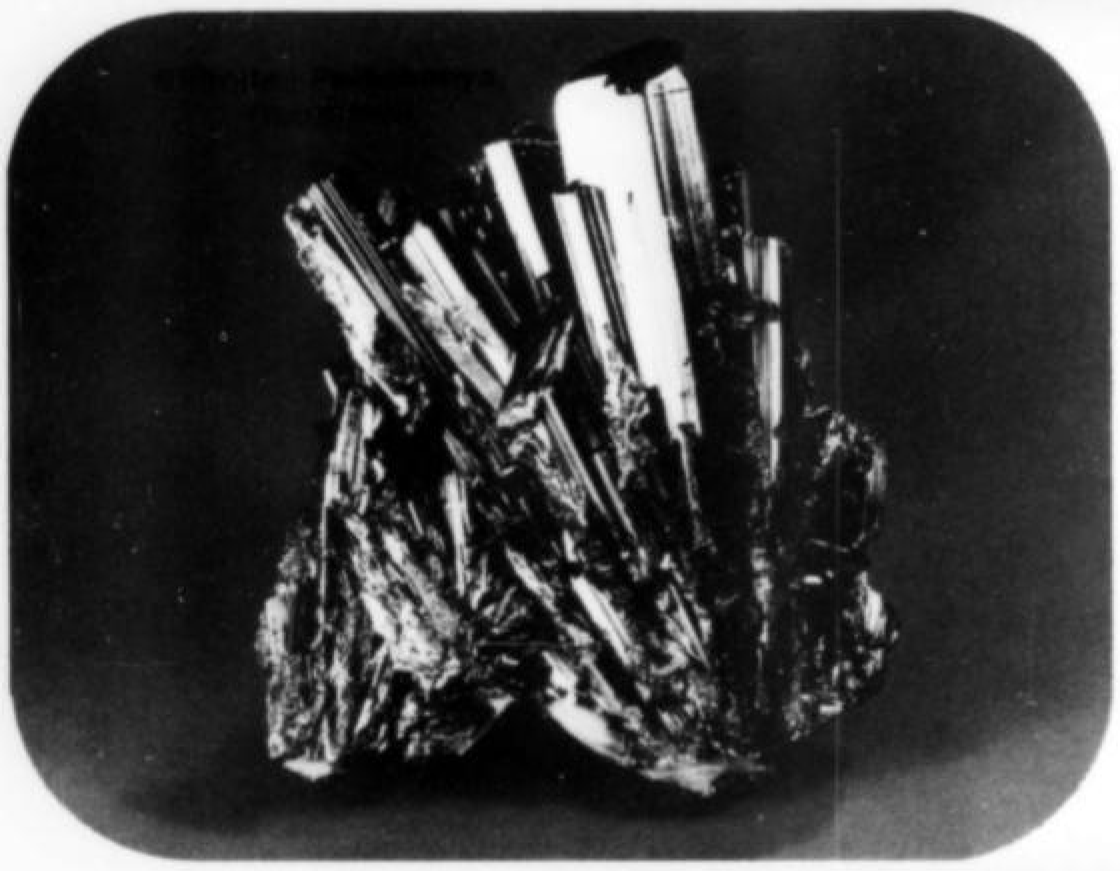
the Mineralogical Record

Volume Seven/Number Four $2.00
JULY – AUGUST 1976

Wulfenite - Glove mine
Pima County, Arizona

Gold - Nevada County, California

NEW ACQUISITIONS



Autunite - Daybreak mine,
Mt. Spokane, Washington

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- *ALL SPECIMENS SUBJECT TO PRIOR SALE*

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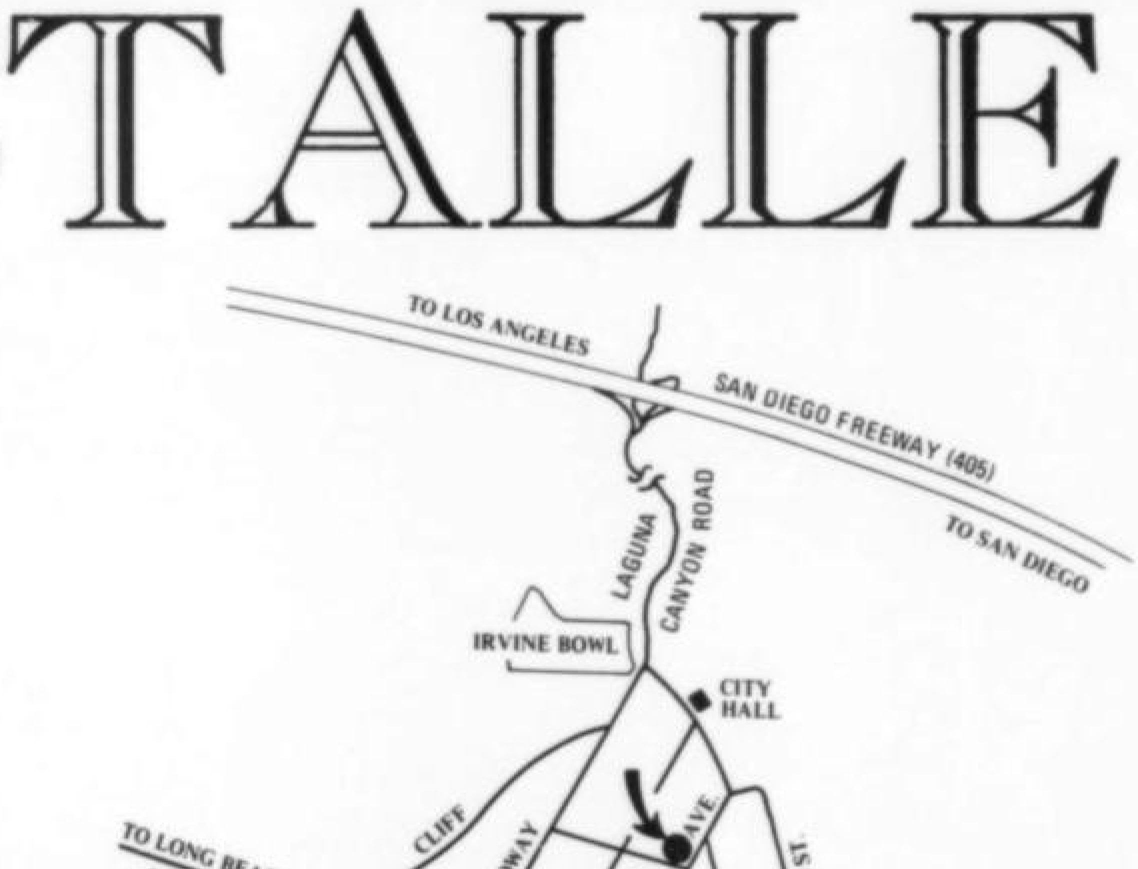

