typical of An Phu. I had the cutting expert reduce the matrix by over 90%.

Then the family produced a new matrix spinel, also from An Phu. The 2 to 2.5-cm individual crystals on this one are an aqua-blue to pale lavender in color, bunched and scattered on both the front and back side of a 50-cm column of marble. I turned the piece in various directions until I was satisfied that I could orient it properly after trimming and said, "Cut, cut, cut" in English. Everyone seemed to know the word or picked up on it, so that later when I marked the matrix with a pen or drew lines with my fingers, they would all exclaim "Cut, cut, cut!" I sealed the deal after many cries of "*Da't gua', da't gua*'" and having indicated by acting that the price was as high as an airplane, while my offer was down near the ground. The family took the bargaining good-naturedly, and would reply with long torrents of Vietnamese, of which the only thing that I understood was that at the mine the piece was bought expensively, and their cost was higher than my offer. We reached an agreement relatively quickly, and then they showed me several more pieces.

I passed on several relatively good rubies in marble, as one of the pieces did not have as sharp a crystal as I would have liked, and the second was a bit awkward and would have to be made into three or more pieces. Several other dealers showed up and one had a nice group of the edenite crystals that I mentioned previously. Finally the people that had purchased the 15-cm twinned spinel showed up and I offered them 10% over the price that I knew they had paid. But they wanted to double their money; I was stuck because by requesting to see the piece again, I revealed a strong interest. I raised my offer and could hardly get them to budge. The process continued for over 20 minutes, with me periodically discussing the price while viewing other specimens. We reached an impasse and they had only dropped the price about 10–15%. They finally started to head out the door, and I stopped them and reluctantly paid their final price. I had learned a valuable lesson in the business practices of Luc Yen: If you see a good piece, buy it then and don't let it get away, especially if the price is not unreasonable, as the locals consider a deal dead if it is not acted upon after 10 minutes.

BACK TO HANOI

The family finished sawing my pieces and a taxi driver pulled up to the home, patiently waiting for me to finish. The family had arranged the taxi, one of the few cars on the road here, which was not an easy feat because most people who come here (usually Indians and Taiwanese coming to purchase commercial marble) leave in the same taxi that had brought them up from Hanoi. I prepaid the driver a bit more than $100 (1,700,000 dong!) to cover the petrol and car rental for the seven-and-a-half-hour return to Hanoi. I had originally intended to go back by public bus, but the one direct bus to Hanoi had already left that morning at 5:45 a.m. I could have taken one to Yen Bai and then switched buses and then gone onward to Hanoi, but this process would have added untold hours to the journey. I was also hoping to begin typing this article for the *Mineralogical Record* on my laptop, and the bus ride may have been too bouncy. And lastly, there was the concern about the expensive specimens in my luggage and the risk that my computer might get stolen, because large public bus stands are usually havens of thieves and pickpockets.

After a series of warm goodbyes to my newly found friends, I left Luc Yen in the small Toyota taxi (via a different road than I had come in on) and within 5 km passed yet another karst hill where vast amounts of shattered white marble was visible. Since the driver spoke no English, and knew nothing about mining, I was not able to determine if this was the other nearby mine that people had mentioned or a different exhausted ruby and spinel mine, or perhaps simply a commercial marble mine.

We made relatively good time to Yen Bai and I thought that we would be in Hanoi earlier than expected. But shortly thereafter the driver indicated that he was tired and he pulled over and dropped the driver's seat back into a reclining position and snored away. I continued to type on the article, finding it far easier to do so in a stationary car. Unfortunately, the driver had not pulled very far off of the road and also had done so at the end of a long curve, so countless vehicles would come barreling down the road and honk at us as they whizzed past.

We started to move again after a half-hour nap for the driver and then made two more stops on the way. First we stopped at the driver's friend's tea house, where he drank the somewhat bitter green tea, while I wandered over to a place that served some iced coffee. I used my newly-learned Vietnamese to ask the price and pay for it. Then we made a 5 to 10-minute stop where the driver disappeared into a warehouse and emerged with what looked like an automotive part wrapped in newspaper. We pulled into the outskirts of Hanoi as dusk approached around 5:00 p.m., with the heavy gray overcast and smog that give this industrial area a very bleak, Soviet-style appearance.

I had left Hanoi via a different route and had no idea where we were. The driver continued for 20 minutes and pulled over and announced "Hanoi." I knew that, but I had to communicate to him that I wanted to get to the hotel. I named the old quarters and the nearby Hoan Kiem Lake (which I ran around every morning), but the driver apparently did not know Hanoi at all. I luckily found a hotel address card which he handed to a local, and there followed a long explanation with hand waves and nods, and my driver returned with a puzzled look on his face. He drove for 10 or 15 minutes through districts that I did not recognize, and then he stopped and asked for directions again. I insisted that we go to a very famous landmark, Hoan Kiem Lake, where I could find my way to my hotel, about five blocks distant from the edge of the lake.

Finally we reached the quaint old part of town where I had been staying, with its nearly thousand-year-old history. In the 13th century, 36 guilds had each established a street in which to sell their wares, and the street names continue to this day, such as "silk" street and "ceramic" street. Unfortunately each street's name changes every few blocks, and the maze of narrow streets, blind alleys, and one-ways made it all the more confusing. We drove endlessly, with me insisting that we go to the lake to find our bearings, and the driver doggedly trying to find my 100-meter-long street.

Finally we had gotten to within two blocks of my hotel, but every time we tried to reach the street, we would run into a one-way going in the wrong direction; the end of my journey started to become a very comical farce. Eventually the driver got it right, as I was becoming tempted to just leave the car and carry my belongings the last few meters. I was very glad to emerge from the car after an hour of driving in Hanoi and seven and a half hours since leaving Luc Yen.

I telephoned Huyen, who had already called Miss Ruby, enquiring when I had left and if I was well. I thanked her profusely as she continued to apologize for the one-day trip becoming a three-day adventure. I assured her that the trip could not have turned out

better. Everything that I wanted to do had been accomplished: I had visited the gem market in Luc Yen, bought enough specimens to cover the cost of my trip, traveled and climbed to the most productive mine in an exotic, remote, beautiful region and had taken some wonderful photographs. I had also met some very nice people, including one of the top extended families involved in mining, trimming and selling fine mineral specimens. A dream came true, another article was already started, and plans for a return trip to An Phu were already forming in my tired brain . . . And the road goes on forever . . .

ACKNOWLEDGMENTS

I would like to extend a special thanks to Huyen Nguyen, my charming Vietnamese hostess (and her American fiancé , Alex), who made my week stay in her native country most pleasurable. From finding me a good hotel and transportation, to taking me to some of the finest Vietnamese restaurants in Hanoi, she went way beyond the call of duty in helping out a person that she had met only once before in the United States. Her translation skills made my trip to the mine at An Phu a reality. Also special thanks to the "crew from An Phu": Miss Ruby, Chung and Cutter, and their respective spouses, who exuded such a warm welcome. Even though we were not able to communicate orally, they did so wonderfully with their actions: from giving me tea to slices of dragon fruit and pears, to taking me for a full tour of the An Phu mine, and even calling back to Hanoi to check up on me after I had left. Their kindness will not be forgotten.

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What's New in Minerals

Figure 1. **Sphalerite on amethyst, 3.3 cm across, from the Commodore mine, Creede, Mineral County, Colorado. Collector's Edge specimen; Jeff Scovil photo.**

Tucson Show 2006

by Tom Moore

[January 28–February 12]

Sometime during the early hotel-show period, we Tucsonans had our hundredth consecutive day without rainfall. Already in Arizona's back country there are forest fires, and although temperatures in town remained in the 60's and 70's one could spot by the roadsides some sad brownings and wrinklings, even of otherwise hardy-looking bearpaw and saguaro cacti. Amid organic nature's distress, however, the supply of fine minerals that was on view is best described (in the established cliché) as a "flood"—few major new discoveries were on hand, but the sense was still of a great ongoing abundance.

Marty Zinn's *Arizona Mineral and Fossil Show* again was held at the Smuggler's Inn, Clarion and InnSuites hotels (these were for mineral people: fossilists hung out largely at the Ramada). This multi-location hotel show will undergo some reshuffling for 2007, but this year it was still well-attended and flourishing as usual.

The *Executive Inn* show, once part of the Zinn enterprise but now under direct management of the hotel, was also worth a check-out. And out on the "funky row" (as I call it) of motel shows along I-10, the cruiser on foot could find, besides the odd interesting crystal specimen, anything lapidary, souvenirish, or arts-and-craftsish he may desire: my wife recommends particularly the Huichol artworks, with special attention to the polychrome crescent moons, lizards and snakes.

Dave Waisman's small, elite *Westward Look* show on the north edge of town has been operating for four years now, under the concept of showcasing just 25 or so high-end dealers who set up in hotel rooms in a series of alcoves in a resort complex, amid gorgeous desert scenery. The show also offers a special exhibit each year (this time it was Irv Brown's super collection of pegmatite minerals), and one evening of socializing and lectures in one of the hotel's conference rooms (this year, Steve Smale and Bryan Lees gave slide talks on their favorite mineral specimens and major specimen-mining projects respectively). Dave Waisman plans to keep the Westward Look show at its present size, for he thinks, justifiably in my view, that an ideal balance between an "elite" atmosphere, an open-to-all display of mineral beauty, and an educational-social agenda, has been achieved. But plan carefully for this one, so you don't miss it: Westward Look goes on for only five days in the very middle of Showtime, and its venue is located pretty far from the general center of gravity.

And finally there is the accustomed climax at the Tucson Convention Center, the "main show," where *Minerals of Canada* was the theme this year. All of these productions and more are in general what Tucsonans mean by "The Show" (or, as they all somewhat annoyingly say, "The Gem Show"); and surely the whole thing is, as is often said of the Grand Canyon, an experience which everyone owes him or herself, at least once in a lifetime.

And now to set out on the what's-new tour . . .

The Commodore mine at Creede, Colorado has long been known for producing what are probably Colorado's best **sphalerite** specimens. The Tucson Show of 2002 saw a generous offering of an old hoard of sphalerite/galena/chalcopyrite specimens which had been dug in the mine in the 1960's (see vol. 33, no. 3, p. 262), and in 2004, Robert Stoufer of *Colorado Minerals* (www.Colorado Minerals.com), in partnership with the *Collector's Edge* specimen-mining crew, took out about 1000 fine new specimens showing sphalerite crystals to 5 cm which are lustrous and gemmy yellow-brown, as in Commodore mine specimens past. These crystals share matrix space with drusy **amethyst** and with lustrous, compound **galena** cubes to 1 cm that are alive with bright, sharp right angles. In a room at the InnSuites, *Colorado Minerals* offered very attractive specimens of this "combination" material, ranging in size

from small miniature to a doorstopping 90 cm (three feet!) across.

In the InnSuites room of *Great Basin Minerals* (scottkleine@greatbasinminerals.com), Scott Kleine showed me an interesting little stash of **copper** specimens which he was marketing now for the first time, although they were found in 1960, during reclamation work at the old Rio Tinto mine, Mountain City district, Elko County, Nevada. About 50 sparkling thumbnails and toenails consist of branching groups of copper microcrystals, most of them nicely copper-colored but a few tinted a lush deep red by coatings of cuprite. A few of the groups rest on gray-white quartzite, or have shards of it in their innards.

We have heard before (see vol. 31, no. 3, p. 276) of good specimens of the very rare zeolite **barrerite** from its only significant worldwide locality—a beachside basalt exposure called the Rocky Pass claim, Kuiu Island, Alaska. At the Executive Inn show, Mary Toth of *Alaska Garnet Mines* (www.alaskagarnetmines.com) was presiding over a large tablefull of barrerite specimens (and many tables full of Wrangell almandine specimens too). Mary explained that she and her husband Istvan have been working the Rocky Pass claim intermittently since 1982, taking out good supplies of barrerite every time. Barrerite crystals look just like stilbite: bladed, wedge-terminated, pinched in their middles in many cases, and pearly white; they reach 5 cm, and most sit edgewise, singly or in bundles, on matrix of weathered gray basalt. The 100 or so matrix pieces offered this year by the Toths range from thumbnail size to 25 cm across.

Amethyst from Jackson's Crossroads, Wilkes County, Georgia was one of the major excitements at last year's Tucson Show, and since then the occurrence has been featured in the *Mineralogical Record* (see vol. 36, no. 6). At Tucson 2006, good supplies of this gorgeous amethyst could be found at the Smuggler's Inn with Rodney Moore of *Dixie Euhedrals* (www.dixieeuhedrals.net), and at the Clarion Inn and the Main Show with trusty Terry Ledford of *Mountain Gems and Minerals* (www.ledfordminerals.com). Terry, now working in partnership with Paul Geffner, hit a very large amethyst pocket in September 2005 and another, even larger pocket on New Year's Day, 2006; the latter, dubbed the "Celebration Pocket," yielded about 120 fine specimens. Shoppers at Tucson 2006 were offered brilliantly lustrous amethyst as sharp, fat, single crystals in lengths from 3 to 20 cm and as clusters to 20 × 20 × 25 cm; the crystals are zoned from milky white to colorless-transparent, to various intensities of gemmy purple. Nor can I neglect to mention that Terry Ledford had even *more* show-stopping **spodumene** (*hiddenite*) crystals newly unearthed at the Adams Farm, Hiddenite, North Carolina, including one large, beautifully terminated gem crystal that surpasses the well-known crystals owned by the Harvard Mineralogical Museum and the Cranbrook Institute.

At the Clarion, Dennis Beals of *XTAL* (dbxtal@aol.com) also had some fine new **amethyst** specimens—in fact, he had what seemed like thousands of them, from thumbnail to large-cabinet size, spread profligately all over the room. Being from the renowned Las Vigas, Veracruz, Mexico locality, these hardly represent "new" material, but any such large new specimen-hoard of such superb amethyst commands attention. If you need to see what I mean by "superb," check out the pictures (and don't skip the text!) in the Las Vigas article in vol. 34 no. 6 ("Mexico IV").

This was, as already mentioned, the Year of Canada at the Main Show, with plenty of great display cases on the theme, some of these of course including specimens from the Jeffrey mine, Asbestos, Quebec. In spring 2003 the last commercial operations ceased at the great asbestos mine, but local collectors (bless their intrepid hearts) have been busy ever since. In September 2005 a huge pocket was breached, presumably in the deposit's rodingite vein area, where nearly all the good grossulars, vesuvianites and diopsides have been found in the past. About 1000 first-class **vesuvianite/diopside** specimens were recovered, of which Jordi Fabre obtained an elite few, most of which he had sold before Tucson. Highly lustrous, color-zoned (pale green and purplish pink) manganoan vesuvianite crystals to 2.5 cm form flashing clusters, and bladed, transparent, pale green diopside crystals, also highly lustrous, to 2 cm rest delicately on these; some specimens show little gatherings of wing-like diopside blades in hollows in the pastel vesuvianite terrains. A few specimens with wafer-thin, gemmy, pale green diopside crystals were also found in the Jeffrey mine in 2003, and showed up at the next Tucson Show (see my report in vol. 35, no. 3), but *their* associated vesuvianite is the emerald-green, chromian kind.

At the Main Show, two of my favorite Canadians, Frank and Wendy Melanson of *Hawthorneden*, as well as another good northern chum, Rod Tyson of *Tyson's Minerals*, had dozens of small, pretty specimens from a new **fluorite** discovery in Ontario. In the fall of 2005, Frank remembered having found some nice greenish blue fluorite crystals in a roadcut on Highway 7 near the town of Deloro, Ontario in the mid-1970's, and so he and George Thompson went back, found a newly widened roadcut, and dug out about 100 more fluorite specimens of thumbnail and small-miniature dimensions; the Melansons later split this take with Rod Tyson. The fluorite crystals are cuboctahedrons (and yes, according to the A.G.I.'s *Glossary of Geology*, that is the officially accepted morphological term rather than "cubo-octahedron"), the two forms being developed about equally. The crystals are not very lustrous but they are translucent and irregularly zoned in rich shades of green and blue-purple. Best of all, they change color with changing illumination, being more green in incandescent light, and more blue in sunlight. These little specimens (ranging in price from $20 to $40 at both dealerships) come in single, loose crystals and in clusters of two or three, without matrix.

Also this year the Melansons of *Hawthorneden* had a selection of nice small specimens of **tremolite** and **diopside** from a roadcut on Grace Lake Road, a short distance north of Wilberforce, Ontario; most of these were collected in 1985, but more specimens have been found intermittently up to the present day. The tremolite comes as sharp, lustrous, translucent gray-green prisms to 5 cm; the diopside forms clean-looking, lustrous, wedge-terminated short prisms, translucent dark gray-green, to 10 cm. The Melansons also had **tremolite** specimens which, in the years around 1970, had been found in a railroad cut west of Wilberforce: thin prisms, to 4 cm, of a softly lustrous, purplish gray-green. Then there are the Melansons' newly collected specimens of **ilmenite** from a carbonatite outcrop on the property of the old Faraday mine (later called the Madawaska mine) in Ontario: slightly rough, thick-tabular, submetallic black crystals to 4 cm in pinkish calcite matrix. And at the same dealership there was **magnetite** as black, slightly rough octahedrons to an amazing 15 cm on edge, with adhering phlogopite patches, also from the old Faraday mine; one of these specimens is a stately 25 × 25-cm cluster of magnetite crystals.

John Medici of Ohio (jmedici@cas.org), normally a midwestern-U.S., limestone-quarry sort of guy, has likewise been drawn to Ontario this past year, to see what he could find at some "classic" localities generally (and in most cases incorrectly) thought to be exhausted. Sure enough, from the old biotite and uranium workings known as the Silver Crater mine, near Bancroft, he dug out **betafite** crystals by the dozen, some equaling the best from the 1950's and 1960's for sharpness and general class. The loose, opaque medium-brown, cuboctahedral betafite crystals John had at the Main Show range from 2 to 4 cm, and in one specimen from this past year, his great prize, a betafite crystal *15 cm* across is about two-thirds

Figure 2. **Rhodochrosite, 7 cm, from the Manuelita mine, Morococha, Junin, Peru. Jordi Fabre specimen; Jeff Scovil photo.**

exposed in a hunk of buff-colored matrix. John also resurrected sharp **thorite** crystals to 5 cm from the Kemp prospect, Cardiff, Ontario; dark green, very crisp **edenite** crystals to 15 cm from the Cardiff mine area, Cardiff Township; equant, pinkish **nepheline** crystals to 20 cm from Davis Hill, Bancroft . . . and, yes, even more. Of course, these Ontario items are generally not glamorous minerals, but all described above are superb representatives of their species, and seeing them all was enlightening and satisfying—and helped a lot to set one up for the many outstanding display cases on the Canadian theme.

Time now, though, to head south—way south—for an extended visit to South America, beginning with some stops in Peru. A discovery of flashy and very attractive **barite** specimens was made last spring at a new locality, a surface prospect at Cerro Warihuyn, Miraflores Huamalias, Huanuco; I say "last spring" because Luis Burillo, the dealer who had the most and the best in Tucson, picked up his supply at Ste.-Marie-aux-Mines in June 2005. In specimens ranging in size from 4 to 10 cm, brilliantly lustrous, transparent, thin-tabular barite crystals to 5 cm sit up edgewise, singly and in subparallel to jumbled groups, on matrix of brownish sandstone; a few matrix areas are covered by druses of little curved rhombs of pink dolomite. Most of the barite crystals are a very pale blue or blue-green, but a minority are pale yellow. Several dealers around the show had selections of these specimens, but the top honors go to Luis Burillo (Urb. Pinar Canal, 24, 50007 Zaragoza, Spain), who offered about 50 pieces, both in the Clarion and at the Main Show.

Jordi Fabre's bright, spacious and welcoming room just off the Clarion lobby held about 20 newly dug specimens of **rhodochrosite** from the Manuelita mine, Morococha, Junin, Peru—an "old" locality noted in the 2003 "Peru Update" by Jaroslav Hyršl and Zolina Rosales (vol. 34, no. 3) as having produced beautiful rhodochrosites "for several years." This newest lot, recovered in October 2005, consists of crystal groups measuring from 5 × 5 to 15 × 15 cm, most of them on matrix of sulfide-rich, mottled gray rock. The sharp, opaque, bright pink rhombohedral crystals of rhodochrosite reach 3 cm on edge; small, hollow quartz casts after rhodochrosite are present on a few of the specimens.

The motel shows along I-10 occasionally harbor noteworthy mineral specimens among the quartz crystal boulders, jade hippopotami, Indian lingams and such—thus part of the fun of prowling here is to seek "hidden" treasures. At the Days Inn, the *Peruvian Opals & Minerals* dealership (www.thelilymine.com) had just such a surprise: a few small shelves full of modest **gold** specimens from the Lily copper mine, Pisco Province, Ica Department, Peru. This locality has been known up to now for its beautiful groups of transparent, colorless gypsum crystals included by atacamite, paratacamite and malachite. But, according to Felix Rocha, co-owner of the dealership, high worldwide copper prices have recently sparked a commercial revival of the Lily mine, and the gold specimens, a first for the locality, were recovered about a year ago. Most are strictly of micromount interest, but a few specimens of thumbnail dimensions show bright, deep yellow "nests" of wire gold and arborescent crystal groups to 1.5 cm resting in white, iron oxide-stained quartz matrix. One exceptional specimen is a loose, flattened group of leafy gold crystals measuring 2.5 × 2.5 cm.

In the March-April article on the Siglo XX mine, Llallagua, Bolivia, the authors (Jaroslav Hyršl and Alfredo Petrov) mention recent rediscoveries of **paravauxite** and **sigloite** in the mine's prolific Contacto vein. It was there that fine, classic specimens of these rare phosphates (including the great paravauxite shown on the cover of that issue) were first brought into the world by Samuel Gordon and Mark Chance Bandy many decades ago. Well, some excellent paravauxite and sigloite specimens from recent finds were offered on Rob Lavinsky's website (www.irocks.com) a few months ago, and at Tucson, Brian Kosnar of *Mineral Classics* (www.Minclassics.com) had about 25 specimens, from loose crystal clusters of thumbnail size to matrix plates 25 cm across, on view in a Westward Look room and at a booth at the Main Show. The matrix is thickly laid with pale greenish white, parallel bundles of paravauxite crystals ("pinwheels," if you will, like the one in the cover photo) to 3 cm, and/or with splintery pale yellow, flat-lying crystals of sigloite to about 1 cm. A few other matrix pieces are studded with pretty, sparkling, dark brown spheres composed of microcrystals of **childrenite**. Other rare phosphate species are probably present as well. Look hard at the photos in the recent article, and don't give up on acquiring one of these distinctive, comes-from-only-one-place-on-the-planet items.