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feature articles

departments

MILARITE, from Piz Giuv, Grisons, Switzerland. Photo by Eric Offermann. The crystal is about 1 cm tall.

editorial matter

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GUEST EDITORIAL

MINERALS AND REPAIR

by
Wayne A. Thompson & Grant W. Richards

At a recent mineral show, a reputable dealer was overheard describing an exciting new acquisition. His comments on the fact that this specimen was **not** repaired were unsettling. A number of very uncomplimentary words were applied to repaired specimens. This touches on a point of great controversy in our profession today: REPAIRS; are they acceptable, and how valuable may repaired pieces be?

People from all walks of the mineral world have frequently voiced views mostly contradictory on the topic. The result thus far has been general confusion and remorse on behalf of many buyers and sellers. Some people actively discourage their friends from buying repaired pieces. And while the basis for such advice may have been one of good intent, that same person, when selling a repaired specimen, all too frequently sees his piece as the exception justifying the repair, and the price. In other instances specimens are drastically undersold; still others are never exposed to the market at all because their owners are not confident of their specimens value.

We are in need of unification on this topic. To establish a consensus of attitude and criteria in mineral repair, a review of other similar professions more highly evolved, could provide valuable direction.

A good place to start may be in establishing a general definition of the term REPAIR, and making distinctions between aspects of the terms REINFORCE, RESTORE and MANUFACTURE, as applied to mineral specimens. Instructive comparisons will then be drawn with examples of art in painting, sculpture, artifacts, etc.

REPAIR: Artificially securing any part (i. e. crystals, matrix) of a mineral specimen precisely in its original, pre-fracture position.

RESTORE: Artificially disguising damage or rebuilding missing parts (i. e. absent terminations, bruises, fractures) by use of inks, paints, clay, plaster of paris or similar substitutive materials.

Examples: a) Tourmaline specimen with plaster of paris replacing cleavlandite; b) Reconstructed azurite crystal termination by use of clay and paint.

REINFORCE: Securing of weakened (but not detached) areas with glue, etc., to prevent future breakage along planes of natural or unnatural weakness. Also the hardening of specimens with unstable clay or mud matrix.

Examples: Boleite, aurichalcite, crocoite and malleable native element specimens such as silvers, coppers, etc.

MANUFACTURE: (see as defined in Bideaux article "The Collector" MR Vo. 3, #3, p. 129) Briefly, a random arrangement of crystals or matrix in any unnatural position. Bideaux described one collection (which went to the American Museum) that was found to have several hundred fakes.

Given this basic terminology, the following examples of repair techniques utilized by other professions can be seen to parallel the repair of minerals.

Fine paintings are probably one of the most frequently restored items. By 1972, more than 1500 priceless paintings and murals of the city of Venice, Italy, were restored by cleaning, backing with reinforcing canvas, replacing missing paint, reviving colors with pigments, etc. Numerous Michelangelo frescoes and the works of many of art's finest masters have all undergone varying degrees of restoration to offset the wear of time and acts of vandalism.

Famous sculptures are also examples. Recently, Michaelangelo's Pieta was disfigured with a sledge hammer by a mad geologist (!) but was consequently restored to perfection. An especially interesting example encompassing restoration and reinforcement as suggested for minerals, are the stained glass windows of the Canterbury Cathedral, the greatest collection of medieval windows in England. Current work includes such extremes as total dismantling of the windows, recycling of the original lead "cames" separating the individual glass pieces, coloring restored with pigments and glass surfaces repolished with hydrofluoric acid. In one instance, a section of original glass with a pattern missing was restored and reinforced by having the missing pattern painted on a thin sheet of modern glass, molded and contoured to the original, and then bonded to it.

Other examples include the skeletons of dinosaurs standing in museums today, fully reconstructed. Their essence would be lost if displayed as discovered—a pile of bones. Also, many of the world's most famous artifacts are repaired or reconstructed. Notable examples include the Chinese Jade Suit, recovered in pieces over several acres of land, vessels and religious artifacts of the Egyptians and American Indians, etc.

The important point here is that whether it be sculpture, artifacts or any other artistic/academic pursuit, these professions do not discourage nor indiscriminately devalue or hide such repairs and restorations. Rather, they are accepted as a totally necessary and justified means of preserving the total aura and essence of a creation. This attitude is reflected in their valuations of things thusly preserved.

The above examples have obviously involved irreplaceable creations from man's past. They, like minerals, are one-of-a-kind and unique. The irony is that for some reason, minerals have apparently not been considered on an equal plane by the bulk of the profession; repair is viewed as if to purport fakery, or as a revealing comment on one's supposedly unimpeachable taste for quality and perfection.

Quality and repair can co-exist. Many of the specimens considered the finest examples of their species and many of the top specimens in the world are repaired. The world's finest crocoite (owned by Ed Swoboda) the Wilber rhodocrosite, numerous phosphophyllite specimens, almost all major tourmalines including those from Pala, the finest Red Cloud wulfenite (Harvard's), the fabulous Roebling apatite, many amazonite and smokey quartz groups, Tsumeb, Ajo and Bisbee azurite, Tsumeb cerussite and on throughout the mineral spectrum's best.