In a similar vein (so to speak), I reported last year from Tucson on a new strike of superb specimens of andorite at the world's best locality for *that* species, i.e. the long-familiar San José mine,

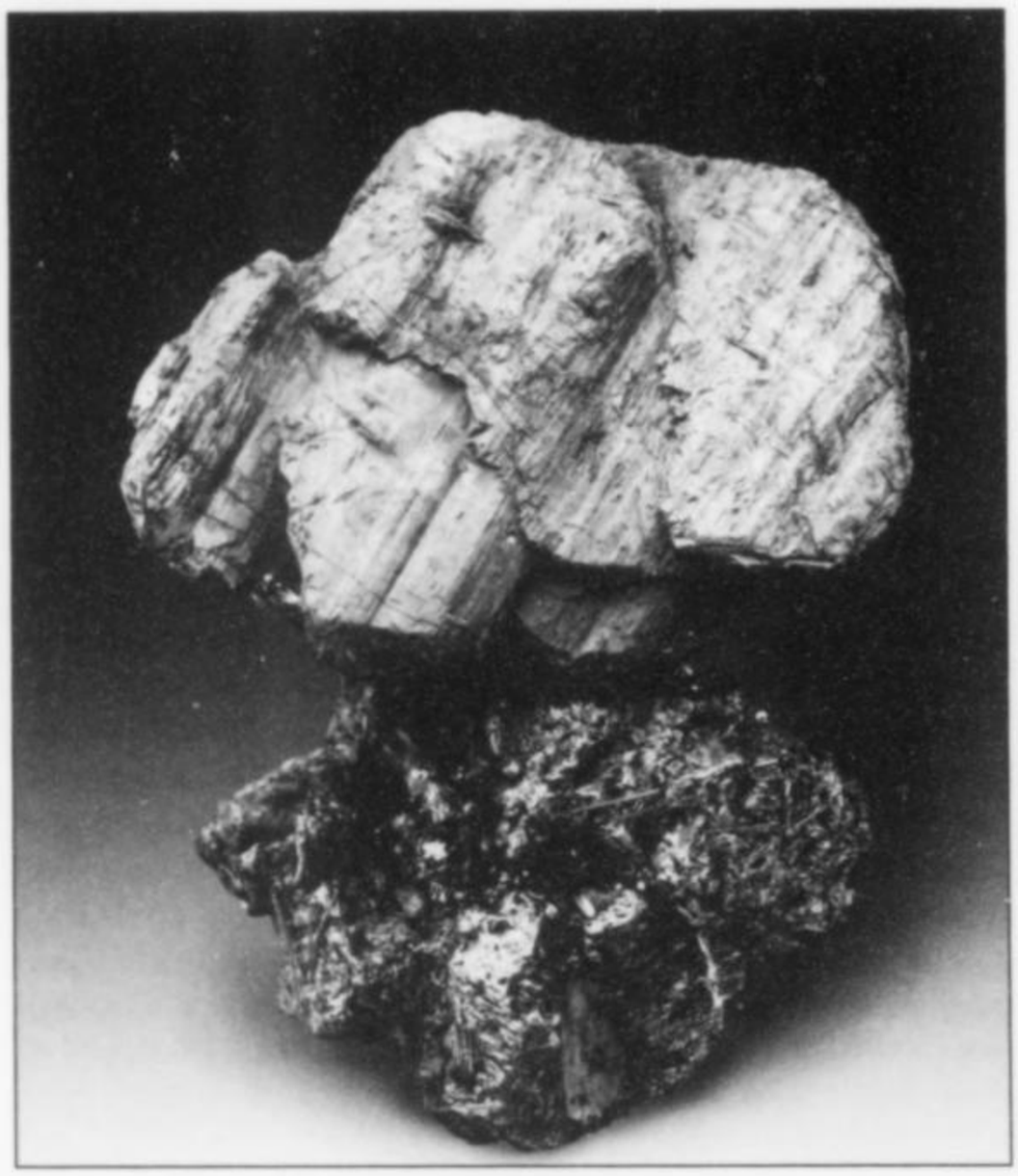

Figure 3. **Andorite on stannite, 3.6 cm, from Oruro, Bolivia. Mike Bergmann specimen; Jeff Scovil photo.**

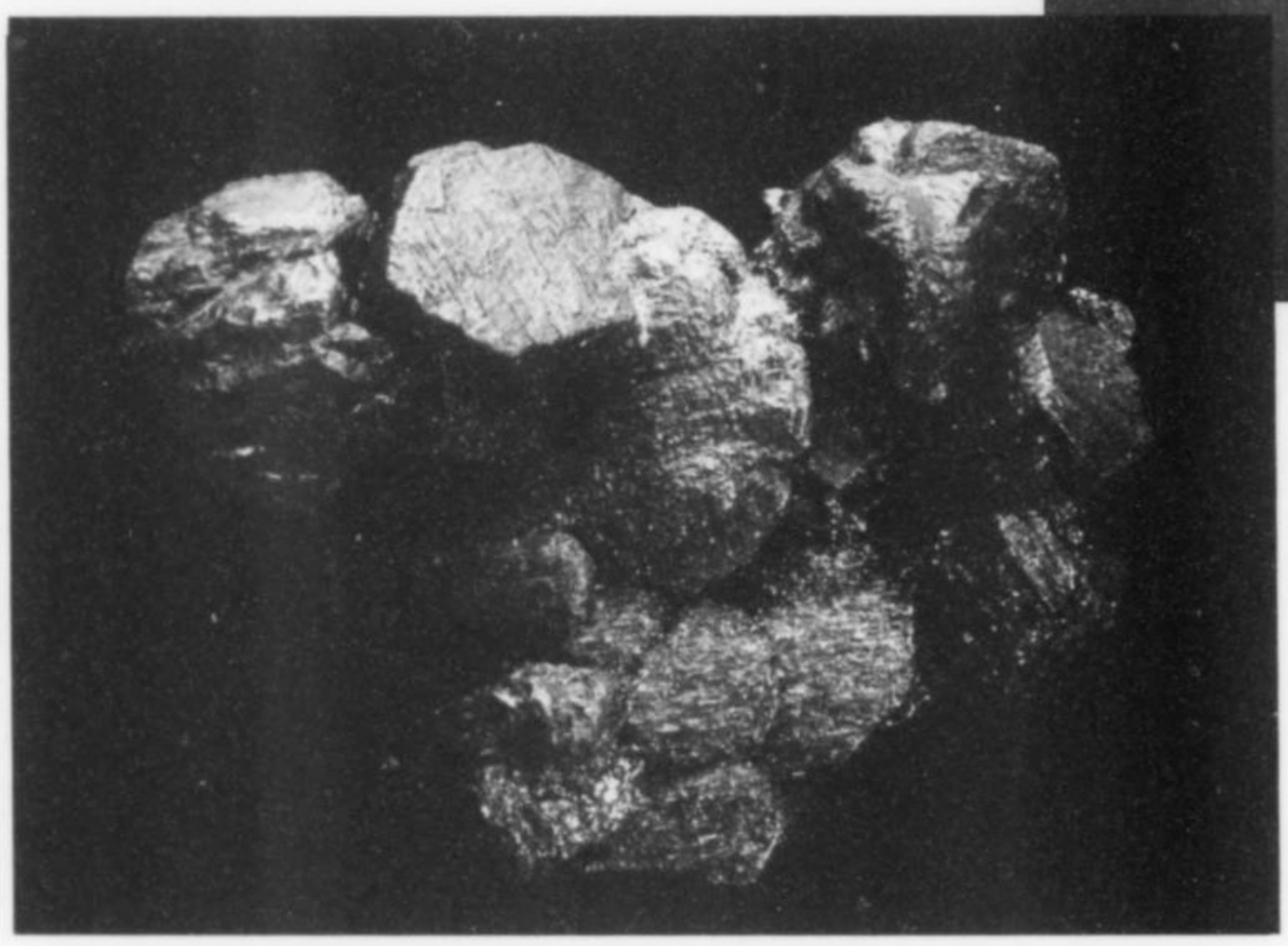

Figure 4. **Stannite crystal cluster with andorite, 5.8 cm, from Oruro, Bolivia. Jordi Fabre specimen; Jeff Scovil photo.**

Oruro, Bolivia. Actually (according to Alfredo Petrov), the San José and Itos "mines" are shaft workings which exploit the same rich silver orebody from opposite sides; thus these two well-known localities for world-class specimens of andorite, stannite, zinckenite and other sulfides and sulfosalts may perhaps overlap ambiguously in some places. Late in 2005 at San José/Itos, miners encountered a series of pockets which yielded small but fine specimens in which lenticular **andorite** crystals perch, like little ears, all over sharp, equant, twinned crystals of **stannite**; these specimens were found as floaters enclosed in acicular boulangerite, and liberated simply by blowing away the boulangerite "fluff." The gray andorite crystals reach 1 cm, and a few are blessed with a bright metallic luster. What is surprising is that some of the gray stannite twins are also quite lustrous and well-formed, and these reach 4.5 cm. Jaroslav Hyršl (in the Clarion) and Alfredo Petrov (in the Smuggler's Inn) both had fine thumbnails and miniatures, some showing numerous andorite crystals standing up on the stannite twins, some showing stannite alone. Pictured here is one exceptional miniature specimen, held by Mike Bergmann at the Westward Look, whereon

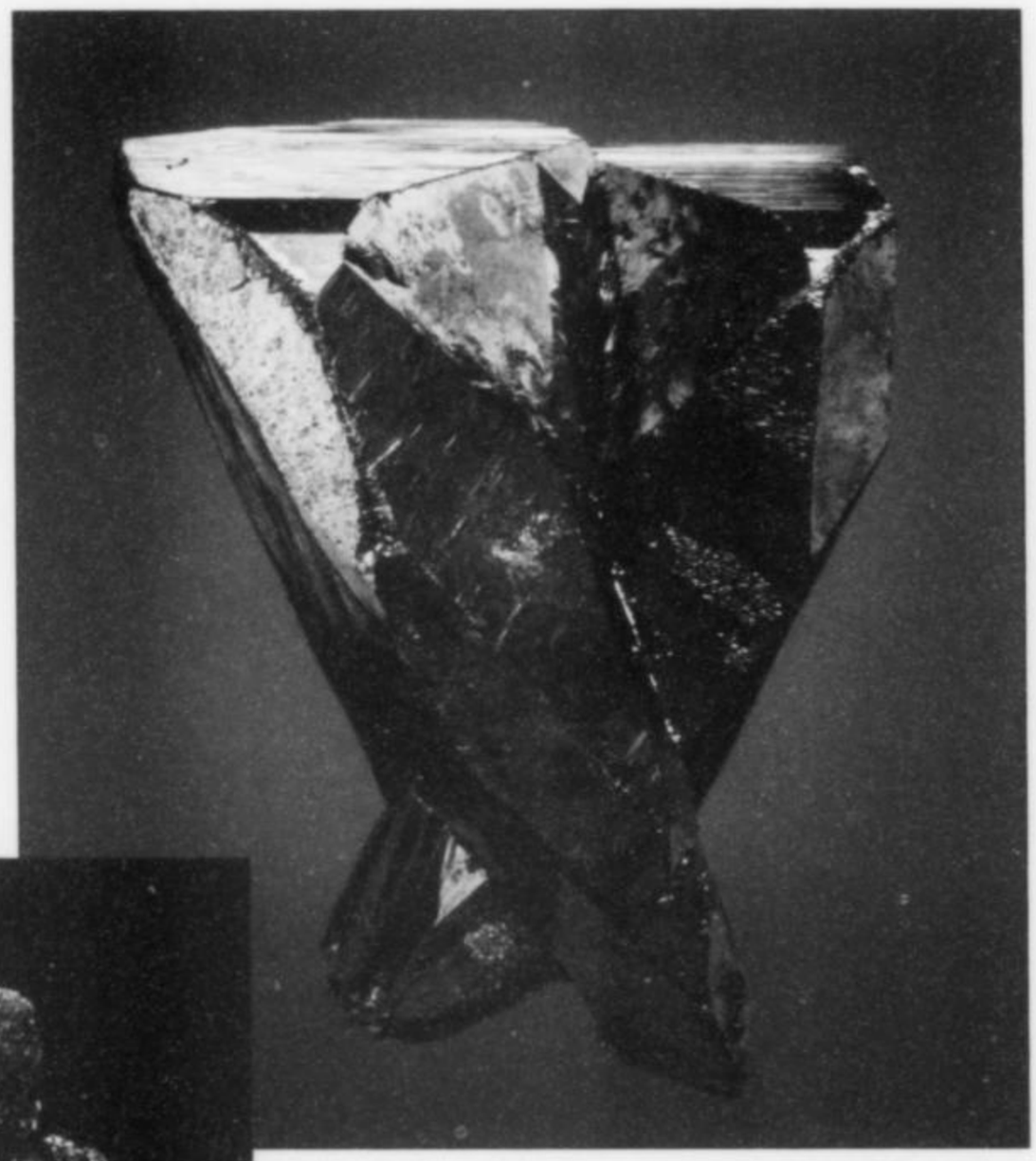

Figure 5. **Ferberite twin, 4.8 cm, from Tasna, Bolivia. Mike Bergmann specimen; Jeff Scovil photo.**

large, fine crystals of both species vie for the viewer's attention.

Yet another Bolivian follow-up from last year: at Tucson in 2005, Mike Bergmann dazzled us with a couple of flats full of clusters of sharp, brilliant black, untwinned **ferberite** crystals to 7 cm from the Tasna mine, Nor Chichas Province, Potosí Department. This time, at the Westward Look, Mike had about 50 specimens, toenail to cabinet size, from the Tasna mine, in which the ferberite crystals in nearly all cases form sharp contact twins, some with no re-entrant angles at all, others in deep V-formations. As before, the crystals are black, razor-sharp, matté to brightly metallic in luster, and swanky-looking, with individuals this time reaching 16 cm. The pocket was opened late in 2005.

As always, Luis Menezes was one of the main men to see

concerning new mineral occurrences in Brazil. For one thing, he offered about 12 miniature and small-cabinet specimens of **brazilianite** from a brand-new occurrence, some 400 km north of the familiar ones in the Linopolis, Minas Gerais region. Found last October, these specimens come from the Jenipapo district near Itinga, Minas Gerais; they are loose groups of sharp, glassy, blocky brazilianite crystals to 8 cm, showing no associated species. The crystals are pale to medium yellow-green and mostly cloudy, but with some small gemmy areas.

Also, Luis was one of several dealers with small stocks of the unusual (and at first misidentified) specimens showing moss-green, low-angle dipyramidal crystals of **hydroxylapatite**, recovered sometime last year in quantity in the Sapo tourmaline mine, Goiabera, Minas Gerais (Alvaro Lúcio's offering of these specimens at Tucson is also notable). Wendell Wilson first saw specimens of the material with several dealers in Munich in 2005, and pictured one in his show report (see vol. 37, no. 1, p. 85): the crystals are translucent, medium-lustrous discoids to 3 cm, color-zoned (greenish to yellowish), and strewn over white or buff-colored microcline crystals. Also, in Luis Menezes' room at the Clarion there were a few huge specimens—to 35 cm across—showing small crystals of the hydroxylapatite resting on surfaces of solid casts of silvery muscovite over vanished, spear-shaped hollow spaces where crystals of spodumene once had been.

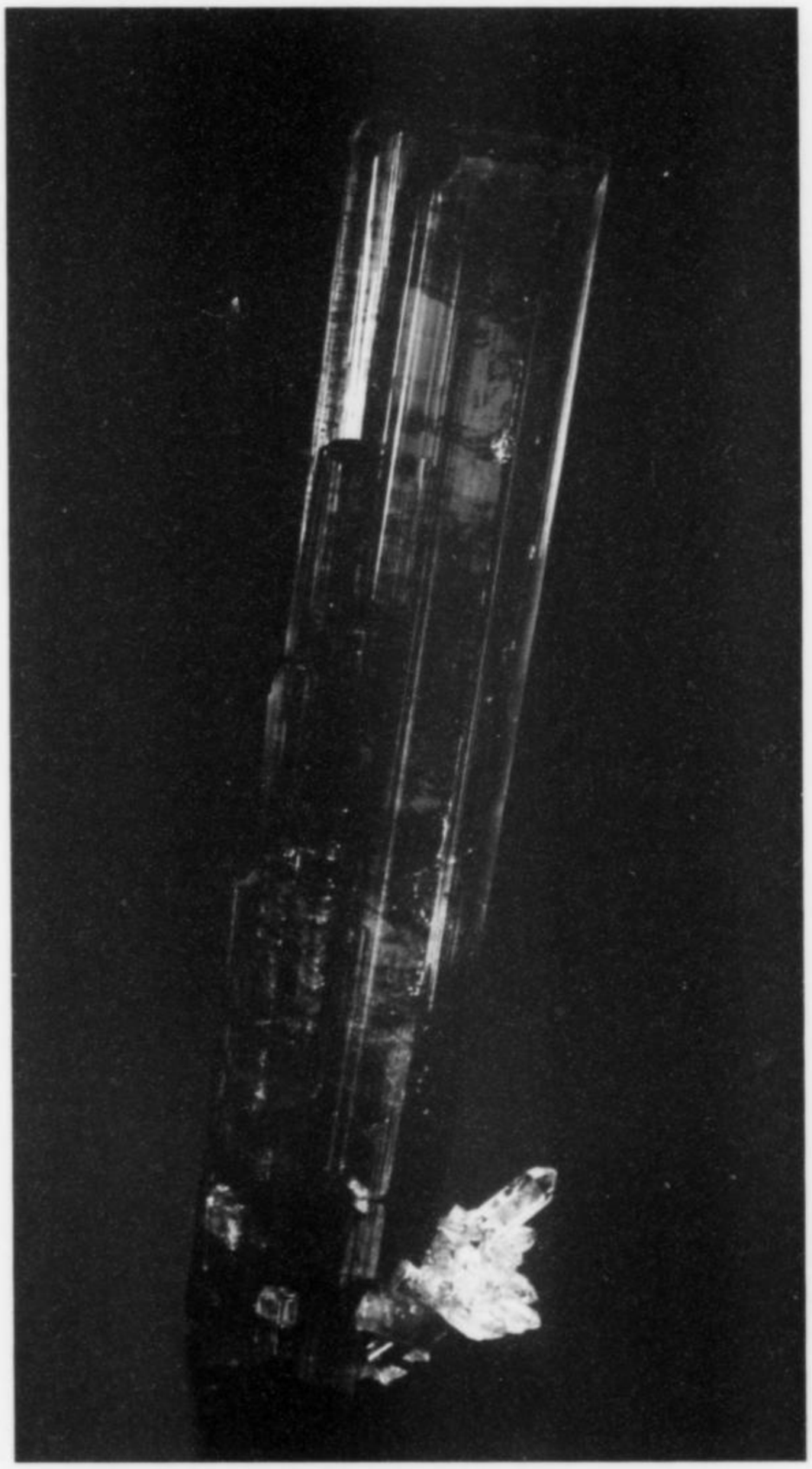

Figure 6. **Elbaite crystal, 16.7 cm, from the Santa Rosa mine, Minas Gerais, Brazil. Michel Jactat specimen; Jeff Scovil photo.**

Luis and a couple of other dealers had a few specimens (not beautiful or dramatic, but we may optimistically call them "promising") showing slightly rough, jet-black, lustrous crystals of the rare species **ferrotapiolite** to 2 cm, in quartz/albite matrix, from Parelhas, Rio Grande do Norte, Brazil; recently John Veevaert has offered a few of these, too, on his excellent website (www.trinityminerals.com).

One of Brazil's oldest sources of gem-quality **elbaite** crystals is the Santa Rosa mine near Itambacuri, a few kilometers southwest of Teofilo Otoni, Minas Gerais—for a bit of history, see the chapter on this locality in Peter Bancroft's *Gem & Crystal Treasures* (1984). It has been thought to be exhausted, but think again! Important specimens have been emerging recently. Pegmatite workings in the "old" Santa Rosa mine area, opened in the late 1950's (though Bancroft says the "main" Santa Rosa occurrence was located in 1938), have recently produced a handful of marvelous, gemmy, green elbaite crystals, as singles and parallel groups reaching 24 cm (nearly 10 inches) long. About 20 major specimens were taken out in November 2005 by Jean Claude Nydegger, and five of these were hidden away (having already been spoken for) in the InnSuites room of Michel and Marcia Jactat (12, rue J.H. Espérandieu, 66000 Perpignan, France). The deep bluish green, thoroughly gemmy prismatic crystals are terminated by pinacoids, some showing small pyramid faces; in one specimen, an elbaite crystal about 20 cm long lies flat on a 35-cm, medium-dark smoky quartz crystal, but otherwise these lush prisms and parallel groups of prisms are free of matrix. The most beautiful specimen (in my opinion) has a spray of 4-cm elbaite crystals of the same gemmy blue-green hue thrusting out from an area low on a prism face of a 22-cm elbaite crystal. Michele Jactat says that the "old" Santa Rosa is once again an active gem and quartz mine, so more such majestic things may reasonably be expected from it.

The final Brazilian item is even more redolent of future promise. For at least 30 years, a manganese-rich skarn deposit somewhere near Conselheiro Lafaiette, Minas Gerais, has been known occasionally to produce deep pink **rhodonite**, very rarely in gemmy crystals (see Alvaro Lúcio's 1971 note in vol. 2, no. 1, p. 10, and two show reports from the 1990's when modest rhodonite specimens from the deposit reached U.S. specimen markets—vol. 26, no. 6, p. 579 and vol. 30, no. 1, p. 52). A mine in the area, said to be "new" and concerning which no details have been disclosed, has very recently yielded hunks of amphibole/spessartine/rhodonite/pyroxmangite skarn from which very fine rhodonite crystal groups can be (and have been!) prepared. In the Clarion, Linus Keating of *Arizona Lapidary & Gem Rough* (ArizonaLapidaryGemRough@yahoo.com) had a few such crystal groups, mostly miniatures (and one very fine thumbnail), showing fairly sharp rhodonite crystals to 5 cm, all incomplete but with areas of rich, deep pink gemminess. And at the Westward Look show, Mike Bergmann had a piece from this occurrence which in some ways might be called the finest rhodonite specimen in the world: it is, so far, quality-wise, absolutely one-of-a-kind . . . but who knows what will come next?

This time there is only one new European discovery to report, but a very significant one: fairly good supplies of quite striking-looking **realgar** specimens found last year in one of the old mines at Baie Sprie (Felsöbánya), Maramures, Romania. The realgar crystals are bright red, sharp, blocky prisms of rectangular cross-section, some hoppered and partially hollow, and they reach 6 cm long. When Pierre Clavel purchased this newly dug material from

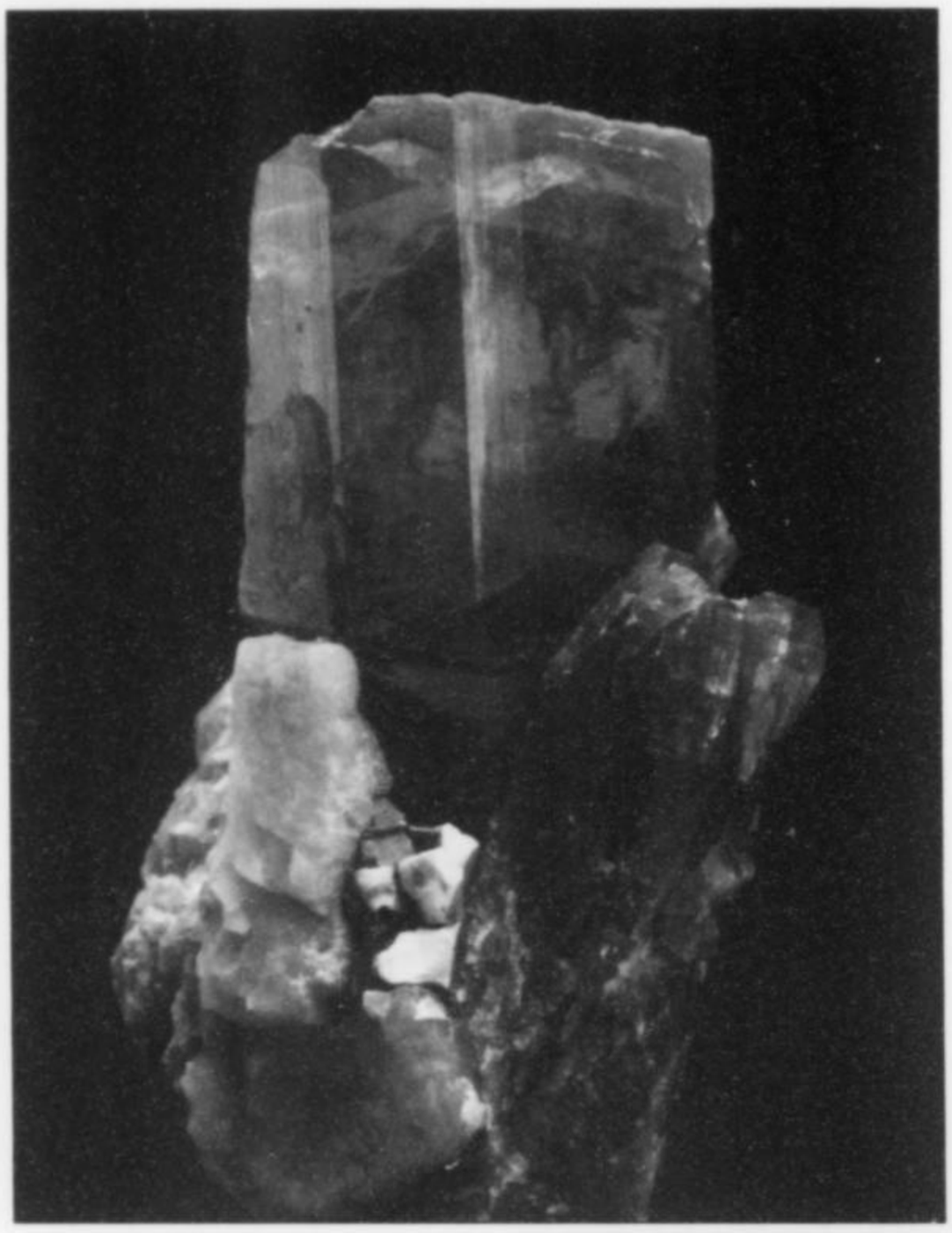

Figure 7. **Rhodonite crystal with albite, 5.2 cm, from Conselheiro Lafaiette, Minas Gerais, Brazil. Mike Bergmann specimen; Jeff Scovil photo.**

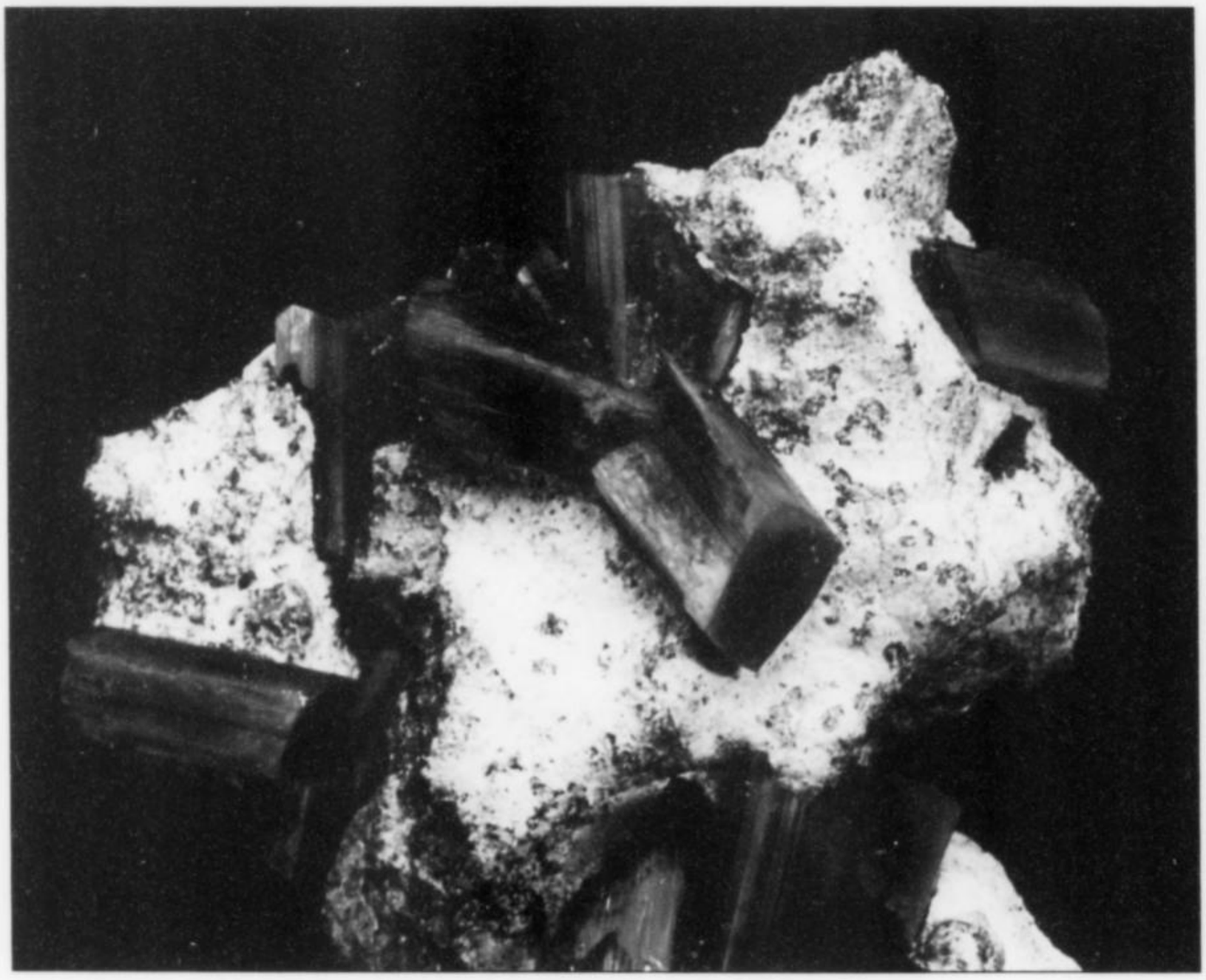

Figure 8. **Realgar crystals on matrix, 6 cm, from Shaft 5, Level 280, Baia Sprie, Romania. G. and J. Megerle collection; Jeff Scovil photo.**

mens ranging from small-miniature to small-cabinet sizes were offered by Chris Wright (of *Wright's Rock Shop*) at the InnSuites, the brothers Gobin and Rob Lavinsky at the Main Show, Luis Burillo in the Clarion and at the Main Show, and a couple of others; but Chris Wright was clearly the major American importer of the specimens from Romania via France, and offered the best selection overall. According to Chris's informants, thousands of specimens, including about 400 very good ones, were dug in November-December 2005 from Level 5, Shaft 280, at Baie Sprie. It can fairly be said that this new realgar (some lots of which had already appeared on websites) made for the show's biggest what's-new buzz.

Everyone likes crystals of pink **cobaltoan calcite**, either (we are not choosy) from the 1980's occurrence at the Mashamba West mine, Congo, or from the more recent discoveries at Bou Azzer, Morocco. The good news this year is that sometime in 2005 a big pocket was opened at Bou Azzer which yielded modest numbers of specimens showing pink, rhombohedral and scalenohedral cobaltoan calcite crystals to 1.5 cm individually, on matrix plates of gray-white limestone to medium-cabinet size. Most of the calcite crystals are frosty and merely pale pink, but a few are much closer to "hot" pink, and gemmy. The best selection at Tucson was to be found at the Main Show stand of François Lietard, with calcite business to be transacted with François's companion, Sabine Amory of *Mineral Design* (sabineamory@libertysurf.fr).

Old Morocco hand Horst Burkart (Dornheckenstr. 20, Bonn, 53227 Germany) is always good for new things from that country, and his vividly colorful, glittering shelves are always a treat to see in the hotel show. This year, besides the usual azurites, anglesites, vanadinites, proustites, acanthites, etc. from other Moroccan places, Horst had some interesting items from the skarn deposit at Imilchil in the High Atlas Mountains. A few pert miniatures are groups of very sharp, lustrous, creamy white **orthoclase** crystals with lustrous, part-gemmy, deep brown **titanite** crystals to 1.5 cm perched lightly on them. Also from Imilchil there are glassy hexagonal

a miner at the miner's home, he noted that some specimens show realgar crystals simply lying lightly on a chalky white matrix with quartz and pyrite; some show mixtures of realgar and stibnite crystals overlying realgar of an earlier generation; and in one case a vug lined with beautiful realgar crystals was revealed when a massive stibnite/realgar lump was cracked open. At Tucson, speci-

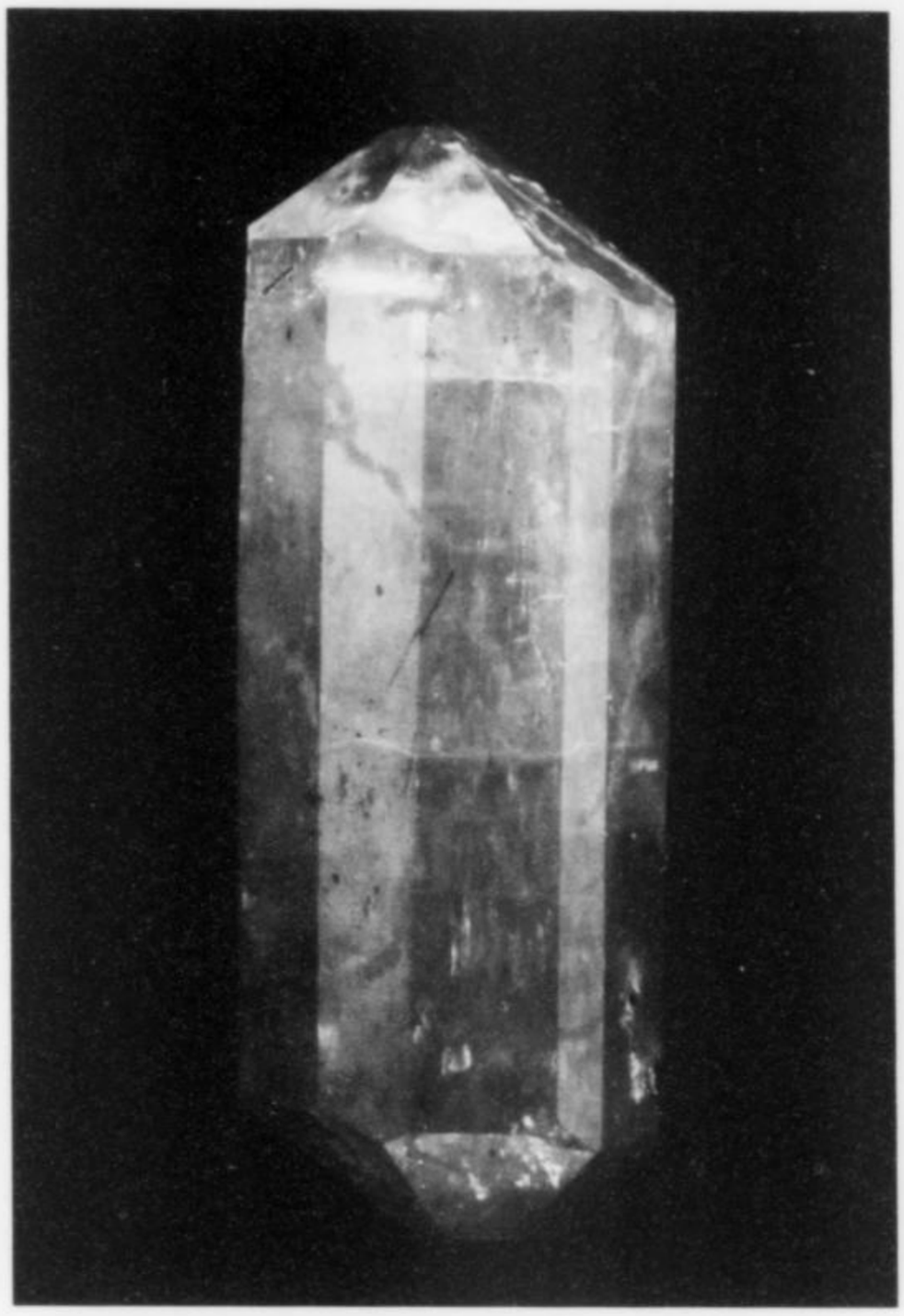

Figure 9. **Fluorapatite crystal, 4.7 cm, from Imilchil, Morocco. Jordi Fabre specimen; Jeff Scovil photo.**

prisms of translucent, pale grayish yellow **fluorapatite** embedded in cavernous masses of drusy milky quartz; the fluorapatite crystals reach 5 cm long, and the matrix ranges from 6 to 10 cm. Even better, Jordi Fabre had about 50 loose, part-gemmy and lustrous, yellow-green, *doubly terminated* fluorapatite crystals to 5 cm long from Imilchil. These are surely the best Moroccan specimens of the species yet: they somewhat resemble the famous fluorapatites from Cerro Mercado, Durango, Mexico, except that they are complete and—say it again—doubly terminated, showing small pinacoid and medium-angle pyramid faces at both ends of the prism.

Since moving to Tucson from Connecticut in 2001 I have become, only a little against my will, a fan of **wulfenite**, and have become much more sensitized than before to its great variety of appearance. But neither I nor older and wiser wulfenite devotees could identify as to species the single specimen being shown around at the Main Show by John Attard: a loose, partial wulfenite crystal measuring an amazing 5.5 × 11 × 12.5 cm and weighing 1795 grams (about 4 pounds!). It is dull yellow-brown and somewhat rough-surfaced, with some translucent areas. This crystal came from the old M'Fouati mine in the Congo, a locality long noted for unusually large and thick crystals. Despite not being anything like a what's-new, the beast, it seems to me, needs to be named in this space. Besides, it should also be mentioned that John Attard has begun a new, high-tech mineral-identification service which looks like a very good deal; contact him at attard@attminerals.com.

A collecting site near Block D in the Merelani mine, Umba Valley, Arusha, Tanzania produced about 120 outstanding gem-quality **diopside** crystals in late summer and early fall of 2005, and about 20 of them were on hand in the Westward Look room of Don Edwards of *Edwards Minerals, LLC* (www.edwardsminerals.com). Brightly mint-green, lustrous, complexly terminated, and gemmy to 50% of their volumes, these crystals are truly beautiful; all are loose and without associations (one has a tiny tanzanite crystal attached to its side), and they range from small-thumbnail size to 5 cm. Don also had a few of the newly found crystals of **painite** from Myanmar: these have been noted before, but it must be repeated that, for such a rare species, the sharp, part-gemmy reddish brown prismatic crystals, which reach 3.5 cm, are quite extraordinary. Loose, sharp black crystals of **baddeleyite** from the same area, these not exceeding 1.5 cm or so, could also be spotted at several dealerships around the show.

Last year Jochen Hintze of *M. Jentsch Minerals and Rough Stones* (jentschmineral@aol.com) was just beginning to develop a contact-metamorphic deposit near Morogoro, Tanzania where crystals of clinohumite, graphite and other unusual species accompany good octahedral crystals of **spinel**. This year Herr Hintze was at the Executive Inn with lots of spinels, and they are getting better, although none yet are gemmy except in tiny patches. The crystals are very sharp octahedrons and spinel-law twins in a range of sizes from 2 to 10 cm on edge and a range of colors from deep blue to purplish blue to purplish pink to red. Most of the single crystals and twins are loose, but some rest in white marble matrix with phlogopite and microcrystals of clinohumite. Further, Herr Hintze had a few nice, loose, thumbnail-size specimens of **chrysoberyl** (variety *alexandrite*) from Lake Manyara, Tanzania: flattened, contact-twinned, gray-green crystals, not gemmy but sharp and lustrous, some with an easily visible color-change (i.e. purplish when strongly lamplit from behind).

Namibia answered the call this year with some wonderful, newly mined scepter **quartz** crystals—brilliantly lustrous, transparent prisms to 8 cm with scepter-tips showing delicate veils of both amethystine and smoky hues. These "Brandberg" specimens—actually the locality is best denoted as Goboboseb, southern Namibia—were in the keeping of Brice and Christophe Gobin at the InnSuites and Westward Look. The Gobins, François Lietard and others also had specimens of very deep green **fluorite** crystals on chalk-white, euhedral feldspar crystals, newly found in the Erongo region. The transparent, emerald-green fluorite crystals are cubes to 2.5 cm, quite pretty despite a somewhat anemic luster.

And so to Russia. This year, as last year, the Smuggler's Inn was a particular haunt of Russian dealerships, and at one of the most familiar of these, *"Axinite-PM" Ltd.* (mineralvvp@omen.ru), Victor Ponomarenko was showing off two fine new items from Dalnegorsk. At the Second Soviet mine last year there was a new discovery of superb **sphalerite** specimens, with very brilliant, jet-black, equant crystals to 5 cm in flashing groups to 20 cm across; and at the Bor Pit working, where much of Russia's boron is mined, some attractive specimens of **andradite** were recently found: lustrous orange-brown dodecahedral andradite crystals to 1.5 cm gather in loose, miniature-size clusters or form solid encrustations on matrix plates to 10 cm across.

Since the Soviet collapse of the early 1990's the mines of Dalnegorsk have produced world-class specimens of an amazing number of major mineral species, but **bournonite** has not been one of them: Grant and Wilson (2001) report bournonite crystals to 1 cm from the Nikolaevsky mine (see vol. 32, no. 1), and Moroshkin and Frishman (2001) mention bournonite in small groups of subparallel crystals enclosed in fluorite (this in vol. 4 of the Russian publication *Mineralogical Almanac*), but that has been the extent of the story. Last fall, however, in the Second Soviet mine, a very few, very beautiful specimens showing highly lustrous, metallic black bournonite as classic "cogwheel" twins studding sulfide matrix were found. At Tucson, Ivo Szegeny of the KARP dealer-

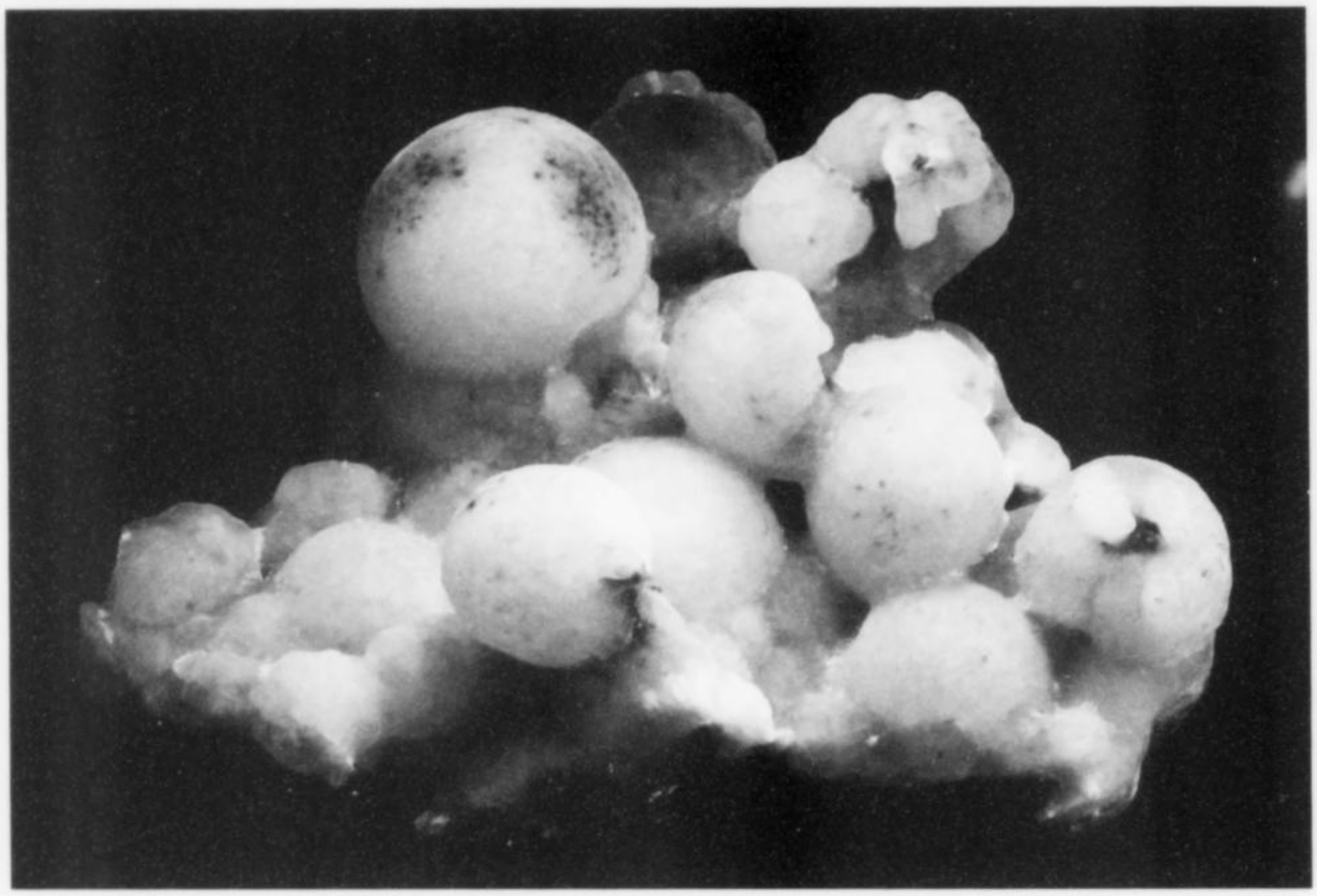

Figure 10. **Thompsonite, 11.3 cm, from Soheygaon, Maharashtra, India. Mineral Décor specimen; Jeff Scovil photo.**

ship had the champion specimen in his room at the Clarion: a mass of lustrous galena and sphalerite crystals with, in a belt running over the top, brilliant bournonite cogwheels to 1.5 cm individually.

Specimens of **copper** from the Itauz mine near Dzhezkazgan, Kazakhstan which turn up at Western shows have been getting steadily better over the past few years, and this year in Tucson it was chiefly Russian prospector-dealer Konstantin Buslovich (phantom1405@yahoo.com) who continued the cheering trend: at the InnSuites, Konstantin offered exceptional copper specimens from a find of two months ago in the Itauz mine. For the most part the crystal groups, of a nice satiny copper hue, are long and spiky and without matrix, ranging in length from 3 to 20 cm. In style they range from tooth-like rows of sharp, hoppered crystals to 5 mm individually, to raggedy stalks and stringers of dendritic crystals, to (my favorite) very sharp, isolated, spinel-twinned crystals to 2 cm twisted a half-turn to make a curved, pointed, corkscrewy shape (very hard to describe, as you've noticed). These are altogether remarkable coppers, and a fine corkscrewy-type thumbnail would run you $20.

The mountains of Pakistan and Afghanistan still are going strong mineralogically, even as earthquakes, wars, Taliban terror, the heroin trade, etc. cause human suffering on a scale that makes our innocent pleasures look small. But for now, never mind all that, for John and Maryann Fender (fendernaturalresources@yahoo.com) were marketing very nice thumbnails of **bastnäsite-(Ce)** from Zagi Mountain, Pakistan, and of palest green **clinozoisite** and lush red-brown **vesuvianite**, both from Alchuri, Shigar Valley, Northern Areas, Pakistan, for prices surprisingly low. François Lietard had some tabular floater crystals, to 4 cm, of transparent-colorless **fluorapatite** with included actinolite, from an Alpine-type cleft opened late in 2005 in the Bomon district near Zagi Mountain (these strongly resemble old fluorapatite specimens from the Knappenwand, Austria epidote locality). And Dudley Blauwet brought in a few lovely new **fluorite** specimens from near the village of Baha, in the upper Braldu Valley of the Northern Areas, Pakistan: lustrous, translucent to transparent, slightly rough-surfaced *pink octahedral* fluorite crystals to 4 cm on edge rest seductively in white matrix, doing their best to imitate Swiss specimens.

François Lietard, Dudley Blauwet and quite a few others had outstanding specimens of the deep reddish brown, translucent to transparent **"chondrodite"** crystals which Dudley introduced at the Denver Show of 2005 (see my Denver report in Jan.-Feb. 2006); the locality for these specimens is reported consistently to be Ladjuar Madan, Kokcha Valley, Badakhshan, Afghanistan. Trouble is, the species is not chondrodite but **clinohumite**—this identification is the unequivocal result of expert and careful testing by Jaroslav Hyršl in Europe, Marcus Origlieri at the University of Arizona, and, I'm told, others. Some dealers, getting this news, were seen busily changing their labels in mid-show and looking vaguely embarrassed. There's no reason for embarrassment, though, or even for changing the uniformly stiff prices on this material, for the fact is that no one has ever seen such large, beautiful euhedral crystals of *either* species before (the old chondrodites of the Tilly Foster mine in New York alone excepted). The Afghan clinohumite crystals are lenticular and face-rich, reach 2.5 cm, are gorgeously colored and in a few cases are even gemmy; they rest in matrix of flaky greenish muscovite and/or talc, making for very attractive, mostly thumbnail-size specimens which were in evidence all over Tucson this year.

K. C. Pandey of *Superb Minerals India* (info@superbminerals.com) had an especially big, sumptuous booth at the Main Show, where the wide cases sported some new finds from India. In January 2006 the Mohodari quarry near Nasik produced a handful of spectacular large-cabinet **calcite** specimens, with lustrous, translucent yellow-brown rhombohedrons and modified scalenohedrons, reaching 15 cm individually, resting lightly on basaltic matrix. In the same quarry, near the end of 2005, some very large specimens were extracted in which fat yellow-brown calcite crystals are associated with or overgrown by **barite casts after quartz**: the casts (epimorphs) reach 4 cm individually, and some clusters of them (without the calcite) reach 25 × 25 cm. The barite of the casts

is translucent gray, but the outer surfaces of these bladed, hollow structures are roughened by a coarse-sandpaper coating of white to brownish rock (and zeolite?) fragments.