If a specimen can be repaired and still be considered the finest example of its species, this would imply that repair does not alter the quality of a fine specimen. With this in mind, collectors, dealers and museums should be alert for the large volume of fine quality minerals whose damage and consequent repair does not detract from their structural and aesthetic beauty.

Repair is almost always the consequence of extraction of a specimen upon discovery, or later handling. As experienced field collectors, the authors have seen many specimens destroyed or damaged during attempted recovery. Some specimens simply cannot be recovered flawless. Pegmatites differ in that they have often suffered fracturing by natural processes.

One of the primary reasons repairative and restorative techniques are so widely accepted by the art profession and others, is that the end product is frequently an excellent rendition of the "original perfection." This would have to be the case for minerals too, as sloppy or technologically inept repairs, while better than none at all, cannot restore to fine specimens their true beauty and value. Repaired minerals should not exhibit obvious chips or bruises related to the point of repair; the repair should be clean and effective, both in strength and unnoticeablility.

With these criteria in mind, almost all major collections (private or museum) contain at least one, and usually many, repaired specimens. Recent discussions with a major Australian collector disclosed that most serious collectors in that country don't even consider repairs if they are well executed. This is an interesting contrast to the older collectors of the U. S. east coast, to whom repairs are generally unthinkable. Many collections have suffered because repair is largely misunderstood and inconsistently dealt with. One of the world's finest mineral specimens was recently traded from a museum to a dealer because of it being a repair. Unfortunately, the repair dilemma is also costing our profession fine specimens right at the very source upon which it depends: field collectors and professional miners.

Many times, an excellent crystal has been recovered by a miner who did not save the matrix because he believed a repair was totally undesirable; such fine specimens are lessened irretrievably. What if the matrix of the world's finest rhodocrosite had been thrown away? What if the miner who recovered a recent exceptional brazilianite had sold it as three incomplete pieces instead of a repaired "world beater"? These would have been incredible losses. Unfortunately, there have been others who were not as fortunate. Collectors would realize a greater abundance of fine minerals by evolving a positive attitude toward repaired minerals and sharing that attitude with others. We will continue to be deprived in this manner until such an attitude is adopted.

The authors would like to conclude with an invitation for written response from the readership. This critical issue calls for discussion by people experienced in minerals. All collectors and miners young in their interest, and those otherwise, must be better directed in their efforts and aims. Besides aiding the economy of the mineral business, this will ultimately benefit the science and the personal satisfaction of collecting for a larger number of people.

friends of mineralogy

1975 Annual Report continued from V.7, No. 3

Carl Francis
Long Hill Tungsten Mine
Trumbull, Connecticut

The Long Hill tungsten deposit at Trumbull, Fairfield County, Connecticut, which is noted for its large pseudomorphs of wolframite after scheelite, and an adjacent topaz occurrence, which produced good crystals, is located in Trumbull's Old Mine Park. Mining was never very profitable and the town received the sixty-one acre property in lieu of back taxes in 1937. The old pits were fenced-in, underbrush was cleared, and a picnic area and playground were developed as a W.P.A. project. With a swimming area, drinking water, a comfort station, and parking lot Old Mine Park is today an attractive and popular recreational facility for the town of Trumbull.

As the mine dumps are in the wooded areas behind and above the ballfield, collecting does not interfere with the normal recreational activities. Although collecting is not hazardous, in 1959 a young fellow entered one of the fenced-in pits and could not get out unaided. Because of this incident, the town threatened to close the collecting areas but local collectors were able to negotiate the agreement which now governs collecting at Trumbull. Collecting is permitted if collectors check-in with the town police department beforehand.

This policy has operated successfully ever since and it is important that it continue to do so for Old Mine Park is one of the few localities in the vicinity of the New York and New Haven metropolitan areas which is still accessible to collectors.

Emery Mines
Chester, Massachusetts
Carl Francis

Emery is a physical mixture of magnetite and corundum which was formerly an important industrial abrasive. It was recognized at Chester, Hampden County, Massachusetts in 1864 and was produced intermittently from six mines until 1914. These mines are especially noted for their abundant specimens of margarite, the pink "brittle mica," and glossy, purple to gray crystals and masses of diaspore. Amesite and corundophilite, a chlorite, are two other interesting accessory minerals from Chester. Although overgrown, the extensive dumps still produce virtually all of the species verified from Chester.

Public access to at least two of the mines and their associated dumps has been insured by the establishment of the John J. Kelley Memorial Wildlife Area in 1973. Concern for the preservation of a bat colony which inhabits the old mine adits led Wynn Seville, the District Wildlife Manager of the Massachusetts Division of Fish and Wildlife, to approach the Kelley Hardwood Company with an offer to purchase the property. Instead, the Kelley brothers donated the 250 acre tract now named in memory of their father to the state.

An open policy toward collecting now obtains for the Kelley Wildlife Area largely through the efforts of G. Fred Lincks, a dedicated collector, who guided Seville to the collecting areas and has presented him with a suite of specimens for his office.

Sunstone Area, Lake County, Oregon
M. M. Groben

This area is located in the Warner Valley, Lake County, in the southcentral portion of Oregon. It is east of Lake Albert, north of Plush, and consists of 2,560 acres of federal land in Sections 2, 3, 10 and 11, T33S, R24E, W. M.

The collecting area is covered with scattered pieces of feldspar which have been weathered out of the underlying basalts. This feldspar, calcic labradorite, is gemmy and sometimes exhibits a red to green schiller effect and is much sought after by rockhounds for faceting and polishing purposes.

Most collecting in the past has been only of the surface material. However, on August 3, 1970, R. E. Rodgers filed a claim under the mining laws of both the United States and Oregon. This claim was followed in rapid succession by several other claims. All these claims were made with the purpose in mind to recover feldspar with a more brilliant schiller located 5-10 ft. below the surface.

Local rockhounds, and the Southern Oregon Mineral Club at Lakeview in particular, protested these claims which were located on lands belonging to the Bureau of Land Management, Department of Interior.

Because the claims were legal and valid, no negative action could be taken. However, because the Bureau of Land Management was under instructions to conduct studies for comprehensive land management, the area around these claims was examined and found to contain ample quantities of feldspar. A notice proposing to amend the classification of the land in the Sunstone Area under the Multiple Use Classification Act of 1964 by segregating it from the operation of the general mining laws was sent to the public. No adverse comments were received and on January 8, 1971, the Secretary of the Interior officially withdrew the area from the 1872 mining laws and set aside 2,560 acres for recreational purposes and noncommercial collecting.

No power equipment is to be used on this area as designated by federal law. Commercial collecting is prohibited.

The area is forever open, at no fee, to all collectors seven days a week. for the collecting of feldspar whenever anyone so desires.

Thunder Egg Lake Agate Beds
Fremont National Forest, Oregon
M. M. Groben

The proposed withdrawal from the nonmetalliferous mining laws of the United States of the Thunder Egg Lake agate beds in the Fremont National Forest of Oregon has not yet been finalized. The withdrawal area, consisting of 960 acres in Sections 8 and 17, T40S, R21E, W.M., is located in the south central area of Oregon, about 7 or 8 miles southeast of Lakeview. The withdrawal would be for the purpose of reserving this area from commercial mining of nonmetalliferous minerals and more specifically for the reservation of this area as a recreational thunder egg agate public digging area. If valuable deposits of gold, copper, silver, zinc, etc. were subsequently discovered, these minerals would still be open to mineral claims and mining on a commercial basis under the existing laws.

This particular withdrawal area was actually initiated by the U.S. Forest Service, which felt that it was in the public interest to reserve this area for rockhounds who are interested in hunting and removing small quantities of thunder eggs for their personal collections or as a part of their hobby. The withdrawal, as proposed by the Forest Service, would prevent nonmetalliferous claims from being filed on an exclusive personal or commercial basis for the purpose of removing semi-precious gems or rocks.

The initial action for this withdrawal was made on July 26, 1971. The Forest Service considers the area withdrawn as of the date in the first pulication in the Federal Register. Formal withdrawal awaits only the verification by the Bureau of Land Management which is examining the area as part of the governmental procedure.

This governmental procedure consists of a series of inhouse government actions. First is the preparation of a formal request for withdrawal. Next, is a justification report followed by a staff report by the proposing agency. There are also mineral examinations, environmental analysis, and BLM staff reports, all of which require approval at both the regional and national levels. If no major objection is received from the public within 30 days after its publication in the Federal Register, the proposal is approved and the withdrawal is formalized.

The above procedure for withdrawing from the federal mining laws, public lands for the purpose of recreation can just as readily be applied to mineralogically important areas. The similarity between semi-precious stones and minerals is obvious, particularly when the withdrawal would be made for recreational purposes, as well as educational purposes. The net result would be "Mineral Locality Preservation" for both the collector and the public at large.

Petrified Forest National Park
Holbrook, Arizona
Peter J. Modreski

DESCRIPTION

Petrified Forest National Park presently comprises 147 sq. mi. of land about 20 miles east of Holbrook, Arizona. Logs, mainly of the genus Araucarioxylon, were transported by streams and became embedded in mudstones and siltstones of the Chinle formation of Late Triassic age. The wood became silicified after burial and now consists of varieties of crystalline and cryptocrystalline quartz including agate, chalcedony, jasper, and amethyst. A total of about 40 fossil plant species are found in the park, along with several species of fish, amphibians, and reptiles. Some 240 archeological sites are also within the park, and the park includes areas of "painted desert," multicolored badlands of the Chinle and the overlying Bidahochi formations.

EARLY HISTORY

Indian legends explained the petrified logs as bones of slain giants or as the arrow shafts of a thunder god. An 1851 expedition by Capt. Lorenzo Sitgreaves was the first Anglo discovery of the petrified wood. In 1879, at the suggestion of General Wm. T. Sherman, an army detail from Fort Wingate obtained and shipped one large log to the Smithsonian Institution. In 1883 the building of the Atlantic and Pacific Railroad through the area of the present Park, along the course of the Puerco River, opened the area to tourism. The town of Adamana, established in 1890, was located 15 miles north of "Chalcedony Park." Adamana served as a railroad stop and headquarters for visits to the area; the Santa Fe Railroad (successor to the A & P) publicized the petrified forest. A period of exploitation followed that threatened to rapidly destroy the petrified wood deposit. Much wood was carried off for curios and jewelry, and other logs were dynamited in search of amethyst crystals. A mill was built at Adamana to crush petrified wood for abrasives.

Preservation

In 1895 the Arizona territorial legislature petitioned the U. S. Congress to make "Chalcedony Park" a national park, but nothing was accomplished immediately. Yellowstone, the first national park, had been established in 1872. Lester Ward, a U. S. Geological Survey paleobotanist, examined the area in 1899 and recommended that it be withdrawn from homesteading and be made a national park. In June of 1906 the Antiquities Act was passed by Congress; this authorized the President to designate sites of scientific or historic interest as National Monuments by proclamation. Citizens in the southwest had lobbied for passage of the act, which was particularly intended to protect Indian ruins in the southwest. In December of the same year President Theodore Roosevelt created Petrified Forest National Monument, the second national monument to be proclaimed under the act. The monument originally comprised 95 sq. mi. Its size fluctuated--down to 40 sq. mi. in 1911, up to 57 in 1930, and 141 sq. mi. in 1932, when the "Black Forest" (painted desert) section was added. "In-holdings" of private land within the monument were a problem that took many years to resolve. An act of May 14, 1930 (46 Stat. 278) authorized the exchange of other public lands for privately owned land within the monument. Other land had been acquired by purchase, and some tracts were bitterly disputed between the owners and the government. An act of March 28, 1958 (72 Stat. 278) authorized the establishment of Petrified Forest as a national park, contingent upon the government gaining title to all inholdings, with certain highway, railroad, and utility rights of way excepted. This took until 1962 to accomplish, and in that year it became a National Park, comprising 147 sq. mi. There appears to have been some disagreement within the Department of Interior as to the wisdom of "upgrading" the area to Park status, presumably because of concern about increased enviromental impact due to a greater influx of tourists.