The time around the turn of the year also saw the discovery of some excellent crystals of transparent-colorless **gypsum** in a quarry near the city of Surat, Guzrat state—a little to the northwest of the main zeolite-producing areas of the Deccan Plateau. K. C. Pandey showed me several lustrous, terminated prisms of gypsum to 30 cm long, some with areas in which small included laumontite crystals may be seen through the water-clear body of the host crystal. Finally, it was K. C. Pandey who had what was probably the show's best (though far from its only) selection of little loose blue starbursts of **pentagonite** from the Wagholi quarry, Poona, Maharashtra. We have seen these before, but supplies of them are more generous nowadays: several Indian and Western dealers' hotel rooms featured dozens and dozens of the little electric-blue crystal sprays lying loose on the glass shelves as if just casually sprinkled there by some passing, possibly drug-addled, fairy. Most of the pentagonite sprays are dusted with tiny yellow calcite rhombohedrons, and some have adhering chalky white patches, probably of a zeolite species. In diameter the sprays range between less than 1 cm to somewhat more than 2 cm, but since they are so odd-looking and almost unbelievably colorful, some dealers feel no compunction about pricing them rather steeply, small thumbnails though they are. It should be interesting to see what happens to the price structure if, like their cavansite brothers, the pentagonite sprays go on to become extremely common on the market. And can we get bored even with things *this* dramatic?

Any good **elbaite** from India surely qualifies as a what's-new—and, sure enough, the elbaite crystals collected in September 2005 from a pegmatite at Ladhak, in the Indian-occupied part of Kashmir, are noteworthy indeed. According to Jordi Fabre, who got the whole lot, there are in all about 50 loose crystals, ranging in length between 1 and 12 cm, lustrous and gemmy and grayish green, with thin, dark blue terminal zones. At Tucson I got to see only the best individual crystal, when Jordi inserted it into the "what's new case" in the Clarion lobby: it is doubly terminated, 12 cm long, and quite beautiful.

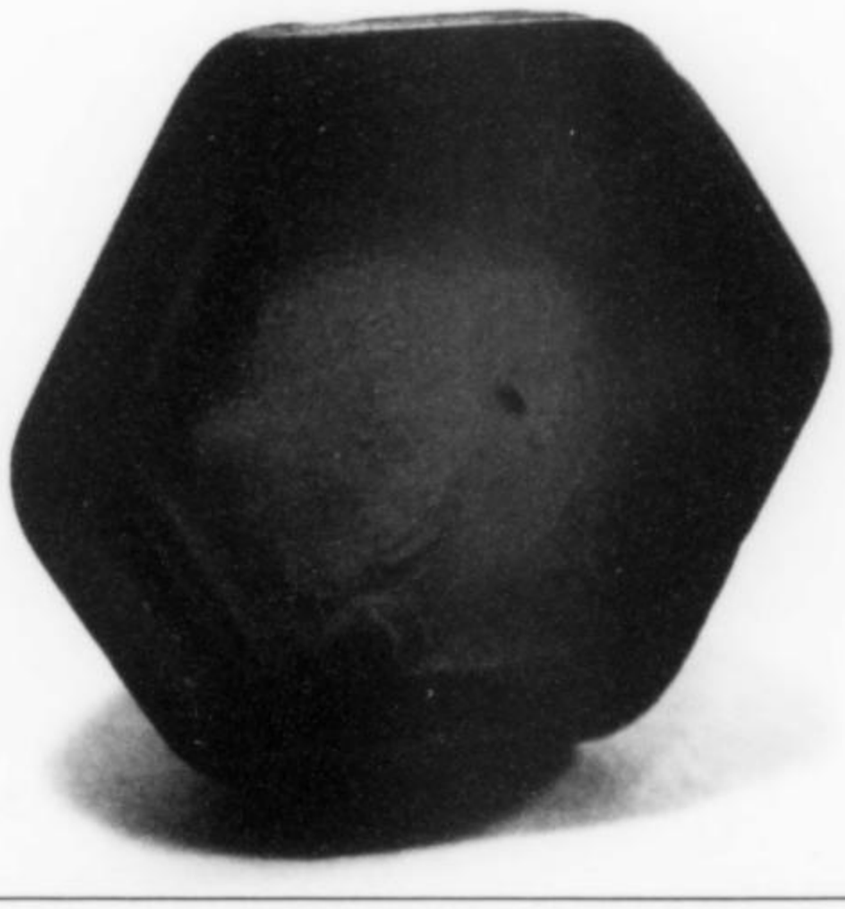

Figure 11. **Taaffeite crystal, 1.3 cm, from Sri Lanka. Arkenstone specimen; Meg Foreman photo.**

Rob Lavinsky has recently acquired a remarkable little loose crystal of taaffeite taken a few months ago from the gem gravels of Sri Lanka. Measuring 0.6 × 1.3 × 1.3 cm and weighing 9.63 carats, the hexagonal-tabular crystal is sharp, complete, and of a rich, uniformly gemmy bluish purple. Apparently it is one—the best one—from a trickle of taaffeite crystals which have been appearing since about the time of last years's Munich Show. Rob bought it in partnership with Bill Larson, in whose expert opinion it is the largest good crystal, and the largest gem-quality crystal, of taaffeite so far known (see the photo here).

In our upcoming special "China II" issue, Bert Ottens will sort out and describe the various recent Chinese localities for world-class **stibnite** specimens. The Big Three are the Xikuangshan, Lushi and Wuning (or Wuling) mines, but a fourth locality, only slightly less important, is much less well known: it is the Chashan deposit in the Dachang orefield, between the towns of Nandan and Hechi, Guangxi Province. Most commonly denoted "Nandan" or (misleadingly) "Nandan mine" on labels, the Chashan deposit produces superb stibnite specimens which very closely resemble Romanian ones of the "hedgehog" style, with closely packed sprays of bladed stibnite crystals resting lightly on gray-white matrix. At Tucson, outdoors at the Riverpark Inn show, quite an impressive trove of such stibnite specimens could be found with, well, *Earth Trove*, a dealership from Los Angeles (www.earthtrove.com). In an alcove just inside one wall of the *Earth Trove* tent, glass cases held about 50 "Nandan" stibnite specimens, with flashing metallic gray-black hedgehogs resting singly or intergrown on matrix expanses to 20 cm, the average hedgehog spray being composed of wedge-terminated stibnite crystals to 2 cm long individually.

In our "China I" issue (Jan.-Feb. 2005), Bert Ottens described the now well-known spessartine locality called Tongbei, in coastal Fujian Province. With the abundant specimens of spessartine, smoky quartz, orthoclase and combinations thereof which are dug at the two sublocalities called Yunling and Yunxiao (after villages near the productive outcrops), there occur rarely, Ottens writes, pseudo-octahedral crystals of yellow **helvite** resting on quartz or feldspar. The crystals are dark on their surfaces (like the record-size helvite crystals of Jinlong, Guangdong) but yellow inside, and while "helvite crystals discovered [after 2002] lack the dark surface coatings . . . it is suspected that such pieces have been treated in Tongbei with hydrochloric acid." Well, I hope not, since at the show I bought a thumbnail with a sharp, mustard-yellow, 1-cm helvite crystal resting on drusy quartz, from Tongbei. As far as I could learn, Rocko Rosenblatt (rocko@catskill.net) was the only dealer to have brought some of these Tongbei helvite specimens to Tucson, but I note too that a Chinese web dealer named Chen Weigang (www.china-mineral.cn) is also offering them. The pictures on the website show yellow helvite crystals to 1.5 cm, looking just like the one on the thumbnail I purchased from Rocko, resting on matrix of feldspar/quartz/spessartine; the web text says that these specimens were found during the last three months of 2005. The helvite crystals combine positive and negative tetrahedrons; they are very clean and sharp, and they do not *look* acid-treated, is all I can safely say for now. And by the way, green and purple octahedral crystals of **fluorite** to 2 cm from Tongbei are also advertised on Chen's website: they represent the first fluorite finds at the Yunxiao digging site, where the species had not yet been found at the time when Bert Ottens composed his article.

More observations on Chinese minerals seen at Tucson might be offered, but I'll save them for the next installment of "what's new in minerals online," and will conclude the tour now with two quick tourist-snaps from the Pacific Rim. Rob Sielecki of *Ausrox* (rob@crystaluniverse.com.au) brought to his room in the Clarion—

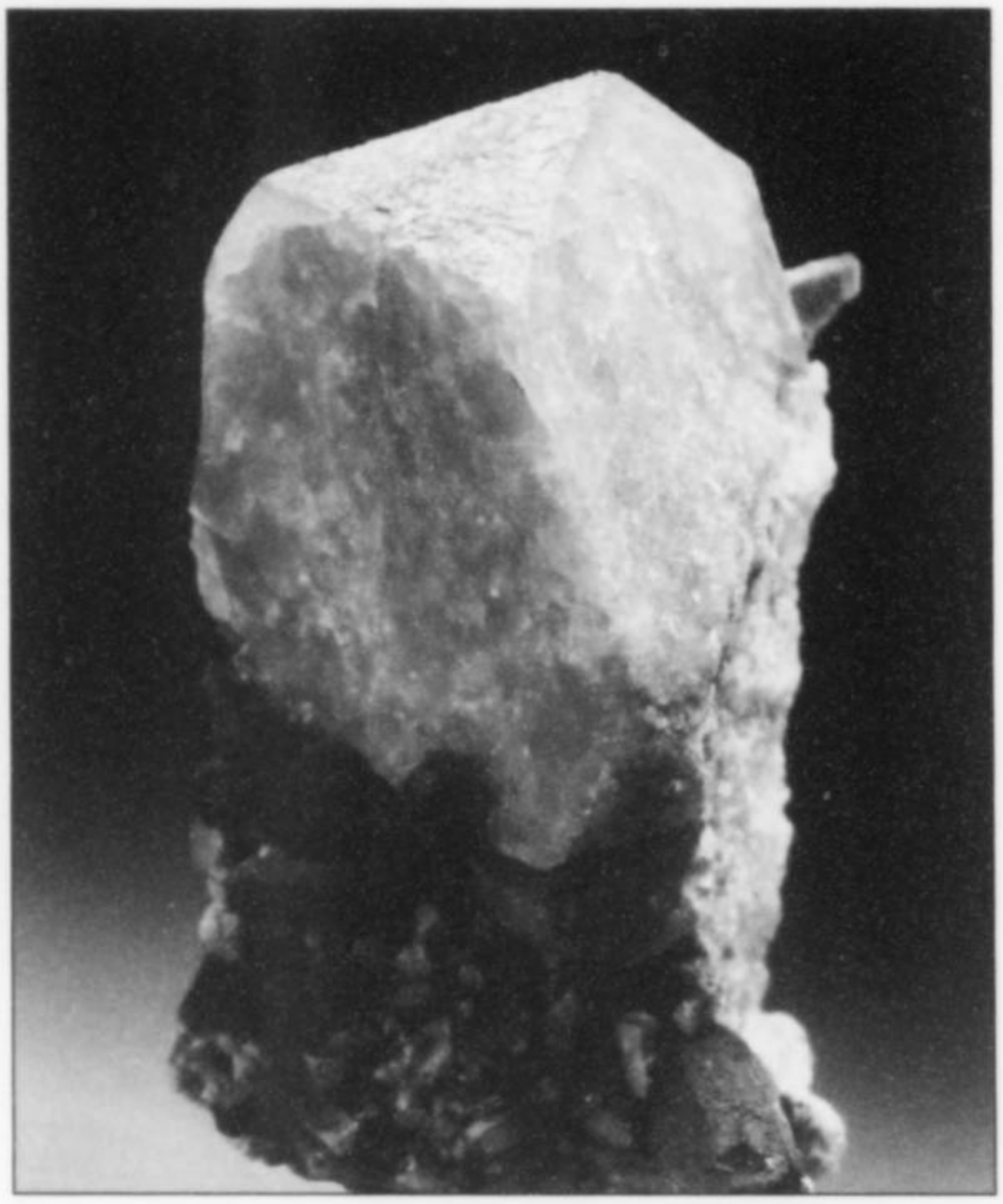

Figure 12. **Helvite crystal with quartz on granite, 1.8 cm, from Tongbei, Fujian, China. XXXXXXXX specimen, now in the Thomas Moore collection; Jeff Scovil photo.**

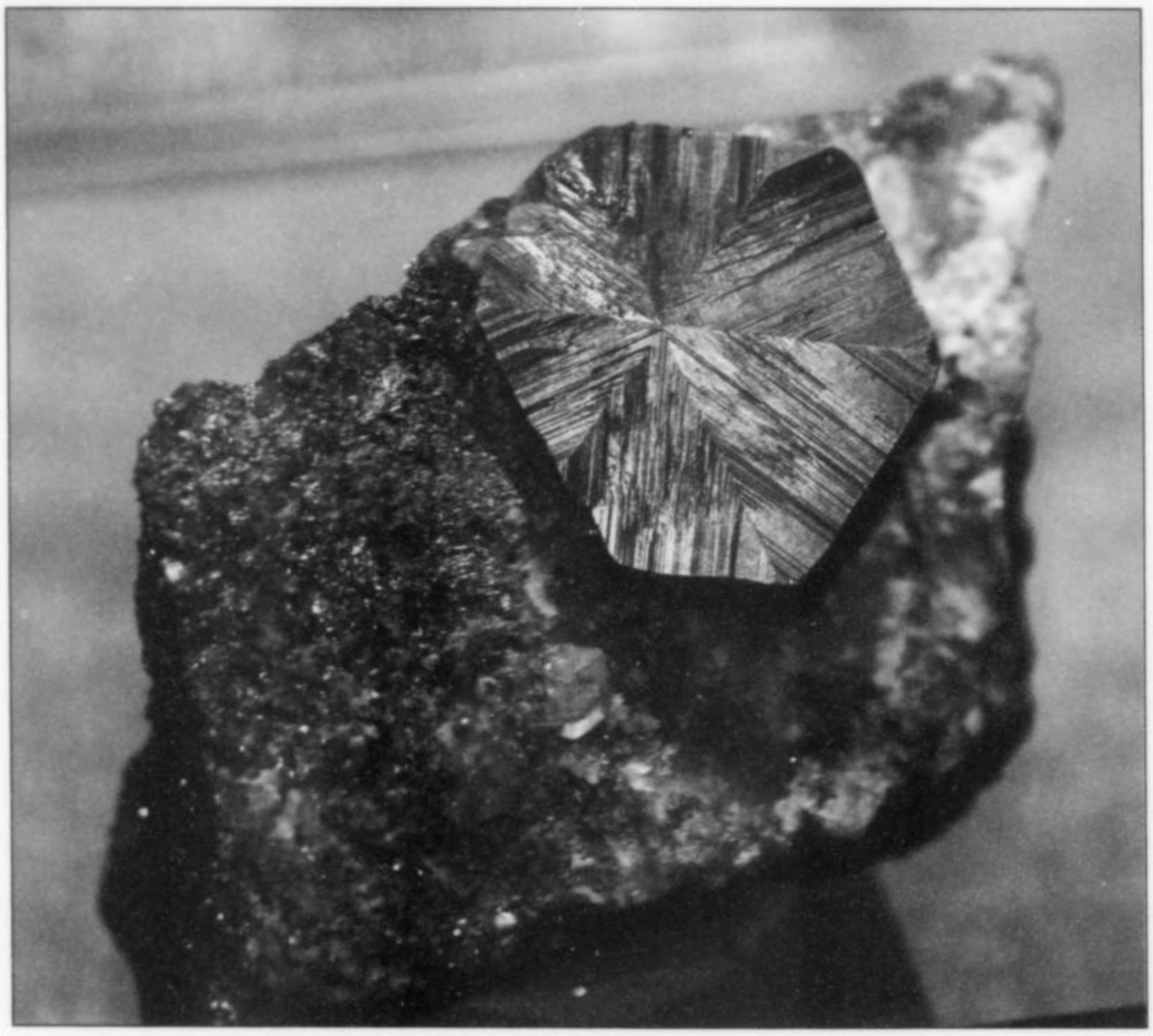

Figure 13. **Cubanite cyclic twin on matrix, 10 cm, from the Henderson No. 2 mine, Chibougamau, Quebec. Canadian Museum of Nature collection; Wendell Wilson photo.**

all the way from Pernatti's Lagoon near Mt. Gunson, South Australia—about a hundred crystal clusters of **gypsum**, from 10 to 60 cm across, all collected over a 3-month period in mid-2005. The chisel-shaped gypsum crystals reach 3 cm individually, and have grown in solid, mound-like groups, perhaps continuously, even as they were being collected, in the evaporite bed of the lagoon. What *else* is nifty about these huge specimens is their color: a lovely apple-green, as imparted by run-off into the lagoon from the old, inactive copper mine on Mt. Gunson.

At the end of the tour we come to a locality which has been known for some decades, though never well known, in the West: the Emperor gold mine, Vatukoula, Viti Levu, Fiji Islands, from which have occasionally emerged some of the world's finest crystals of **native tellurium** and of the rare Au-Ag telluride **sylvanite**. In the Clarion room of Luis Burillo (see above under barite), about ten miniature specimens were laid out inconspicuously, showing very fine sylvanite from this exotic source: brilliant metallic white microcrystals of sylvanite glitter on open seams in dense gray rock matrix. Luis told me that these finds in 2005 had been crowned by specimens showing sylvanite crystals to 1.5 cm and tellurium crystals to 2.5 cm—these pieces were sold, no doubt quickly, in Europe.

EXHIBITS

The layout of dealers' stands and display cases on the floor of the Main Show changed somewhat this year, becoming less regular than it has been. The hall was no longer neatly divided into mineral-dealer and gem-dealer halves by a single great row of display cases down the middle. Instead, some mineral dealers found themselves over the line into the gem kingdom (I noticed no instances of the reverse), and the display cases were scattered irregularly throughout, their places marked by buoylike clusters of red balloons visible from a distance.

Some visitors no doubt missed seeing important cases before they finally *got it* about those balloons. But it was great fun, as always, to buzz and bounce about in the hall, seeing what one could see. Canada Ruled, a splendidly uniformed Royal Canadian Mounty patrolled the proceedings, and the cases full of Canadian minerals were (when you found them) as magnificent as could be. As usual, I can't undertake detailed descriptions of individual cases, let alone individual specimens, although this is a frightful injustice; again a mere listing, with just a few fillips, will have to do.

Among exhibitors who put in "general" displays of Canadian

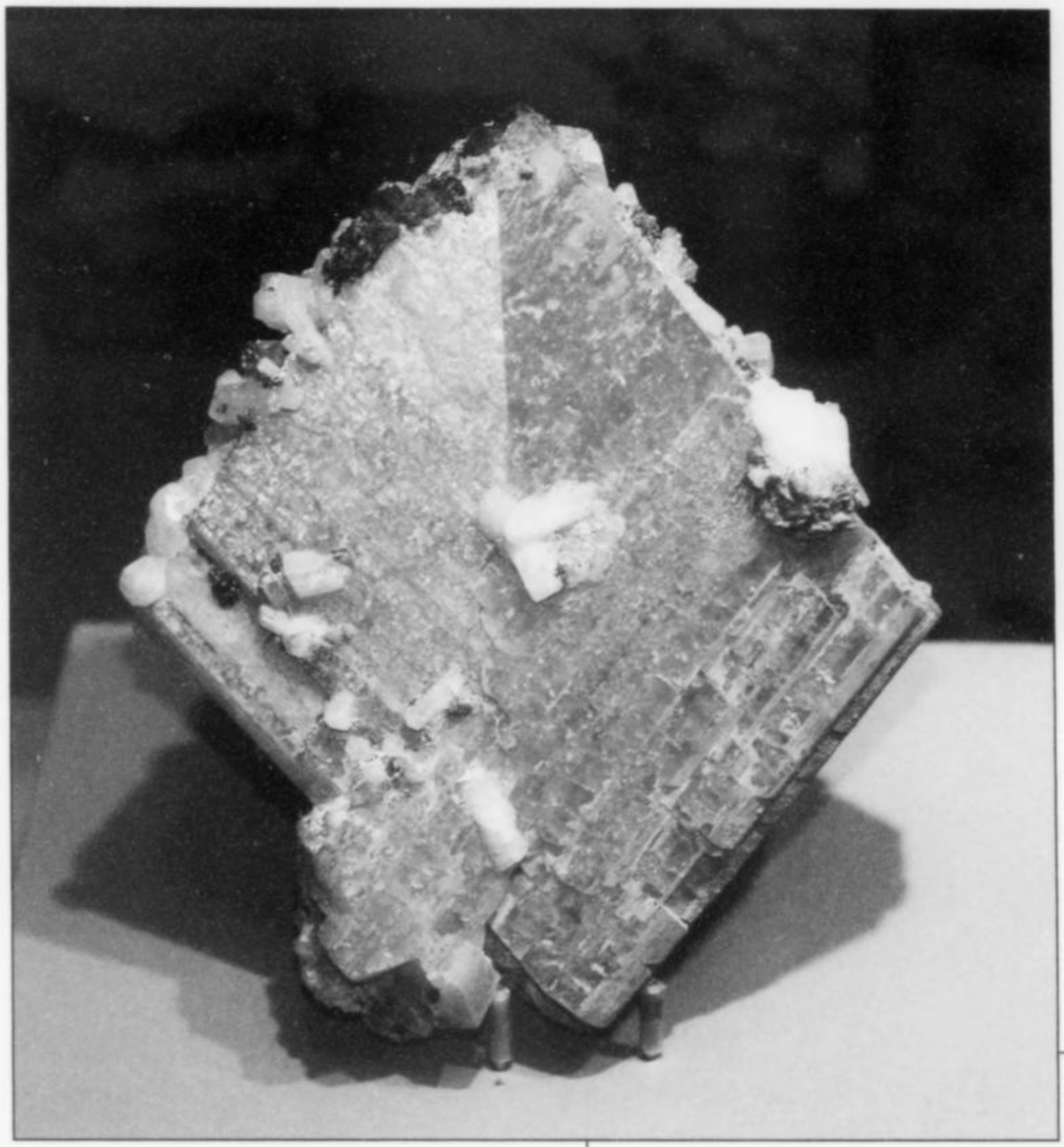

Figure 14. **The big serandite twin, 12.5 cm, from Mont Saint Hilaire, Quebec. Rod Tyson collection; Wendell Wilson photo.**

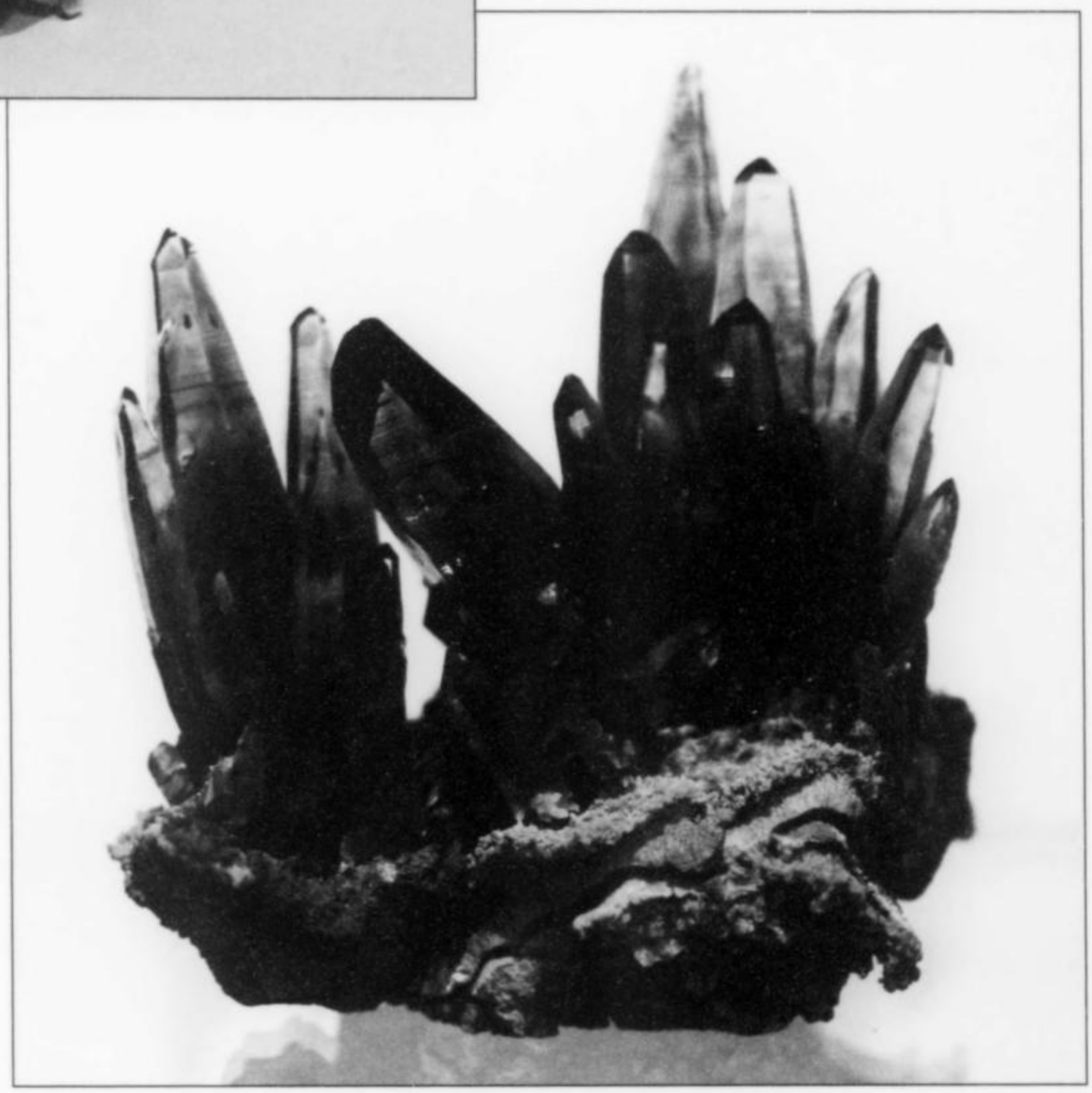

Figure 15. **Amethyst crystal cluster, 8 cm, from Guerrero, Mexico. Exhibited in the Arizona Mineral Minions case. John Lucking collection; Wendell Wilson photo.**

minerals were the Canadian Museum of Nature; the Smithsonian; the Rice Northwestern Museum; the American Museum of Natural History; Wendy and Frank Melanson; Rod and Helen Tyson (two wide, very spectacular cases); and the Royal Ontario Museum (viewing this case, we learned that there exist brilliant iridescent specimens of stephanite and polybasite from the Husky mine, Yukon, which are 6 cm across).