Present Status

The most important petrified wood and archeological sites within the Park are easily accessible to visitors via paved roads and short trails. Large areas of the Park, however, have been designated Wilderness Areas, with access controlled and for hikers only. Two visitors centers, with a museum, restaurants, gas stations, and gift shops, have been built in the Park. Removal of petrified wood (or other natural materials) is, of course, strictly forbidden, and this is publicized by numerous signs and notices. Pilferage is, however, a continual problem, and the park rangers made an effort to apprehend or search suspected rock-snatchers. Closing the park at dusk is believed to aid in limiting pilferage. Wood carried out of the park is estimated (1969) at more than 12.5 tons per year. It is said that small chips of petrified wood (a convenient size for pocketing) that once littered the ground in some areas are now rather scarce.

The petrified wood occurs over quite a wide region; the park preserves only the more spectacular areas. Those areas of petrified wood outside the park are said to be severely depleted, both by rockhounds and by commercial interests. Wood collected on ranches outside the park is still sold in abundance in the area at relatively reasonable prices, and one or more of the nearby ranches have at times been open to rock hunting for a fee.

12/23/75

Discovery Site
Sudbury, Ontario
Louise S. Stevenson

The minerals in the sulfide ores of the Sudbury, Ontario, copper-nickel deposits have long been of interest to collectors. The first indication of the orebody was obtained in 1856 by the provincial land surveyer while engaged in running the meridian line. The orebody was revealed during the building of the Canadian Pacific Railway in 1883 and led to a prospecting rush in subsequent years. The first mine located in the Sudbury Basin was the Murray mine, along the right of way of the railroad. Shortly thereafter, all the mineralized area was staked and became inaccessible to collectors as mines developed and the property was taken over by mining companies.

During the 1950's, it was found necessary to reroute Ontario Provincial Highway 544, from Sudbury to Levack, in order to permit further mining of the Murray property being worked by The International Nickel Company of Canada. The new highway was relocated close to the railway line and to the site of the original discovery. Thus, Tom Flanagan's famous rockcut became accessible to the public, and also was placed in some jeopardy. At that time the Ontario Archaeological and Historic Sites Board was just beginning a development program, and this outcrop was brought to the attention of the Ontario government by the Corporation of the City of Sudbury, The Innational Nickel Company, and interested individuals. As a result, on September 30, 1959, the outcrop was declared an historial site and a plaque was unveiled beside the Sudbury-Levack highway near the entrance to the Murray mine and adjacent to the discovery cut.

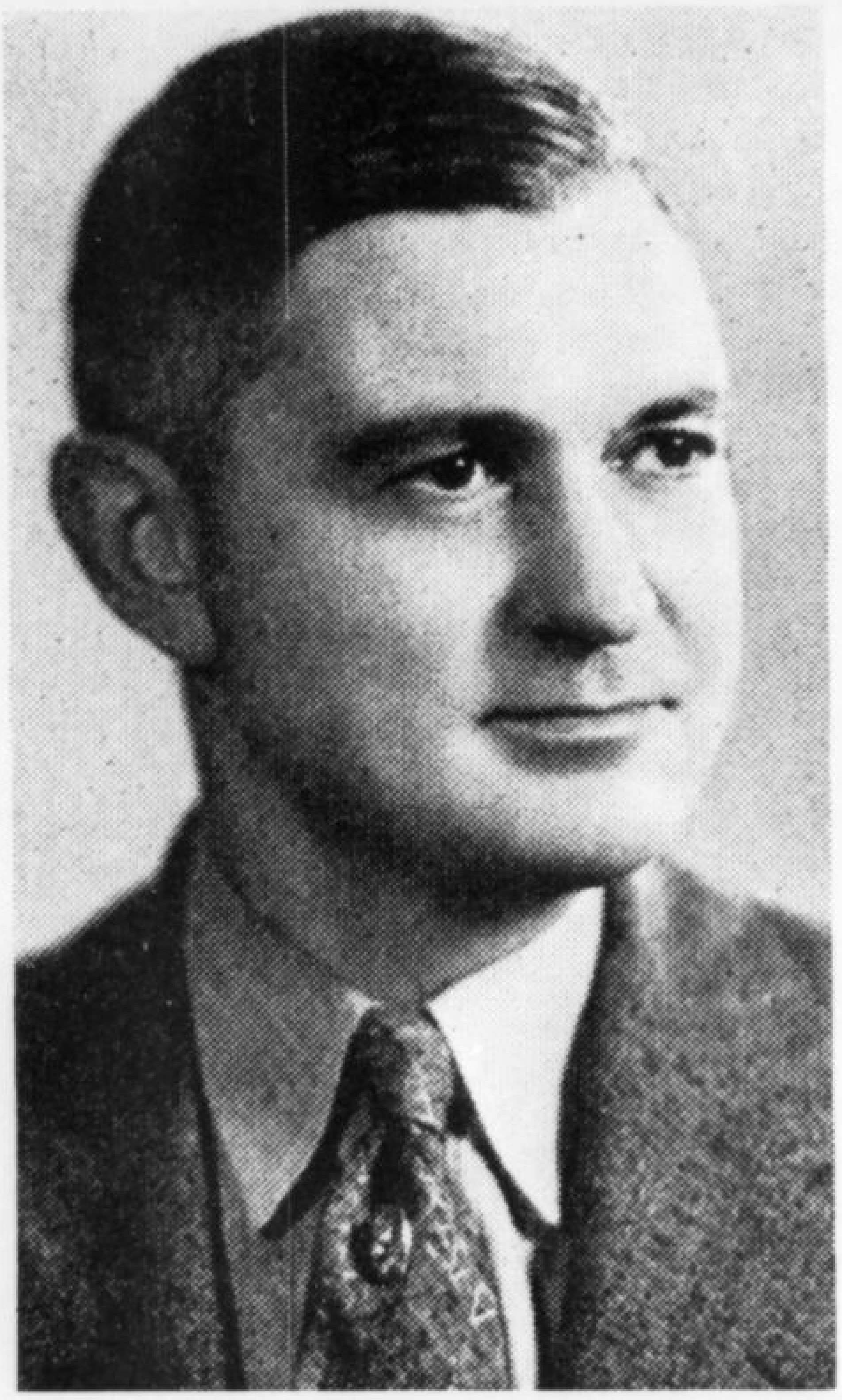
Although there has been some hammering of the outcrop since this site was declared historic, the rockcut with its conspicuous rusty gossan (weathered pyrrhotite) is still well intact. Collecting is still possible from the pieces of broken rock that resulted from highway construction. The ore minerals includes pentlandite, pyrrhotite, chalcopyrite, pyrite, marcasite, cubanite, gersdorffite, niccolite, violarite, and several rare minerals of precious metals of microscopic size.

10/9/75

Selenite Locality
Salt Plains National Wildlife Refuge
Alfalfa County, Oklahoma
Carl Francis

A mudflat on the southwest edge of the Salt Plains National Wildlife Refuge is the source of the well-known "hourglass" gypsum crystals commonly labelled as being from Cherokee or Jet, Oklahoma. Collecting is permitted from April first to October fifteenth of each year. An illustrated brochure with directions to the collecting area, collecting instructions, and safety hints is available at refuge headquarters. Crystals form at shallow depths by precipitation from saline groundwater in response to weather conditions. So long as the mineral contents of the groundwater do not change, crystals will continue to grow and depletion is not likely to be a problem.

1/1/76



PERSONALITY SKETCH

HENRY C. DAKE
1896-1969

by John F. Mihelcic
700 N.E. 101st Ave., Apt. 15,
Portland, Oregon 97220

The surge of interest in minerals among the nonprofessionals began in the '30s. A catalyst was needed to unite these early "friends of mineralogy" with kindred souls who were collecting and studying minerals as individuals. Such a catalyst appeared in the seeming unlikely form of a dentist in Portland, Oregon—Dr. Henry C. Dake—a man with a strong scientific bent, a dynamic personality and a marvelous modesty.

He came to Portland from Minnesota with his parents at the age of five and remained there until his death 68 years later. While working in a pharmacy, he decided to become a pharmacist, and later he entered dental school to graduate as a dentist, a profession he followed until his creation, *The Mineralogist*, became a fulltime occupation.

Prior to this, he had read about minerals in a scientific magazine and this provided an objective for his travels into the more remote areas of Oregon and Nevada. He started a collection and soon was requested to place a display in the Portland library where it aroused intense interest. As a result, 12 enthusiasts gathered in January, 1933, to form the Oregon Agate and Mineral Society with H. C. Dake as president. In June, the first issue of *The Oregon Mineralogist* appeared with H. C. Dake as editor. This became the official bulletin of the Society. The Mineralogical Society of Southern California also designated it as their official publication. Leading mineralogists of the nation contributed articles. Among them Esper S. Larsen, Jr. of Harvard; Walter F. Hunt of Michigan (Editor of *The American Mineralogist*); James F. Morton, Curator of Paterson, New Jersey, Museum, John Melhase, well known petroleum geologist of California; E. W. Lazell, professional mineralogist of Portland who submitted 20 articles on crystallography, and Samuel G. Gordon, associate curator of the Academy of Natural Sciences in Philadelphia. These are but a sampling of those who found merit in Dake's editorship.

Widespread collecting in California, Oregon, Washington and Nevada came about through the publishing of articles on the minerals of these states with specific localities given, including a description of the occurrences. When the Northern California Mineral Society was organized, the first official resolution was the naming of *The Mineralogist* as it's official monthly publication. A. N. Goddard, of Detroit, learned of *The Mineralogist*, and made a trip to Portland to visit Dr. Dake. He became so enthused that he joined the Oregon Agate and Mineral Society in order to receive *The Mineralogist*. He then returned to Detroit to found the Michigan Mineralogical Society, in 1935. When I visited Dr. Dake in 1936 (accompanied by my wife) he told us about A. N. Goddard and the Michigan Mineralogical Society in our hometown, Detroit. We returned and joined. Other mineralogical societies throughout the country would send announcements to Dr. Dake and he published them, urging all in that vicinity to join in affairs of their fellow collectors.

The Mineralogist carried one story about Magnus Vonsen, George Switzer and Bill Nisson going to Borax Lake. It rained and the surface of the Lake became a saline soup. They fastened boards to their feet, skied along precariously and collected. What collectors will do!