Cases on particular well-mineralized localities and regions in Canada included Minerals of Quebec (a crowded case of wonderful specimens—Jonathan Levinger); Minerals of the Atlantic Prov-

Figure 16. **Amazonite crystal cluster, 16 cm, from the Two Point claim, Teller County, Colorado. Natural History Museum of Los Angeles County collection; Wendell Wilson photo.**

inces (ditto above—George Thompson and Jonathan Levinger); Minerals of Mont St.-Hilaire (László and Elsa Horváth); Minerals of the Francon quarry (Dr. Donald Doell); Minerals of Ontario (George Thompson); Minerals of Ontario (Wendy and Frank Melanson—with an extremely detailed geologic map of the Bancroft-Wilberforce area, spotting 60 collecting localities, spread along the back of the case; you could also pick up one of these maps at the Melansons' booth); Collecting Phosphates in the Yukon (Bill and Elizabeth Moller); Yukon Phosphate Rarities (United Keno Hills Mines Limited—two *amazing* big lazulite specimens there); Canadian Silver (Sterling Hill, New Jersey Mining Museum); and Thunder Bay Amethyst (Sandra and Michael Grieve—proudly explicating their "Purple Haze amethyst mine" and showing off its terrific specimens).

There was also an offering of displays on other topics that seemed especially various, even for Tucson. Fine "general" displays of minerals were put in by, among others, the Arizona-Sonora Desert Museum; the Matilda Pfeiffer Collection; Al and Sue Liebetrau; Keith and Mauna Proctor (I was glad to see the Proctor display collection including fabulous specimens even of non-spectacular things, e.g. German stephanite, amid the great elbaites, rhodochrosites, beryls, etc.); and a tall case of miscellaneous superb specimens put in by ten "Central Arizona Mineral Minions" contributors.

We heard in numerous ways (outside the Canadian theme) from major museums, including the Carnegie (eight super rhodochrosites from various places); the Natural History Museum of Los Angeles County (recent acquisitions); the University of Arizona Mineral Museum (minerals of Cumbria, England); the Urals Geological Museum (smoky quartz gwindels from the Puiva mine, Polar Urals); and the Smithsonian (the 330-carat "Star of Asia" sapphire).

Then, you never knew what to expect from dealer and private-collector exhibitors. There were displays of thumbnail-size calcite twins (Gene and Doris Wright); beautiful agate slabs (Norm and Roz Pellman); glowing, very large specimens of Swiss smoky quartz and pink fluorite (Siber & Siber): a huge case of amethyst specimens of all descriptions and sizes, plus faceted amethyst gems (Bill Larson); rock-forming minerals (but superb specimens of them—Jesse Fisher and Joan Kureczka); minerals of Mexico (Peter Megaw); Arizona vanadinite (Evan Jones); Hallelujah Junction, Nevada quartz (Krystal Tips Mining); general quartz (Bill Severance); worldwide fluorites (Steve Smale); American minerals (the Mineralogical Association of Dallas); highlights of the Lidstrom Family Collection, in memory of the late Walt Lidstrom . . . and once again Jim Bleess, this time with the help of his wife Von Ceil and of Neil and Cami Prenn, concocted a big, dazzling case with about 100 exceptional quartz specimens from everywhere.

There were four interesting "historical" cases. The German dealership of *Christel-Gebhard* showed many antique specimens from the collection of Archduke Stephen of Austria (1817–1867), with their original labels (one of these elegant, very distinctive Archducal labels is pictured in Wendell Wilson's article about the label archive: vol. 36, no. 5, p. 452). The National Museums of Scotland showed specimens of the "Biggest Crystals in the World"—of species for which that still isn't very big (with magnifiers placed helpfully), taken from the Museum's collection. These biggies included matlockite, greenockite, harmotome, susannite, and others from Scottish localities. Meanwhile the Hunterian Museum of the University of Glasgow showed some great old classic specimens to vivify the theme of "250 Years of Mineral Collecting at the Hunterian." Finally (for this historical paragraph) there was the small case displaying the whole of the Dactyliotheca, i.e. the "finger stone collection" of Pope Leo XII (reigned 1823–1829), put in by the Mineralogy Museum of the University of Rome. This collection consists of 388 dainty-looking, colorful little cabochons, some set in rings and some not, with old black-ink labels to

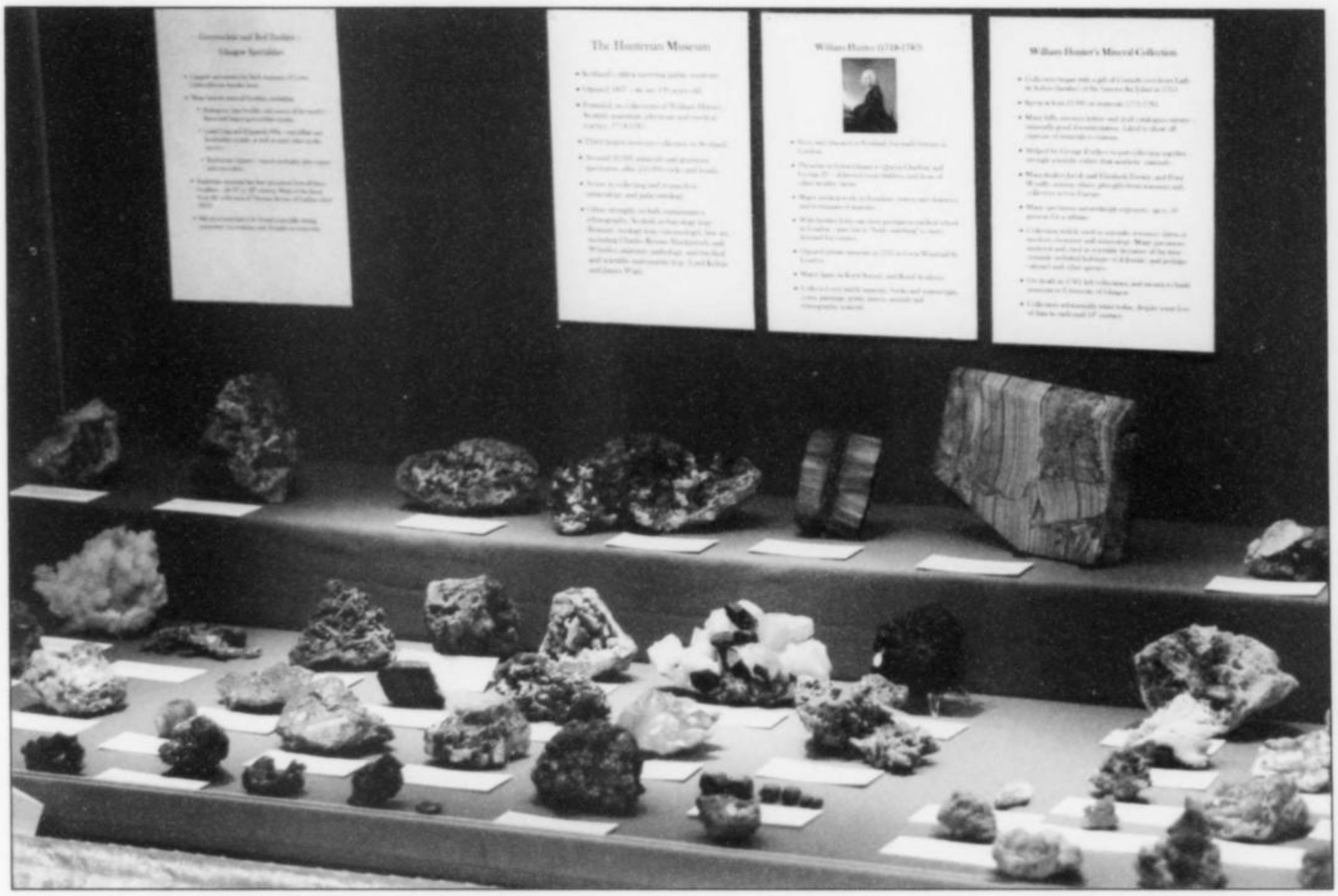

Figure 17. **Specimens from the collection of William Hunter (1718–1783), exhibited by the Hunterian Museum, Glasgow, Scotland. Wendell Wilson photo.**

Figure 18. **The Mineralogical Association of Dallas case. Wendell Wilson photo.**

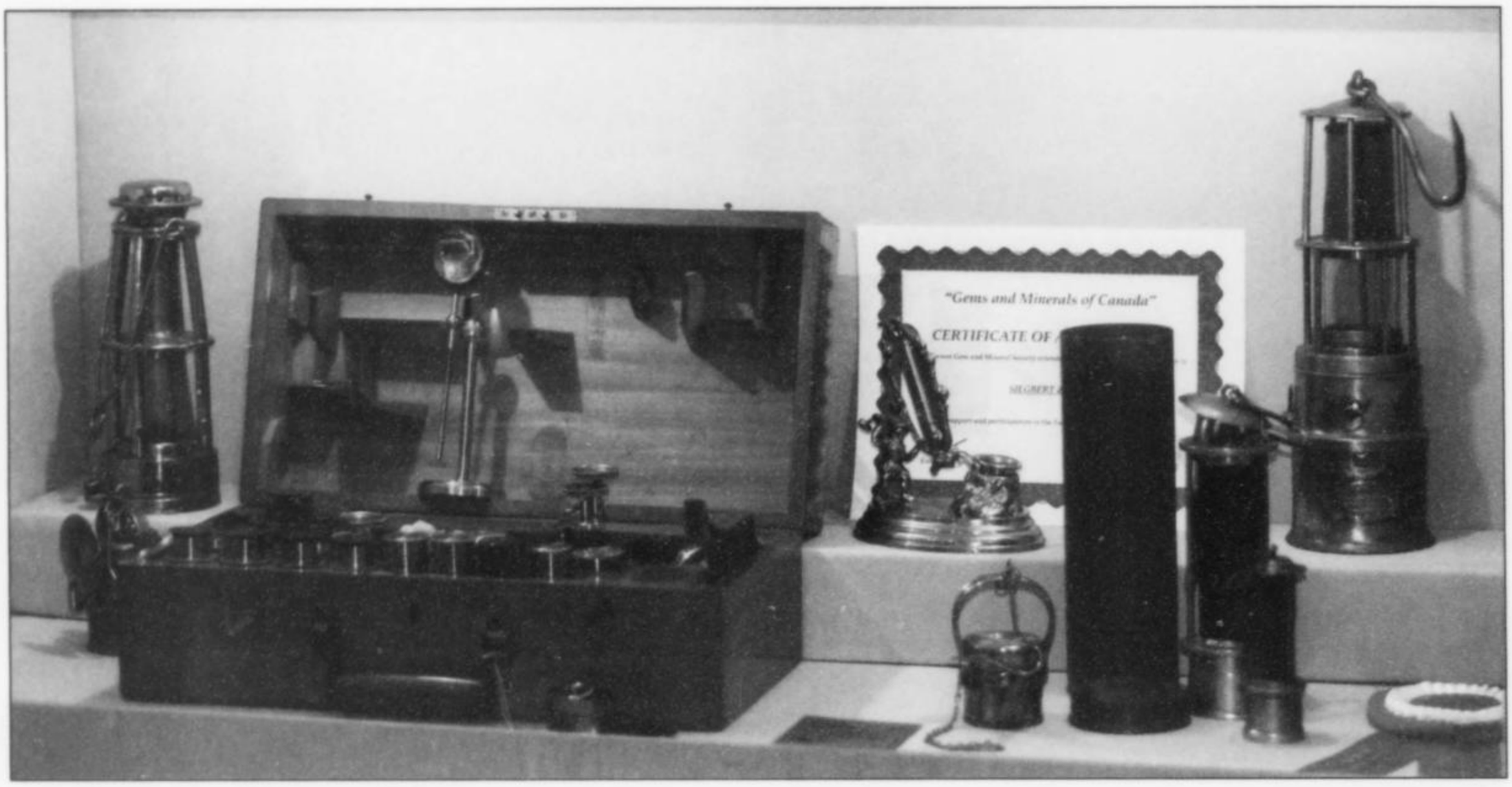

Figure 19. **Mining artifacts in the case of Siegbert Zecha, Schöneck, Germany. Wendell Wilson photo.**

identify their materials, e.g. "agata . . . opalizzante . . . quarzo . . . serpentina." Displayed in the back of the case was a set of false books, in reality hollowed-out carrying containers, with little drawers, for the finger stones: symbolically these seemed apt, for the 2006 Tucson Show marked the first occasion when Pope Leo's Dactyliotheca had been taken anywhere outside Italy.

Perhaps the most magnetic single case on the show floor was a tall, narrow one showing just five specimens recently acquired by private collector Marc P. Weill. These were (1) a 30 × 30 × 30-cm cluster of Moroccan acanthite crystals, with individual sharp octahedrons to 4 cm; (2) a 25-cm, totally gemmy aquamarine prism on a huge, sharp microcline crystal and with a midnight-black, lustrous crystal of schorl along the side, from Pakistan; (3) a terminated, richly colored Brazilian kunzite of similarly outrageous dimensions (I forgot to write my size estimate in my notes); (4) the amazing 10.5-cm bournonite crystal from the Yaogangaxian mine, China, which was shown on the cover of the Sept.-Oct. 2005 *Mineralogical Record*; and (5) a lustrous stibnite crystal cluster from the Wuning mine, China, out of the midst of which rises a single, undamaged, terminated stibnite prism of 78 cm . . . hence the need for a very *tall* display case. Even the general public seemed especially drawn to this case, even though three of the five specimens in it were black metallics; and each hour or so a "serious" collector could be spotted standing in front of it, facing it silently, thinking (no doubt) sacred thoughts.

Figure 20. **Grossular, about 2.5 cm, from the Jeffrey mine, Asbestos, Quebec. Winner of Best Thumbnail in the topical competition this year focusing on Canadian minerals. Wendell Wilson photo.**

WINNERS

The Saturday night banquet and awards ceremony was well attended, and the general mood, as usual, was a kind of pre-nostalgic regret, with strong cross-currents of simple relief, that the Show was over for another year. One nostalgia-inspiring notable in attendance was 86-year-old Manuel Ontiveros, up from Mexico with his family (hosted by Gene and Jackie Schlepp): readers of "Mexico IV" will recall that Señor Ontiveros gathered Guerrero amethyst in the 1930's, in his teen years, then went on to become a pioneering wholesale dealer in Mexican minerals.

Speaking of old-timers, three of the earliest couple-members of the Tucson Gem & Mineral Society were winners of a new award, called the Founders Award, for furthering the growth of the TGMS: this award went, with much affection and gratitude, to Dan and Betty Caudle, Bill and Millie Schupp, and Richard and Marjorie Flagg.

The award for best junior case of minerals went to Eleanor Bales; for best novice case, to Lauren Megaw (Peter's daughter); for best master case, to Ralph Clark. Ralph snagged this prize for (what else but?) his case of superlative thumbnails, and one of these thumbnails, his resplendent, transparent, emphatically ***red***

proustite from Chañarcillo, Chile, took the Lidstrom award for the show's single best specimen in competition. The award for the best advanced case went to John and Claudia Watson, for their superb display of pseudomorphs.

Peter Megaw's case of wonderful Mexican specimens took the Desautels award, and Roz and (the late) Norm Pellman's elegant case of Mexican agate slabs won the Miguel Romero Trophy. Paul Harter's leadhillite from Tiger took the Bideaux Trophy for best Arizona specimen. The Friends of Mineralogy gave their award for the year's best article in *Rocks and Minerals* to Martin Jensen, for his article on Yaogangxian mine fluorite. And Bert Ottens and Guanghua Liu were co-winners of the FM award for the year's best article in the *Mineralogical Record*, for having produced almost the whole of the special "China I" issue which was Jan.-Feb. 2005.

Finally there came the Carnegie Mineralogical Award for outstanding contributions to mineral science, mineral collecting, and mineral-related publishing or education. Its winner this year was June Culp Zeitner, of whom Carnegie curator Marc Wilson said that "she may be the most prolific mineral writer in the world." At age 90, June Culp Zeitner is now finishing her tenth book on minerals; also she has written nearly 1,000 magazine articles, has given countless talks, and has held leadership positions in many groups, from "rockhound" clubs to museum directorates to the American Federation of Mineralogical Societies. Congratulations to the "Queen of Mineralogy," as the Carnegie press release called her.

For those who need something specific to look forward to, the theme of next year's Tucson TGMS Show will be *Minerals of Australia*. And Marty Zinn would like to alert showgoers to next year's changes in his "hotel show" extravaganza: the Smuggler's Inn will be no more (as a show venue); replacing it, and holding at least 60 dealers old and new, will be the Quality Inn-Benson Highway, one block from I-10 exit #262 at Benson Highway and Park (this is only a short distance from the Tucson Electric Park show and other shows near Palo Verde). The Clarion and InnSuites will be Zinn-managed and mineral-laden as before . . . and both Marty and this editor/show reporter would like to encourage all dealers to contribute specimens to the "what's new days" case in the Clarion lobby (the case was rather thin this year, for reasons that I can only call inexplicable; "what's new days" is good for business and buzz, all around).

Time to sign off now, and get back to practicing my magic Tucson rain dance . . .

The Friends of Mineralogy, Inc.

Visit the National Friends of Mineralogy website:

www.friendsofmineralogy.org

Who We Are

The Friends of Mineralogy (FM), formed at Tucson, Arizona on February 13, 1970, operates on a national level and also through regional chapters. It is open to membership by all. FM's objectives are to promote, support, protect and expand the collection of mineral specimens and to further the recognition of the scientific, economic and aesthetic value of minerals and collecting mineral specimens.

Among its activities it sponsors awards for the best articles each calendar year in *The Mineralogical Record, Rocks & Minerals* and *extraLapis English* and gives special recognition at the February Tucson Gem and Mineral Show for exhibits which help explain an aspect of mineralogy.

Friends of Mineralogy 2006 Awards

The Friends of Mineralogy presented awards at the Saturday night banquet of the Tucson Gem and Mineral Show. The 2006 winners are:

Best Article 2005, *The Mineralogical Record,* Berthold Ottens and Guanghua Liu: for a collection of articles on Chinese mineral localities (v. 36, n. 1, p. 4–80, the "China" issue).

Best Article 2005, *Rocks & Minerals,* Martin Jensen: Fluorite from the Xianghualing Polymetallic Ore Field, Hunan Province, China (v. 80, n. 1, p. 32–38).

Best Article 2005, *extraLapis English* (Werner Lieber Award), Frederico Pezzotta: The Italian Island of Elba—A Mineralogical Jewel in the Tuscan Archipelago.

Best Educational Case, TGMS, 2006—Individual, Members of Cleveland Mineralogical Society—Synthetic Minerals.

Best Educational Case, TGMS, 2006—Institutional, California State Mining and Mineral Museum, California State Parks—JADE

In conjunction with the Best Article awards, FM presents a check for $200 to *The Mineralogical Record, Rocks & Minerals,* and *extraLapis English.*

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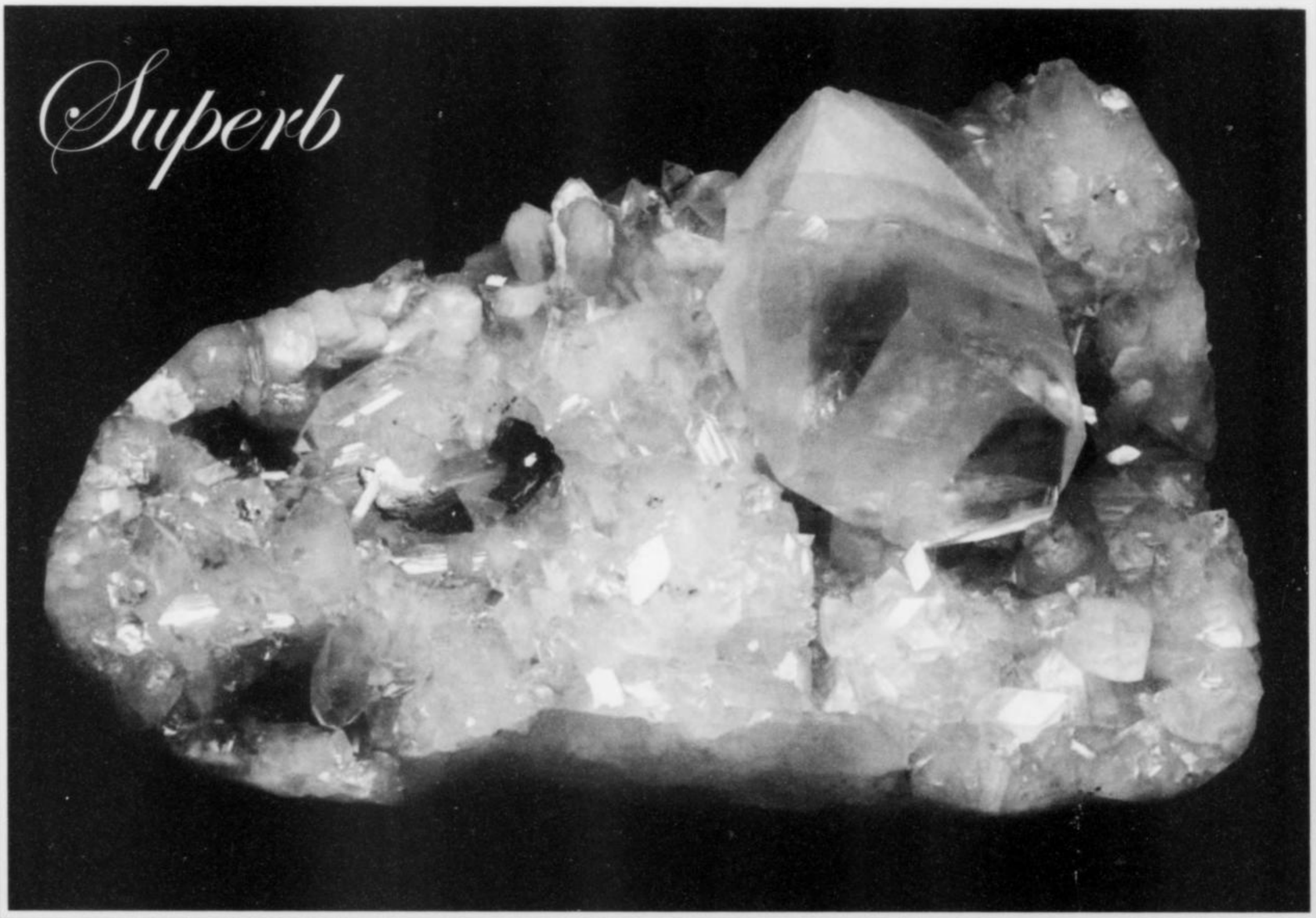

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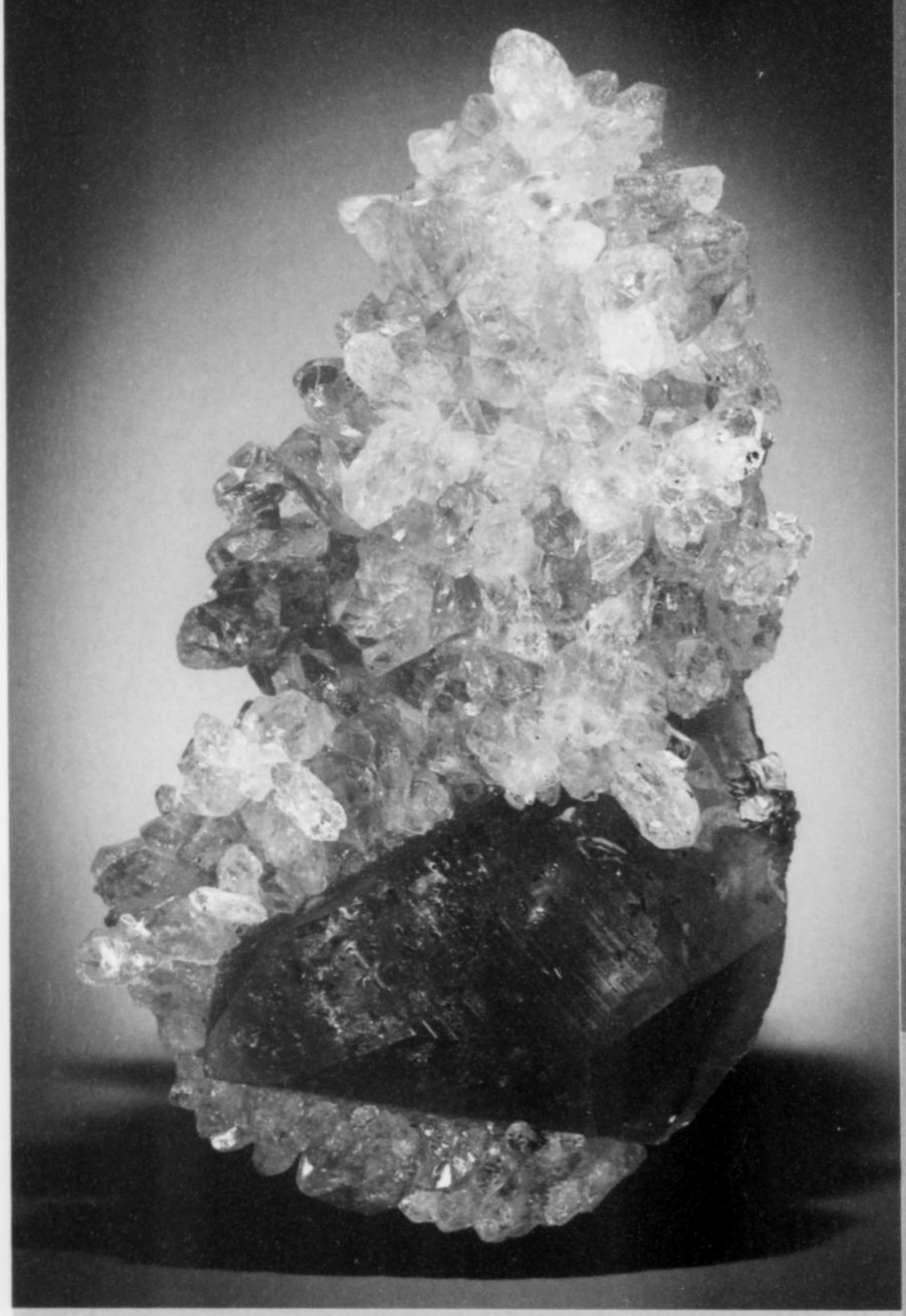


Rose Quartz on Citrine
Lavra da Ilha, Taquaral,
Minas Gerais, Brazil,
4 inches tall.

Wilensky photo.

Francon Revisited

Peter Tarassoff
91 Lakeshore Road
Beaconsfield, Québec, Canada H9W 4H8

László Horváth and Elsa Pfenninger-Horváth
594 Main Road
Hudson, Québec, Canada J0P 1H0

A Note from the Editors: *As readers may have noticed, we had a color reproduction problem involving some photos in the January-February issue in the article on the Francon quarry. Because that is such an important article, the definitive documentation of that famous locality, we don't want the problem to remain uncorrected, and so we offer here as a supplement an album of a selection of color-corrected images from that article (subsidized in part by our printer). Every magazine occasionally has color fidelity problems, and they generally must be accepted as part of the limitations of a very complex technology. However, we have wanted an article on Francon for many years, and the authors did such a splendid job on the text and photography that we want to take another shot at getting the following 21 photos documented just right for the Record. The original captions and figure numbers have been retained.*

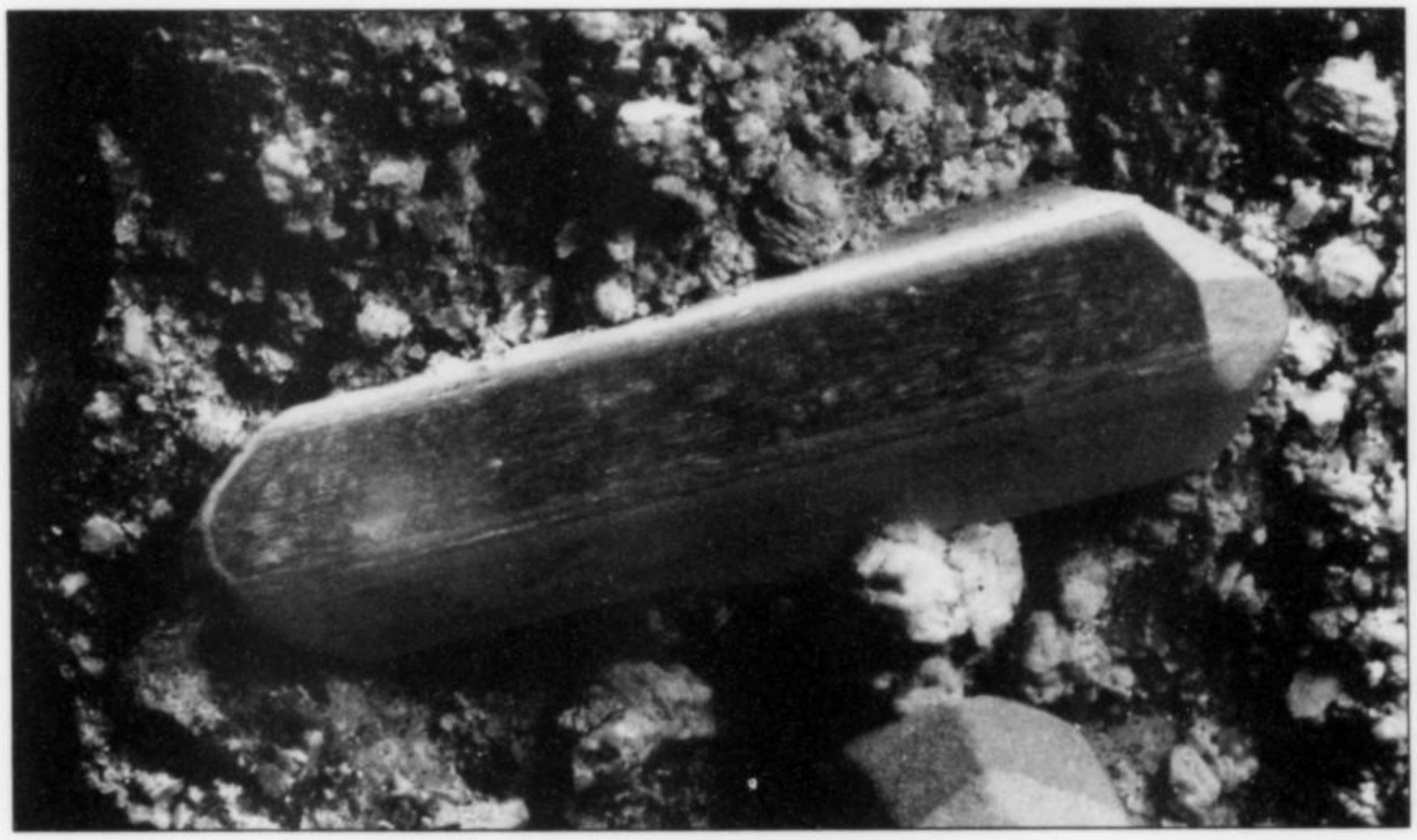


Figure 17. **Doubly terminated barite crystal from the Francon quarry, 2.5 cm. Redpath Museum specimen D5218.01, McGill University; L. Horváth photo.**

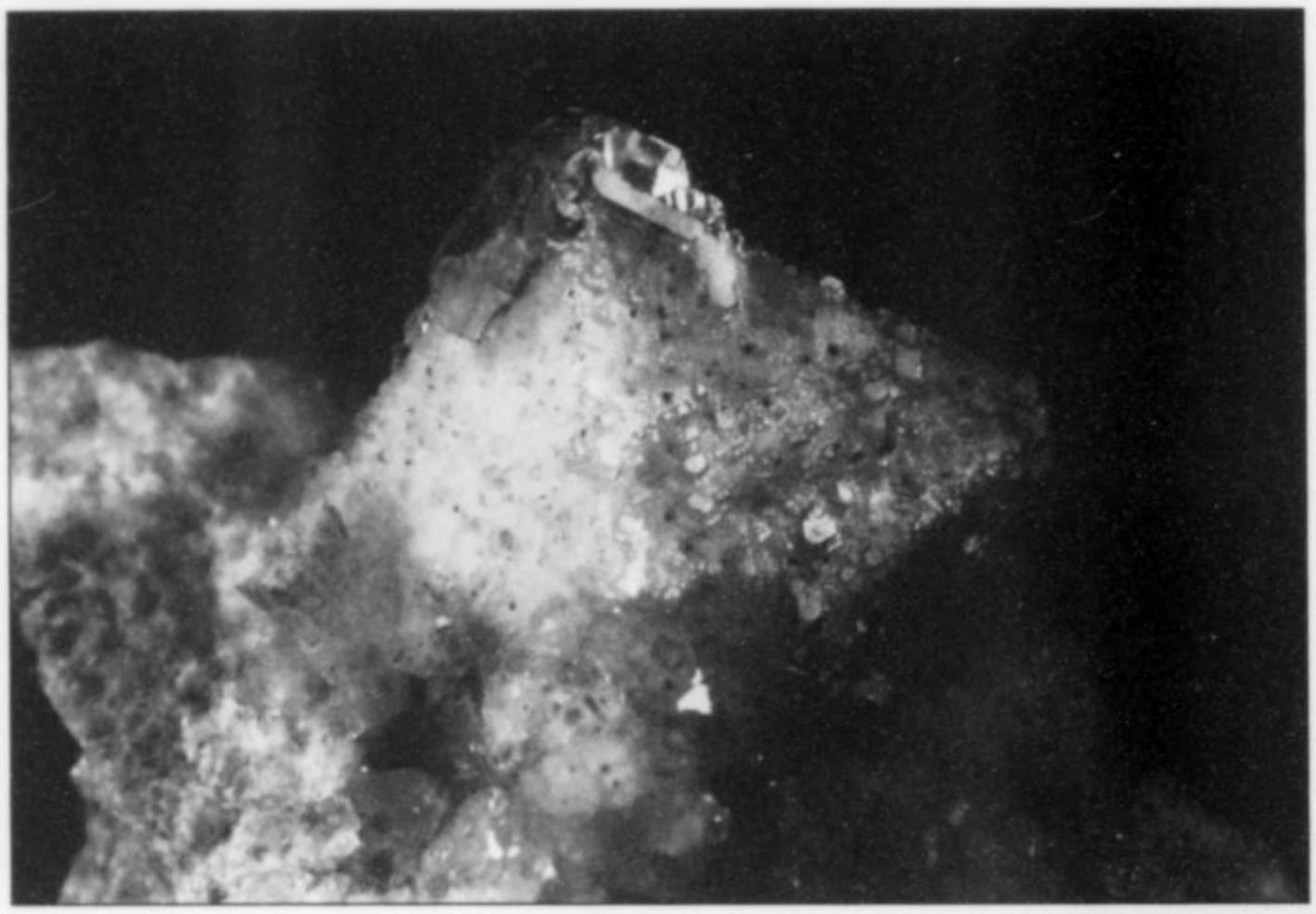
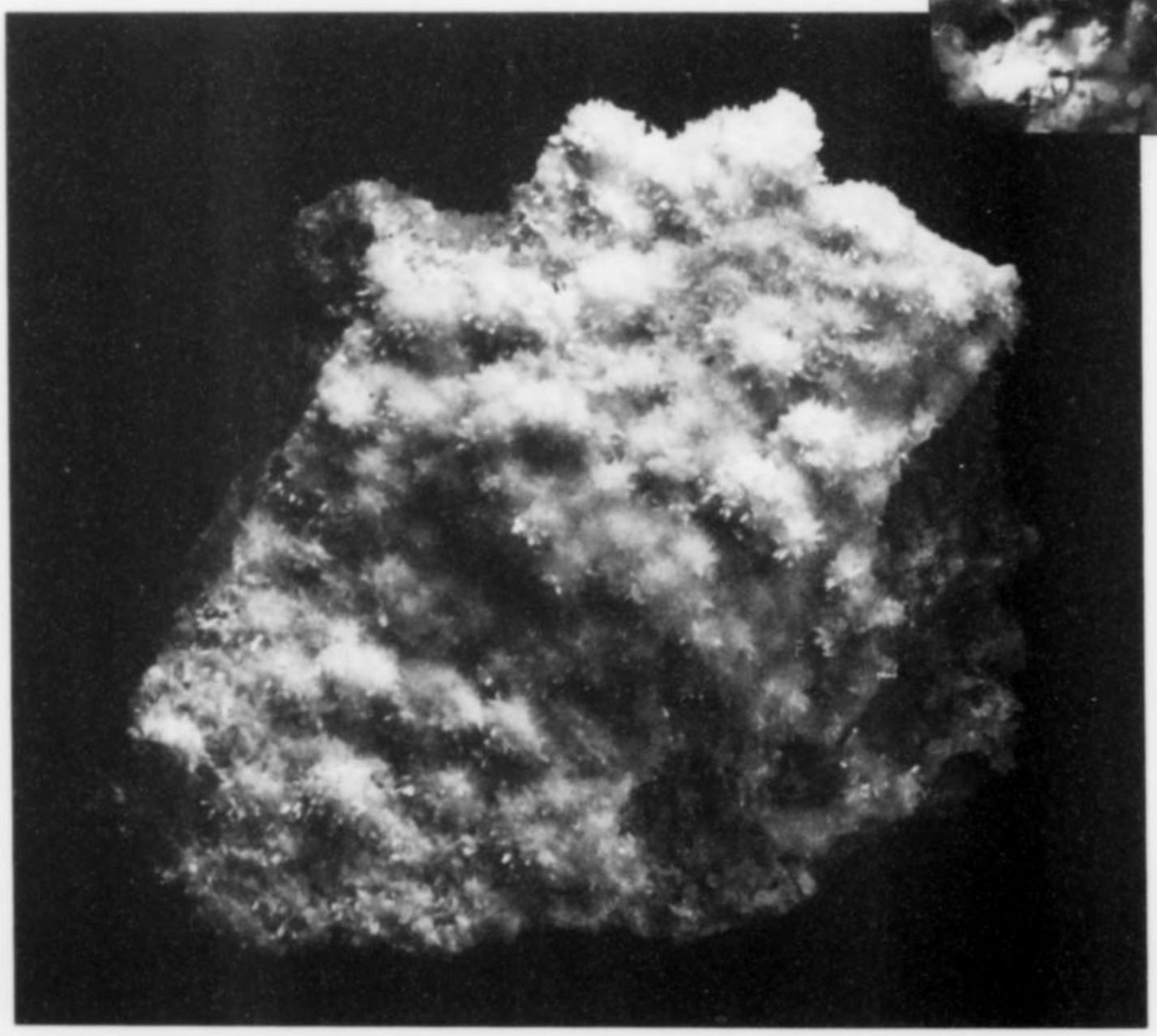


Figure 28. **Yellow dipyramidal cryolite crystal, 1.4 cm, with oriented cryolite overgrowths, from the Francon quarry. Horváth collection (no. 5517); L. Horváth photo.**

Figure 29. **Dipyramidal yellow cryolite crystals to 1.8 cm (one of the largest cryolite crystals ever found), with weloganite and strontianite. Horváth collection (no. 5516); L. Horváth photo.**

Figure 35. **Acicular white dachiardite-Na crystals covering a 5.5 x 6.5-cm matrix, from the Francon quarry. Doell collection; L. Horváth photo.**



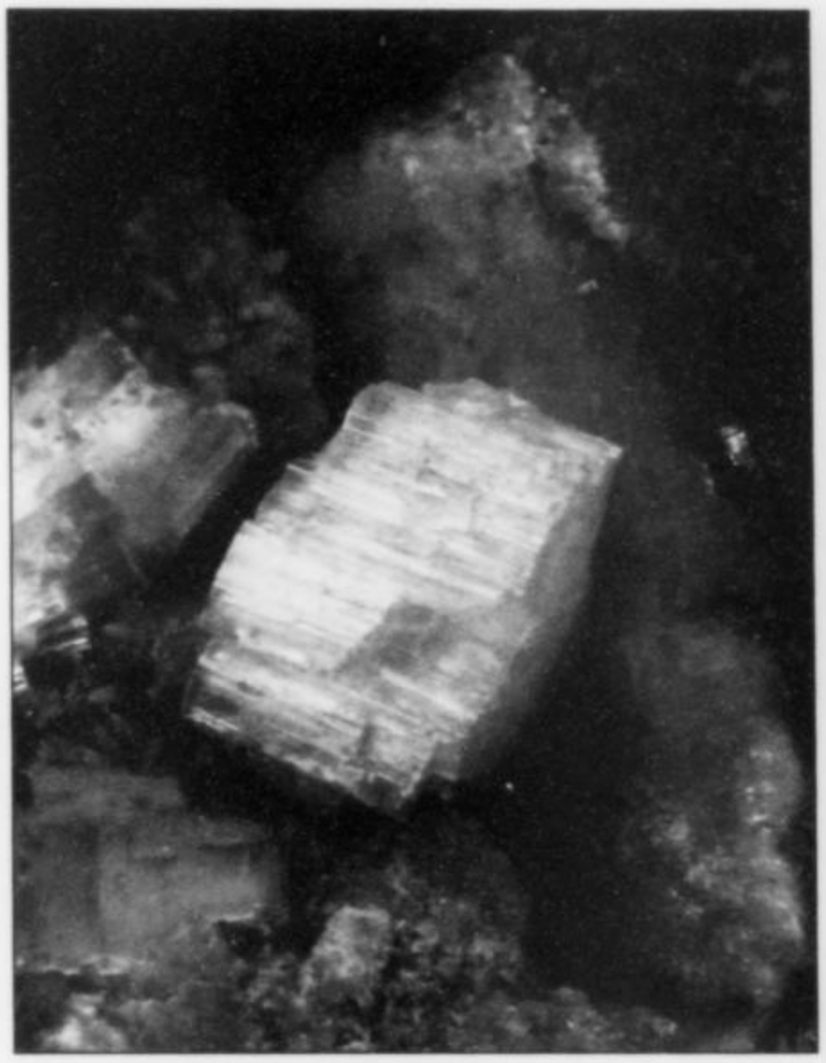


Figure 37. **Dawsonite crystal, 1 cm, in a cavity from the lower sill, Francon quarry. Doell collection; L. Horváth photo.**

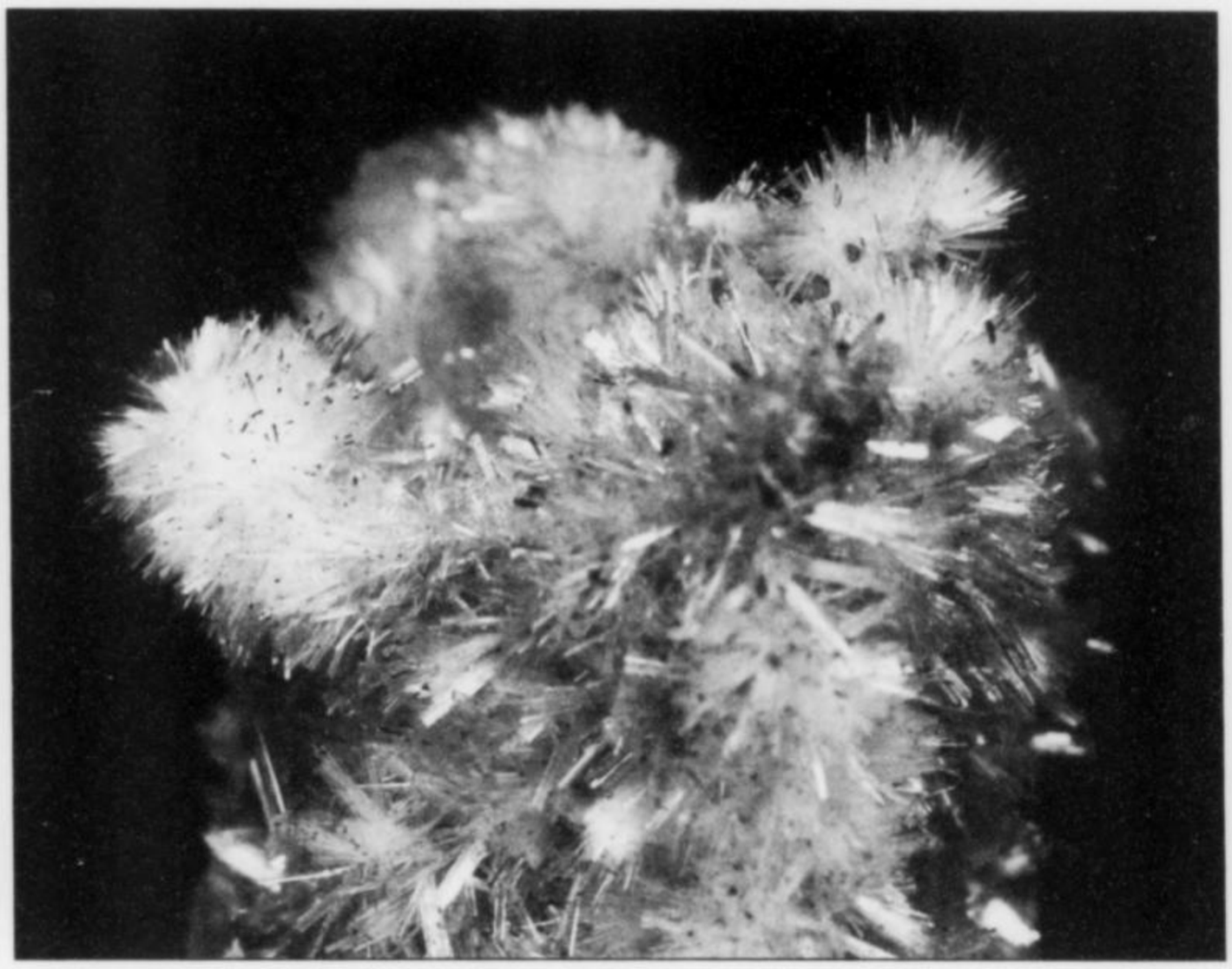


Figure 40. **Acicular dawsonite covering matrix, about 1.5 cm across, from the upper sill, Francon quarry. Horváth collection (no. 3229); L. Horváth photo.**

Figure 39. **Dawsonite crystals to nearly 1 cm with celestine sprays in a cavity from the lower sill, Francon quarry. Tarassoff collection (no. 2391); L. Horváth photo.**