Aside from the magazine, Dr. Dake was a co-writer of *Quartz Family Minerals*, 1938; *The Art of Gem Cutting*, 1938; *Fluorescent Light and Its Applications*, 1941; *Uranium and Atomic Power*, 1942; *Ultraviolet Light and Its Applications*; *Fluorescent Chemicals and Their Applications*, 1942; *Rarer Metals of Science and Industry*, 1943; and *Handbook of Uranium Minerals*, 1947. He wrote *Mineral Club History*, 1943 and *Popular Prospecting*, 1955. As an interesting sidelight, *The Quartz Family Minerals* by Dake, Fleener and Wilson was written with two other authors who never even met with

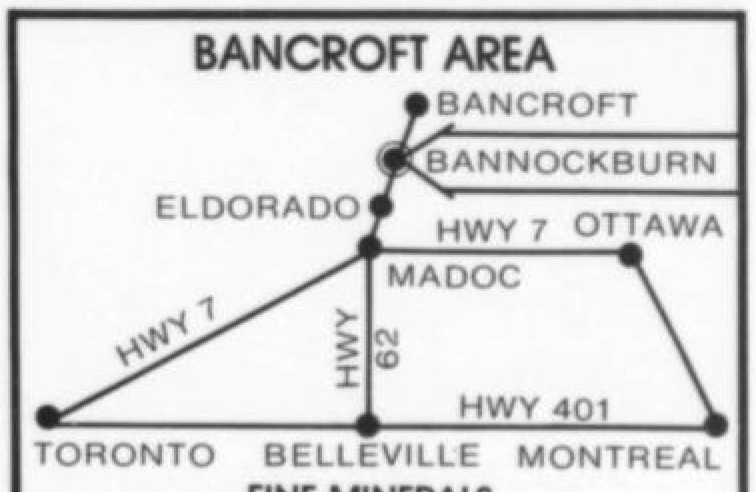
Dake. Somewhat tragically, *Uranium and Atomic Power* was suppressed during the war and copies that were sold were reclaimed. Not only that, the Federal Bureau of Investigation had Dr. Dake under interrogation for four hours because of it's publication. Many of these books were the first of their kind. The more technical books came out later. Some of the major finds of uranium minerals in the west were located by amateur and professional prospectors who used his book.

During the summers, the Dakes had two homes; one in the city and one on the outskirts. The basement of the city home became the office of *The Mineralogist*, complete with a laboratory. On the outskirts of Portland, he had a rustic home in the midst of a large area of tall pines, with another building which served as an office close by. This home served as a summer retreat for him, and his wife and friends from many lands who came to see him.

Certainly, H. C. Dake's influence went far and wide to arouse interest and give encouragement to the early "friends of mineralogy". All those who followed owe him a debt. We should all salute his memory.

ACKNOWLEDGEMENTS

The following are but a few of those who furnished very real assistance: Ray Schneider and Glen Steele, who loaned me an almost complete set of *The Mineralogist*, published by Dr. Dake. Arthur Montgomery's notes on *The Mineralogist* and Dr. Dake were an excellent guide. Mike Groben, who expedited all exchanges of material. The support of FM Region 12 is also gratefully acknowledged.



MR INTERVIEW:

ANNE VOILEAU, Editor of *Le Monde et les Minéraux*

***Le Monde et les Minéraux** (The Earth and the Minerals) is a French mineral magazine, similar in philosophy to the **Record**, which has been appearing for about two years under the sole proprietorship of Anne Voileau. Combining a degree in journalism with a strong interest in minerals, she has created an interesting journal which is becoming increasingly popular in France, Belgium and elsewhere. Although only half the length of the **Record**, every issue contains color, and very little space is taken by advertising. We met her at the recent Tucson Show and obtained the following interview which should be of interest to our readers contemplating a subscription to this relatively new and colorful magazine.*

MR: What made you decide to start doing a magazine?

VOILEAU: My education was in journalism, then I worked in New York for some time. When I returned to France I wasn't sure of what I should do. I asked myself "What interests me?". One thing is journalism and another is minerals because I am a collector, and one morning I awoke and I thought "Journalism...Minerals...*Voila!* Magazine!" The first thing I did was to go to the National Library to see if any other such magazine [in French] existed, but I found there was none. Just some club bulletins and no magazine, so I said "All right, I'll do my own magazine". I wrote to friends and said that if I could get 200 subscriptions I could put out the first issue, and it worked.

MR: Only 200 subscriptions and you were able to pay for Number 1?

VOILEAU: Yes.

MR: And you had color in Number 1?

VOILEAU: Yes but there were not many pages; it was something like 20 pages.

MR: Do you ever get letters from your readers telling you what they'd like to see in the magazine, or what they like or don't like?

VOILEAU: Yes, sometimes. There were two sides: one side said you are too technical and the other side said you are not technical enough.

MR: We get exactly the same type of letters.

VOILEAU: It always revolves around that question. Some people like jewelry, travel articles, it's always the same: not technical. And the others say "No, you must be serious". The big thing in France is that in order for people to believe you are seriously interested in mineralogy the print must be very small, no color pictures, and the style difficult to read...if you are not like this people think you are not serious.

MR: Wasn't there already a professional mineralogy magazine in France like, for instance, the *American Mineralogist* here?

VOILEAU: No. They have one bulletin from the Society of Crystallography and Mineralogy, but it is a bulletin and not a magazine. There are also magazines for lapidaries, but not really for mineralogy.

MR: Do your readers like locality articles?

VOILEAU: Yes, I think the travel articles are very important. I receive a lot of letters asking me where to go in Norway or Morocco...where they should stop to eat, to sleep, as if I were a travel agency. And I don't mind doing that; I think, it's interesting to meet other people and not just to find specimens.

MR: Do you have difficulty getting articles on localities?

VOILEAU: No. In the beginning it was difficult because the professional people were waiting to see how the magazine would work out, what would happen, what side I would take. They all waited for about a year and then after one accepted (the offer to submit an article) another would say "Oh, okay, he is very knowledgeable, if he accepted maybe I will accept too." But I always need articles because I want to add more and more pages to the length of the magazine. I think it is most important to publish the locality articles.

I want to try to be in the middle (level of technicality) but sometimes I think it might be the worst place because...

MR: ...you get attacked from both sides if you are in the middle, but only from one end if you are on the other end.

VOILEAU: Yes, exactly.

MR: Do you ever decide that you want an article on a certain subject and then go ask someone to write it for you?