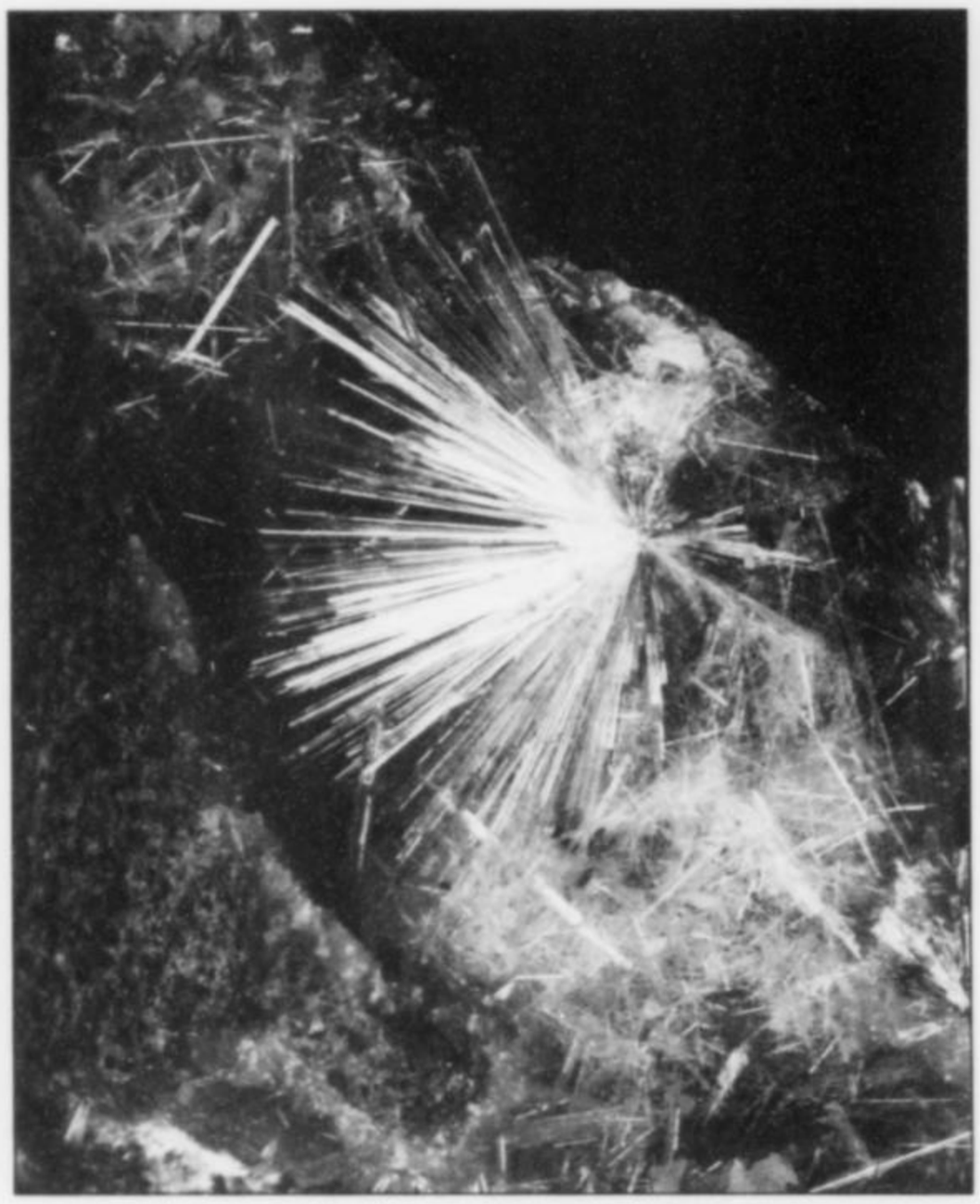


Figure 42. **Acicular dawsonite crystals to about 1 cm in a cavity; Francon quarry. Doell collection; L. Horváth photo.**

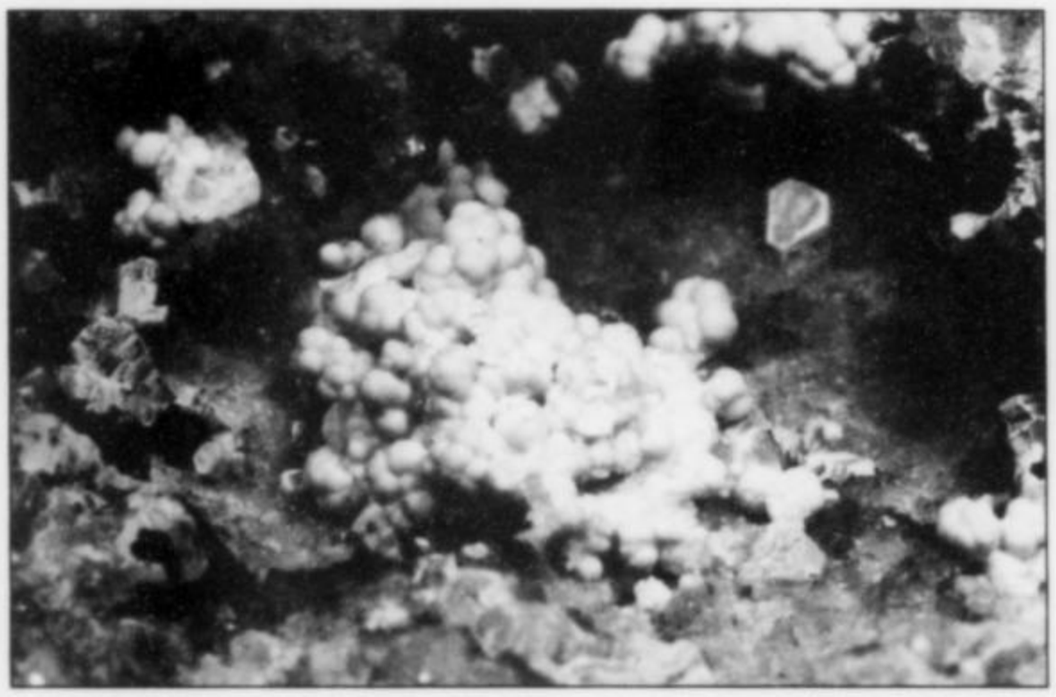


Figure 46. **Dresserite spherules about 1 mm each, on matrix, from the Francon quarry. Tarassoff collection (no. 2395); L. Horváth photo.**

Figure 47. **Dresserite spherules on a 1-cm smoky quartz crystal aggregate from the Francon quarry. Horváth collection (no. 5524); L. Horváth photo.**

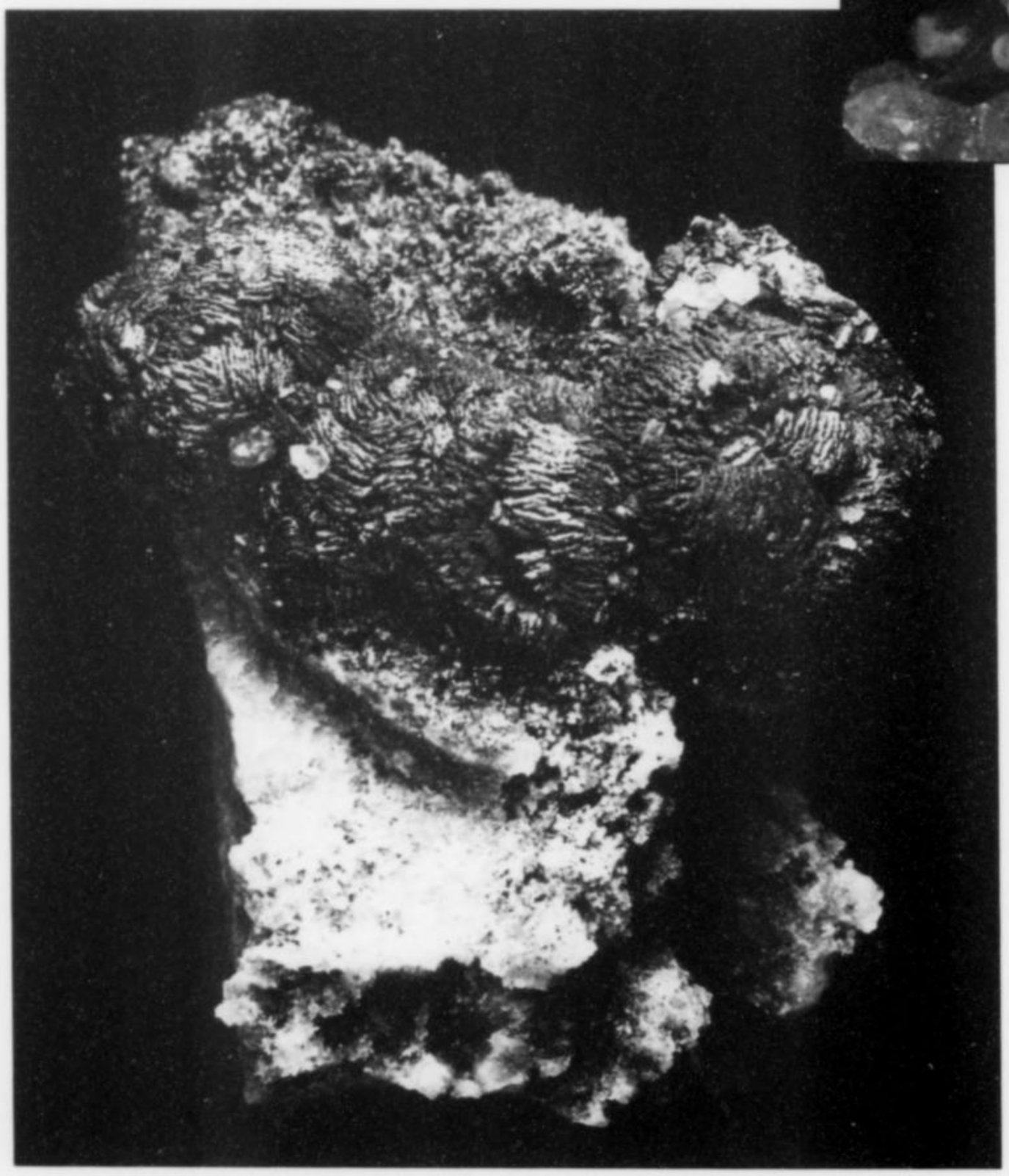
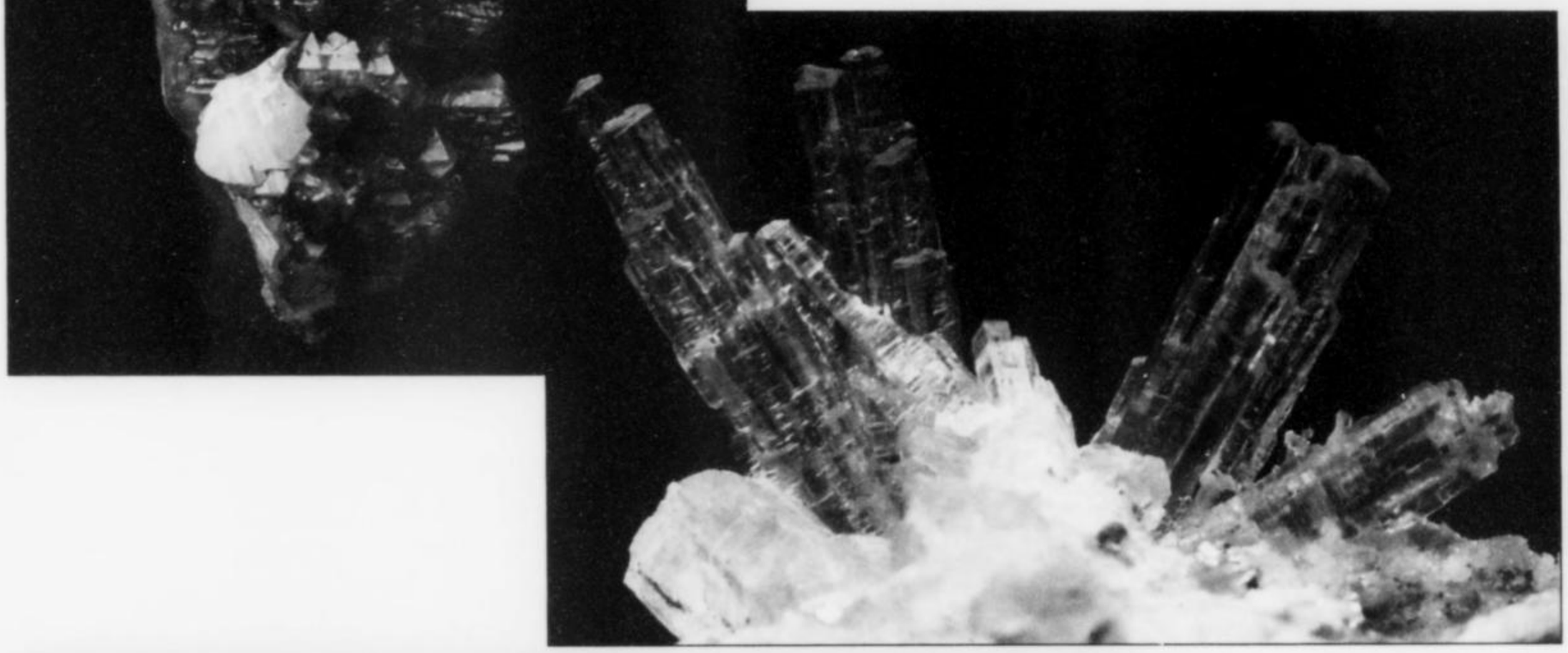


Figure 65. **Marcasite crystal aggregates (4.5 cm) on matrix, from the Francon quarry. Horváth collection (no. 5519); L. Horváth photo.**

Figure 72. **Smoky quartz crystals in parallel growth, 5 cm. Horváth collection (no. 3890); L. Horváth photo.**

Figure 80. **Strontianite crystals to 1 cm, Francon quarry. Horváth collection (no. 3211); L. Horváth photo.**



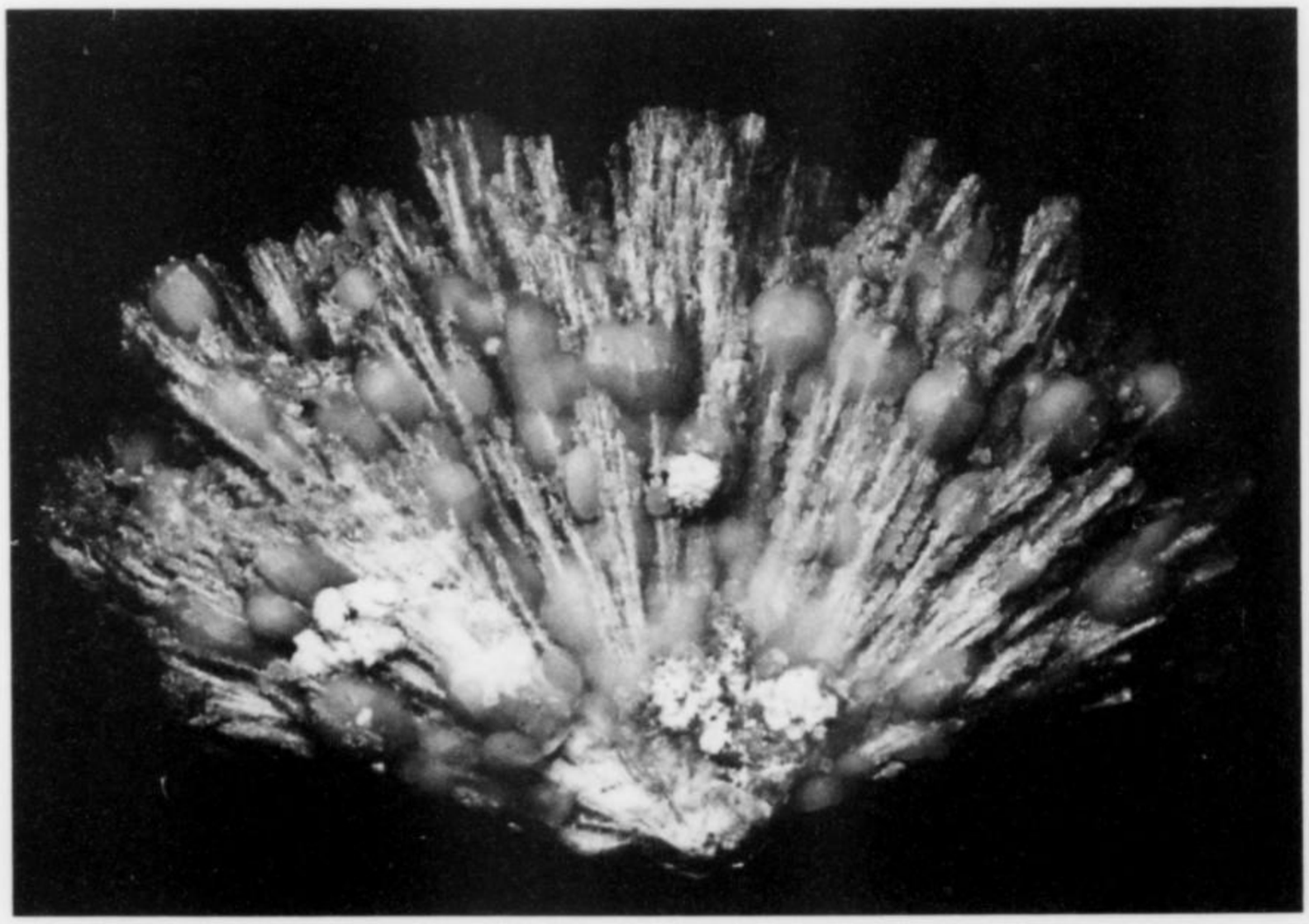


Figure 81. **Strontianite crystal spray, 8 cm, from the Francon quarry. Redpath Museum collection (no. D2251.2), McGill University; L. Horváth photo.**

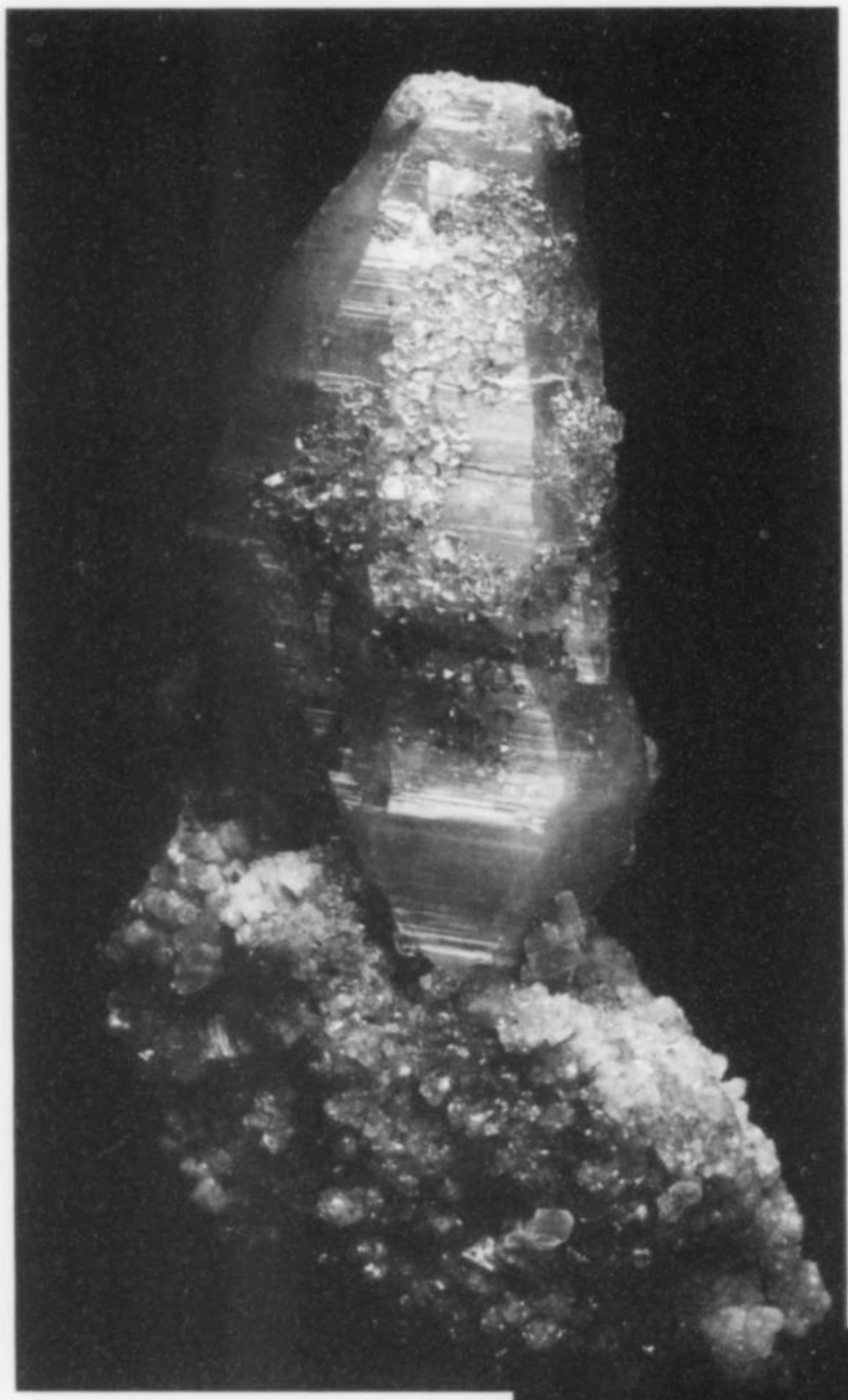


Figure 93. **Yellow weloganite crystal with tiny quartz crystals, on matrix, 3.5 cm, from the Francon quarry. Doell collection; L. Horváth photo.**

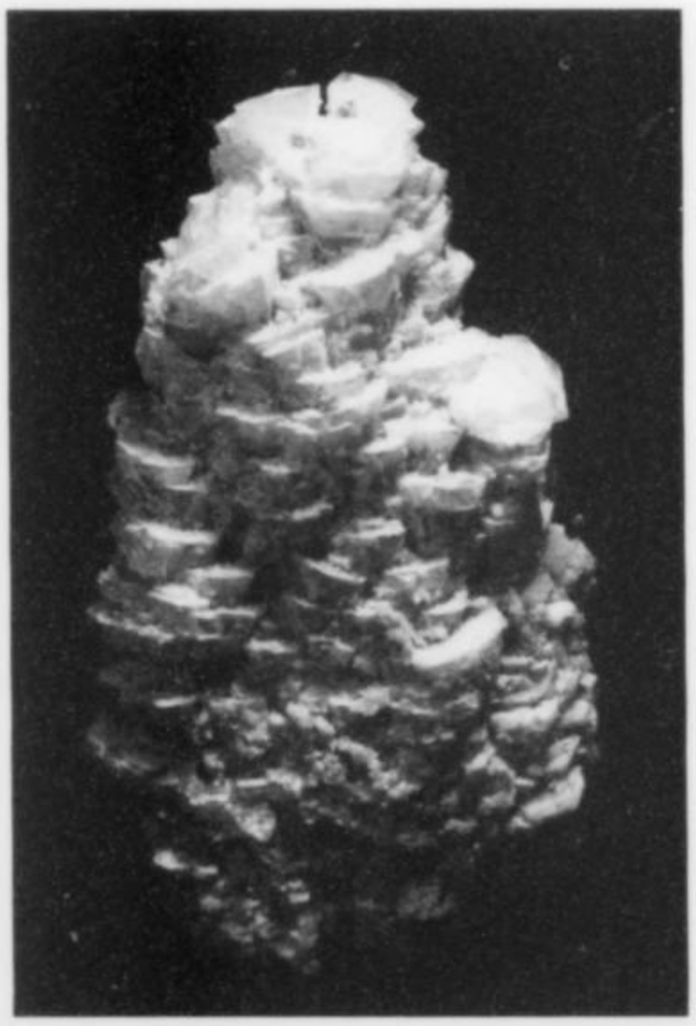
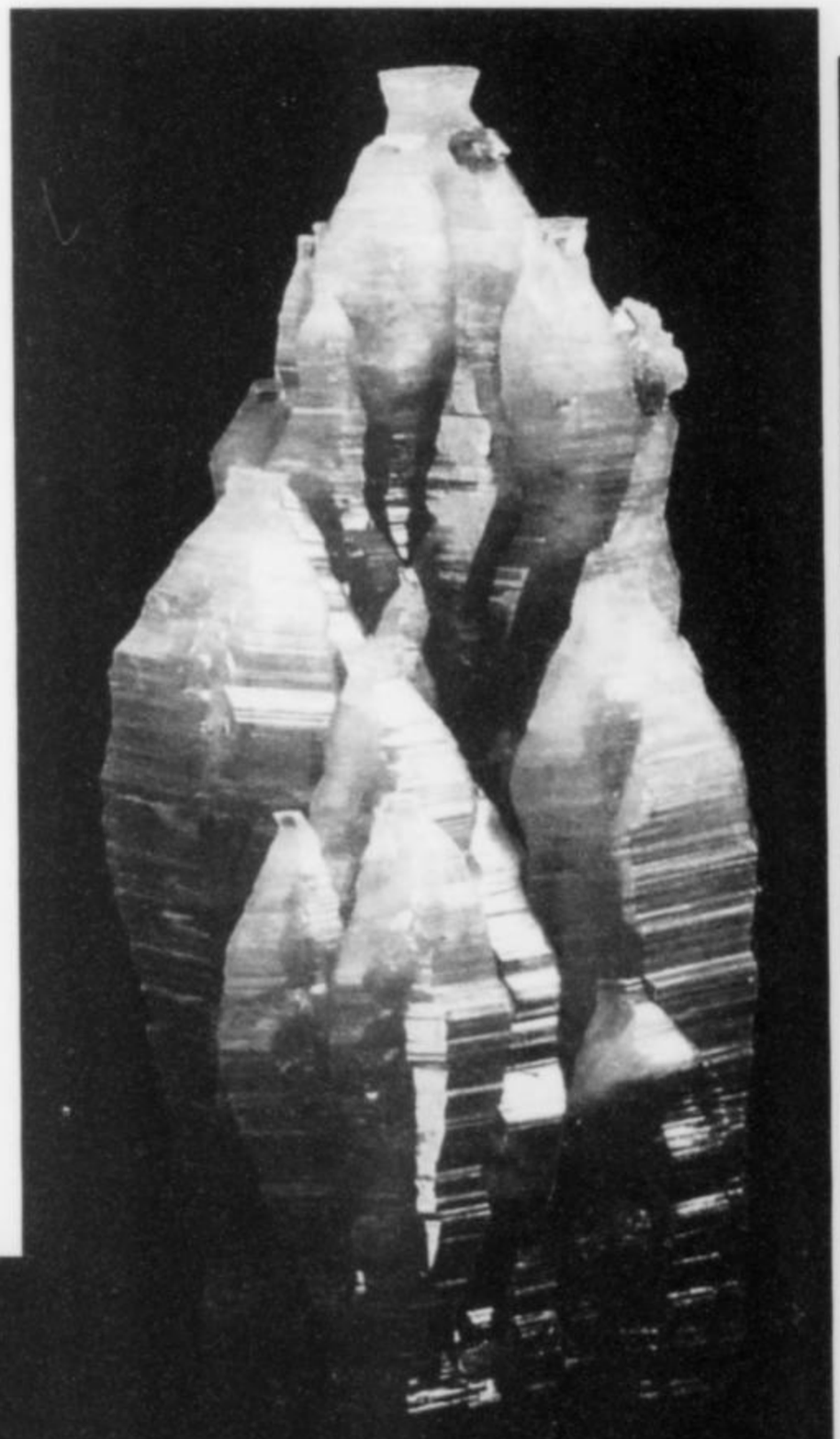


Figure 97. **Stacked weloganite crystal group, 4.8 cm. Doell collection; L. Horváth photo.**

Figure 94. **Weloganite crystals to 2.5 cm in a cavity, from the Francon quarry. Canadian Museum of Nature collection (no. 48628); L. Horváth photo.**

Figure 99. (right) **Weloganite crystal group in parallel growth, 3.8 cm, from the Francon quarry. Doell collection; L. Horváth photo.**



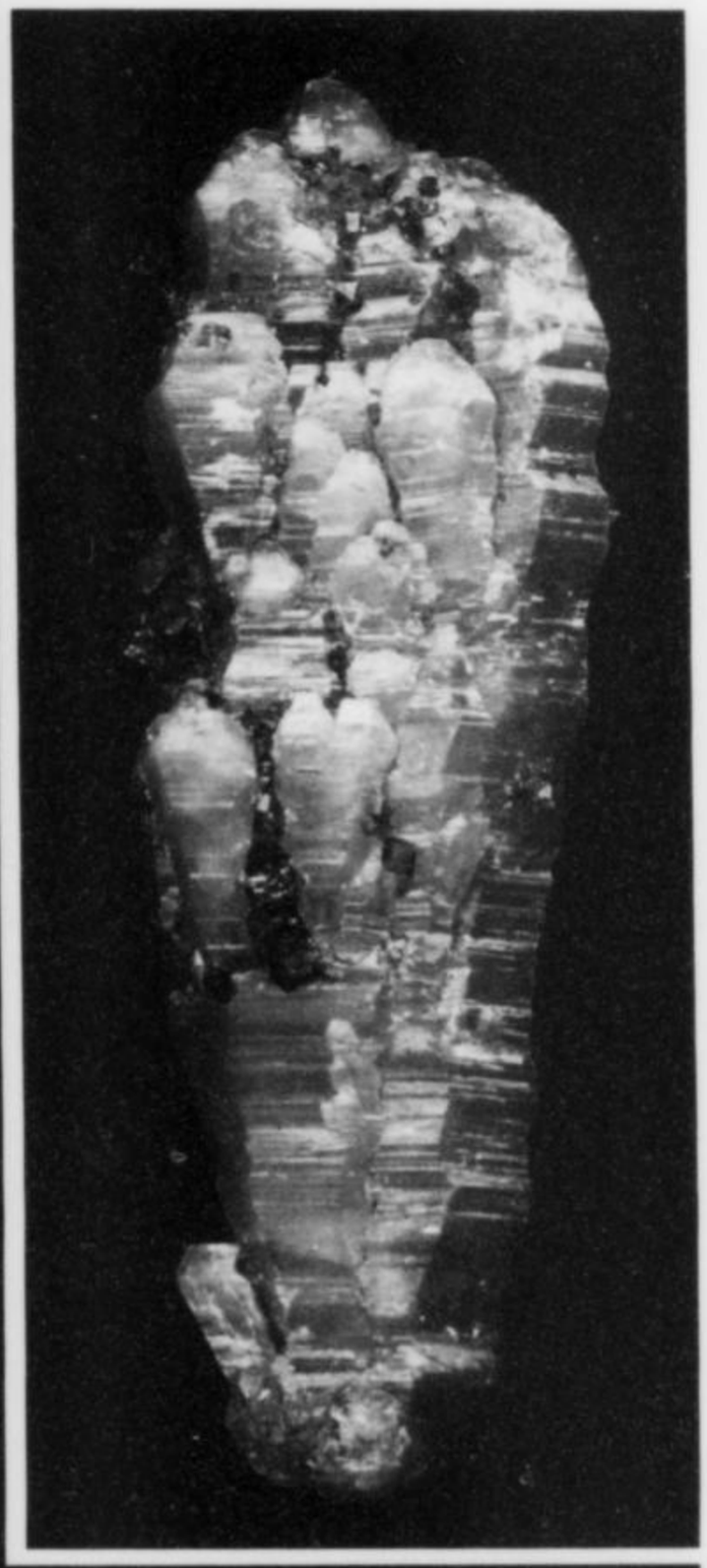


Figure 101. (far right) **Doubly terminated "floater" crystal of weloganite, 4.9 cm, from the Francon quarry. Doell collection; L. Horváth photo.**

Figure 102. **Doubly terminated "floater" group of weloganite crystals in parallel growth, 4 cm, from the Francon quarry. Horváth collection (no. 5508); L. Horváth photo.**

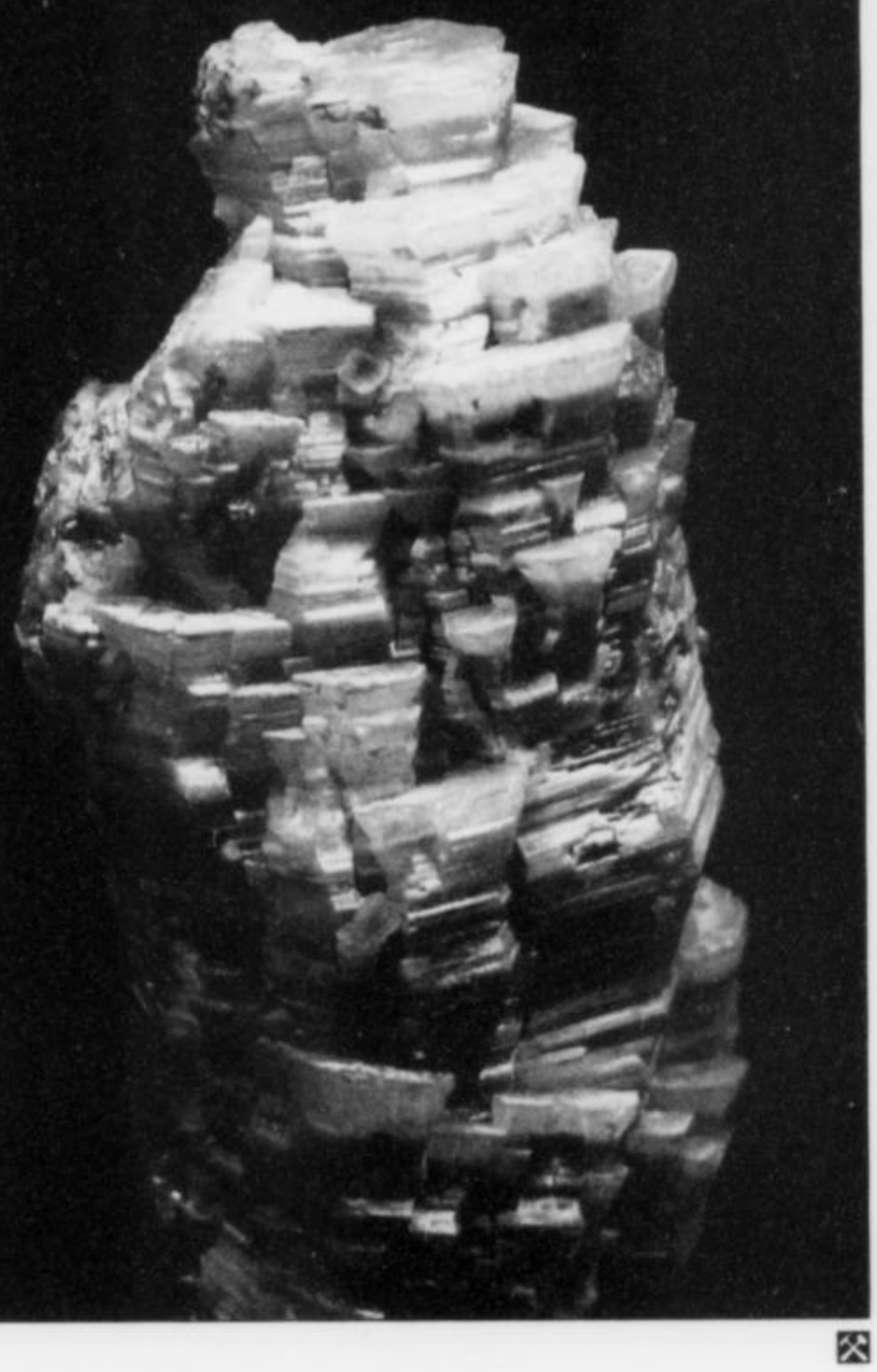


Figure 104. **Weloganite crystal aggregate in parallel growth, 5.5 cm, from the Francon quarry. Canadian Museum of Nature collection (no. 36378); L. Horváth photo.**

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www.wrightsrockshop.com
e-mail: wrightsr@ipa.net

**List your internet site here! Contact the editor at minrec@earthlink.net*

THE MUSEUM DIRECTORY

Colburn Earth Science Museum

Curator: Phillip M. Potter
Tel: (828) 254-7162
Fax: (828) 257-4505
Website: www.colburnmuseum.org
Pack Place Education,
Arts & Science Center
2 South Pack Square
Asheville, NC 28801
Hours: 10–5 Tues.–Sat.
1–5 Sun. Closed Mondays
and holidays
Specialties: North Carolina and worldwide minerals and gems
Accessible to persons with disabilities

Montana Tech Mineral Museum

Curator: Dr. Richard Berg
Tel: 406-496-4172
Fax: 406-496-4451
E-mail:dberg@mtech.edu
Program Director: Ginette Abdo
Tel: 406-496-4414
E-mail:gabdo@mtech.edu
Website: www.mbmg.mtech.edu
/museumm.htm
Montana Bureau of Mines & Geology
Montana Tech of UM,
1300 W. Park Street
Butte, Montana 59701
Hours: Mem/Day to Labor Day
9-6 daily; Rest of year M-F 9-4; Open
Sat & Sun May, Sept &
Oct 1-5 pm
Specialties: Butte and Montana minerals, worldwide classics

Western Museum of Mining & Industry

Curator: Terry A. Girouard
Tel: (719) 495-2182
email: wmmicurator@aol.com
Dir. of Educ.: Scott Wright
Tel: (719) 488-0880
Fax: (719) 488-9261
www.wmmi.org
1025 North Gate Road
Colorado Springs, CO 80921
Hours: 9–4 M-Sat.
Specialties: Colorado minerals & ores,
Western mining memorabilia, 14,000-vol.
research library

The Gillespie Museum of Minerals, Stetson University

Bruce Bradford
Tel: (904) 822-7331
E-mail: bbradfor@stetson.edu
Assistant Director: Holli M. Vanater
Tel: (904) 822-7330
E-mail: hvanater@stetson.edu
Fax: (904) 822-7328
234 E. Michigan Avenue
[mailing: 421 N. Woodland Blvd.
Unit 8403]
DeLand, FL 32720-3757
Hours: 9-noon, 1–4 M-F; closed during univ. holidays, breaks, summer
Specialties: Worldwide comprehensive collection of rocks & minerals; Florida rocks, minerals & fossils; large historic fluorescent collection

Colorado School of Mines

Curator: Paul J. Bartos
Tel: (303) 273-3823
E-mail:pbartos@mines.edu
Website: www.mines.edu/academic/geology/museum
Golden, Colorado 80401
Hours: 9–4 M–Sat., 1–4 Sun.
(closed on school holidays & Sundays in the summer)
Specialties: Worldwide minerals; Colorado mining & minerals

A. E. Seaman Mineral Museum

Website: www.museum.mtu.edu
Curator & Professor of Mineralogy:
Dr. George W. Robinson
E-mail: robinson@mtu.edu
Tel: 906-487-2572; Fax: 906-487-3027
Electrical Energy Resources Center
Michigan Technological University
1400 Townsend Drive
Houghton, MI 49931-1295
Summer Hrs (July-Sept.): M–F: 9–4:30,
S–S: 12–5
Winter Hrs (Oct–June): M–F: 9–4:30
*Closed Mondays: Nov–Mar.
Specialty: Michigan minerals, Lake Superior region & Midwest U.S. minerals

Houston Museum of Natural Science

Curator (mineralogy): Joel Bartsch
Tel: (713) 639-4673
Fax: (713) 523-4125
1 Herman Circle Drive
Houston, Texas 77030
Hours: 9–6 M–Sat., 12–6 Sun.
Specialty: Finest or near-finest known specimens

Natural History Museum of Los Angeles County

Fax: (213) 749-4107
Website: http://nhm.org/minsci
Curator (Mineral Sciences):
Dr. Anthony R. Kampf
Tel: (213) 763-3328
E-mail: akampf@nhm.org
Collections Manager:
Dorothy L. Ettensohn
Tel: (213) 763-3327
E-mail: dettenso@nhm.org
900 Exposition Blvd.
Los Angeles, CA 90007
Hours: 9:30–5:00 Daily
Specialties: Calif. & worldwide minerals, gold, gem crystals, colored gemstones, micromounts
Support organization:
The Gem and Mineral Council

W. M. Keck Earth Science & Engineering Museum

Administrator: Rachel A. Dolbier
Tel: 775-784-4528, Fax: 775-784-1766
E-mail: rdolbier@unr.edu
Website: http://mines.unr/edu/museum
Mackay School of Earth Science & Engineering
University of Nevada, **Reno** 89557
Hours: 9–4 Mon.–Fri. (closed university holidays) and by appointment
Specialty: Comstock ores, worldwide minerals, mining artifacts, Mackay silver

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Send vital information, as shown, to the editor. There is a modest annual fee (lower than our regular advertising rates).

Museums listed alphabetically by city

THE MUSEUM DIRECTORY

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Department Director: Dr. Madan Singh
Curator: Sue Celestian
Tel: (602) 255-3795
1502 W. Washington Avenue
Phoenix, AZ 85007
Hours: 8–5 M–F, 11–4 Sat.,
closed Sun. & holidays
Specialty: Arizona minerals, worldwide minerals & fossils, uses of minerals

Matilda and Karl Pfeiffer Foundation Museum

Executive Director: Teresa Taylor
Tel: (870) 598-3228
E-mail: execdir@ pfeifferfoundation.org
P.O. Box 66
1071 Heritage Park Drive
Piggott, AR 72454
Hours: 9–4 Tues.–Fri.,
11–4 Sat. (Daylight Savings Time)
Specialties: Fine collection of geodes from Keokuk, Iowa, area; worldwide collection of minerals

Carnegie Museum of Natural History

Collection Manager: Marc L. Wilson
Tel: (412) 622-3391
4400 Forbes Avenue
Pittsburgh, PA 15213
Hours: 10–5 Tues.–Sat., 10–9 F,
1–5 Sun., closed Mon. & holidays
Specialty: Worldwide minerals & gems

New Mexico Bureau of Mines & Mineral Resources—Mineral Museum

Director: Dr. Virgil W. Lueth
Tel: (505) 835-5140
E-mail: vwlueth@nmt.edu
Fax: (505) 835-6333
Associate Curator: Robert Eveleth
Tel: (505) 835-5325
E-mail: beveleth@gis.nmt.edu
New Mexico Tech,
801 Leroy Place
Socorro, NM 87801
Hours: 8–5 M–F, 10–3
Sat., Sun
Specialties: New Mexico minerals, mining artifacts, worldwide minerals

Arizona-Sonora Desert Museum

Fax: (520) 883-2500
Website: http://www.desertmuseum.org
Curator, Mineralogy: Anna M. Domitrovic
Tel: (520) 883-3033
E-mail: adomitrovic@desertmuseum.org
2021 N. Kinney Road
Tucson, AZ 85743-8918
Hours: 8:30-5 Daily (Oct.-Feb.)
7:30-5 Daily (Mar.-Sept.)
Specialty: Arizona minerals

Pacific Museum of the Earth

Curator: Kirsten Parker
Tel: (604) 822-6992
E-mail: kparker@ubc.ca
Dept. of Earth and Ocean Sciences
Univ. of British Columbia
6339 Stores Rd.
Vancouver, BC, Canada V6T 1Z4
Hours: 9–4, M–F
Specialties: BC–Yukon–Pacific NW, Worldwide Gold & Silver

U.S. National Museum of Natural History (Smithsonian Institution)

Curator: Dr. Jeffrey E. Post
E-mail: minerals@nmnh.si.edu
Collection Managers: Paul Pohwat and Russell Feather
(Dept. of Mineral Sciences)
Washington, DC 20560-0119
Hours: 10 am–5:30 pm daily
Specialties: Worldwide minerals, gems, research specimens

William Weinman Mineral Museum

Website: www.weinmanmuseum.org
Tel. (770) 386-0576
Director: Jose Santamaria x401
E-mail: joses@weinmanmuseum.org
Curator: Julian Gray x415
E-mail: juliang@weinmanmuseum.org
Collections Manager: Cherry Johnson x405
E-mail: cherryj@weinmanmuseum.org
51 Mineral Museum Dr.
White, GA 30184
Mailing Address:
P.O. Box 3663
Cartersville, GA 30120
Hours: Mon-Sat 10-5, closed Sundays
Specialty: Georgia and worldwide minerals, fossils and mining artifacts

University of Delaware Mineralogical Museum

Penny Hall,
Newark, DE 19716
University of Delaware
For directions, hours, contacts and
a virtual tour see
www.museums.udel.edu/mineral
Specialty: Worldwide Classic & New Minerals

Museo Civico di Storia Naturale

Curator: Dr. Federico Pezzotta
Tel: +39 02 8846 3326
Fax: +39 02 8846 3281
E-Mail: fpezzotta@yahoo.com
Associate Curator: Alessandro Guastoni
Department of Mineralogy and Petrography
Corso Venezia, 55
I-20121 **Milano,** Italy
Hours: 9 am–6 pm daily
Specialties: Italian minerals, pegmatite minerals

Gargoti Mineral Museum

Director: K. C. Pandey
Tel: ++91 2551 230528
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Fluorite, 6.1 cm, Mt. White, Chaffee County, Colorado. Photo by Jeff Scovil.

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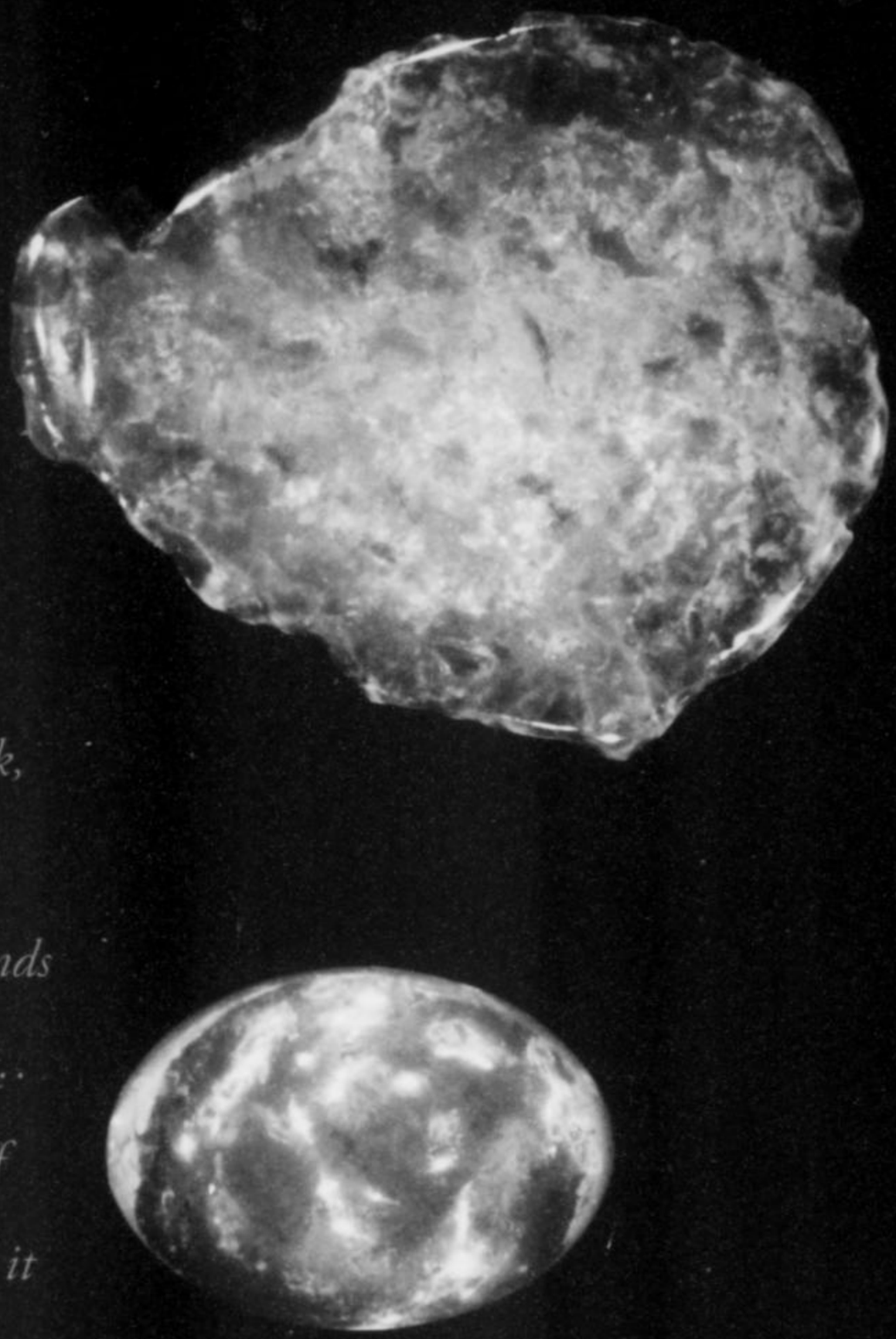

As we looked up the height of rock, there, peering and winking at us like myriads of curious eyes, shone thousands upon thousands of these bright opals... At the mine I went over the hoards of opals, each one a miniature sunset as it lies in your palm, like a shower of fireworks as they pour from your fingers.

– G.F. Kunz in Mexico

Mexican Opal

Photo: Harold & Erica Van Pelt