VOILEAU: Yes, I do that because I want articles about museum collections. I began with Paris because I live there; I published one about the Museum of Natural History in Paris by Schubnel, and I published one by Bariand about the Sorbonne, and also one about the School of Mines' collection. The collection there is very very beautiful. After that I went to London to see the British Museum, but I have not yet had time to write it up. I have received one on the American Museum from Vince Manson, and am waiting for one on the Smithsonian Institution.

Other magazines always publish pictures of the type of specimens you can easily find yourself. I do the opposite; I want to show the people the best. I don't think that because you see the best in a museum you should feel bad about your own specimens. I don't feel that way myself. I enjoy seeing a nice specimen and yet I enjoy my own too even if they are not as nice. Some people have told me I should show only the kinds of things that everyone can own, and I said that if everyone can have it, it is not necessary for me to publish it because you have it in your home.

MR: It's difficult for people sometimes to know how close their specimen is to the best, and if they don't know what the best looks like, they don't know.

VOILEAU: Yes. But some don't want to know. Some collectors say it is good but some say it is not. I think it's very important to learn. You need to know what is best in order to learn everything after.

MR: Besides, it's very pleasurable just to look at beautiful specimens.

VOILEAU: Ah, it's a pleasure, I agree. For me it is always a pleasure.

One thing I think is very important about making this magazine is to bring people together who have the same passion, they like minerals. They can write and get to know each other, and for this reason I have an exchange column at no cost to subscribers.

MR: What kind of articles, in general, do you normally publish?

VOILEAU: We always have one about a mineral locality in France, one about a particular mineral species, and one about fossils. I always try to maintain the same format: one French locality, one mineral study, and one fossil. And there is usually one very technical article, and the Fiche Technique section (a one-page review of all the known information about one species), and always a travel article to some locality outside of France. In every issue we always have something on one locality within France and one outside of France. Also information about mineral shows, new mineral descriptions, mineral conferences, and letters to the editor.

Editor note:

Article titles that have appeared in *Le Monde et les Mineraux* include the following:

Uranium and its minerals
Ancient mines of Huelgoat and Poullaouen
The Chitry-les-Mines locality
Mines of Ste-Marie-aux-Mines (Alsace)
Minerals of Morocco (to be reprinted in *Min. Record*)
Pyrite from the Isle of Elba
Imperial Topaz from Saramenha (Brazil)
History and legends of the minerals of Oisans
Minas Gerais, Brazil

[Subscription: $15/year, checks in North America payable to *Min. Record*. Address in France: 4, avenue de la Porte de Villiers, — 75017 PARIS, FRANCE.]

The Collections of Donald K. Olson and Douglas K. Miller

by **Wendell E. Wilson**
The Mineralogical Record
P.O. Box 783
Bowie, Maryland 20715

Anyone who collects minerals with the time-honored silver pick has attended shows or visited dealers and seen large quantities of specimens for sale. I can recall seeing thousands of specimens of dioptase, wulfenite, calcite, quartz, and fluorite, hundreds of fine azurites, tourmalines, and pyrites. And of course there have been so many fine pieces of various species that were priced above my head, and I could only look upon them for a few minutes before they were gone. All of these have been sold and you and I will probably never see the vast majority of them again. It seems incredible that such enormous quantities of specimens, hundreds of thousands of pieces, could disappear so completely into the hands of private collectors. Older collectors than I will remember the glut of English calcites and barites (barytes?) that once flooded the market; and now how rare it is to see one for sale or in a friend's collection. All of those specimens cannot have been broken or discarded, so most of them must exist somewhere, tucked away into dark drawers and boxes or left unseen in basement cabinets.

As you may recall, one of my goals for this column is to exhume and show some of these long-lost specimens for the sake of enjoyment and discussion. This time I have photos of specimens from the collections of Douglas K. Miller and Donald K. Olson.

Doug is an Arizonan transplanted to Washington, D.C., where he works as an attorney for the Justice Department. He's been collecting for about six years, and specializes in thumbnails and miniatures. Like myself, he is a fan of Arizona localities, and once collaborated with me on an article about the Rowley mine, near Theba, Arizona (M.R. 5, 10). He has never publicly displayed his collection.

Don is a salesman for a corrugated box company in Milwaukee and has been collecting for over 26 years. He specializes in thumbnails and miniatures too, and occasionally competes in shows with his thumbnails. Nevertheless most of his specimens shown here have never been seen publicly. Don is trying to build up a sub-collection of showy Midwestern minerals, which is very difficult, although not impossible. I'm looking forward to the day when he puts a case of impressively flashy minerals from Minnesota, Wisconsin and Michigan in a major show...it should open a lot of eyes on both coasts.

Both of these fellows have fine collections and well-developed taste, in my opinion, so I have chosen a few of their more interesting and photogenic pieces to picture here. The figure captions contain information on each piece. As usual I used B & W Kodak Plus-X, ASA 125, for these shots, with two microscope lights and two desk lamps. One microscope light was used to create a spotlight effect and the other was often used to add a "pool" of light behind the specimen in some way to increase the contrast around dark areas of the specimen. This is a favorite technique of mine, and you can see it on many of my photos in previous columns.

W.E.W.

Figure 2. (left) **Chalcocite** (brilliant metallic dark gray, the specimen is 3.4 cm tall), from Redruth, Cornwall, England. Specimens of this size and quality are extremely rare, and only become available when old collections are liquidated. The pseudohexagonal sixling twins are distinctive but the luster on this specimen is unusually bright. Miller collection.

Figure 3. (below) **Malachite** (dark green on white matrix, the large crystal is 14 by 14 mm) from Onganja, near Seeis, Southwest Africa. These so-called "primary malachites" made a big splash at the mineral shows in 1974 for two reasons. Principally they are some of the largest and best-formed crystals of malachite (that originally grew as malachite rather than being pseudomorphous after azurite) ever found. They also created a semantic debate over the term "primary" as applied to a clearly secondary mineral to mean non-pseudomorphous. Miller collection.

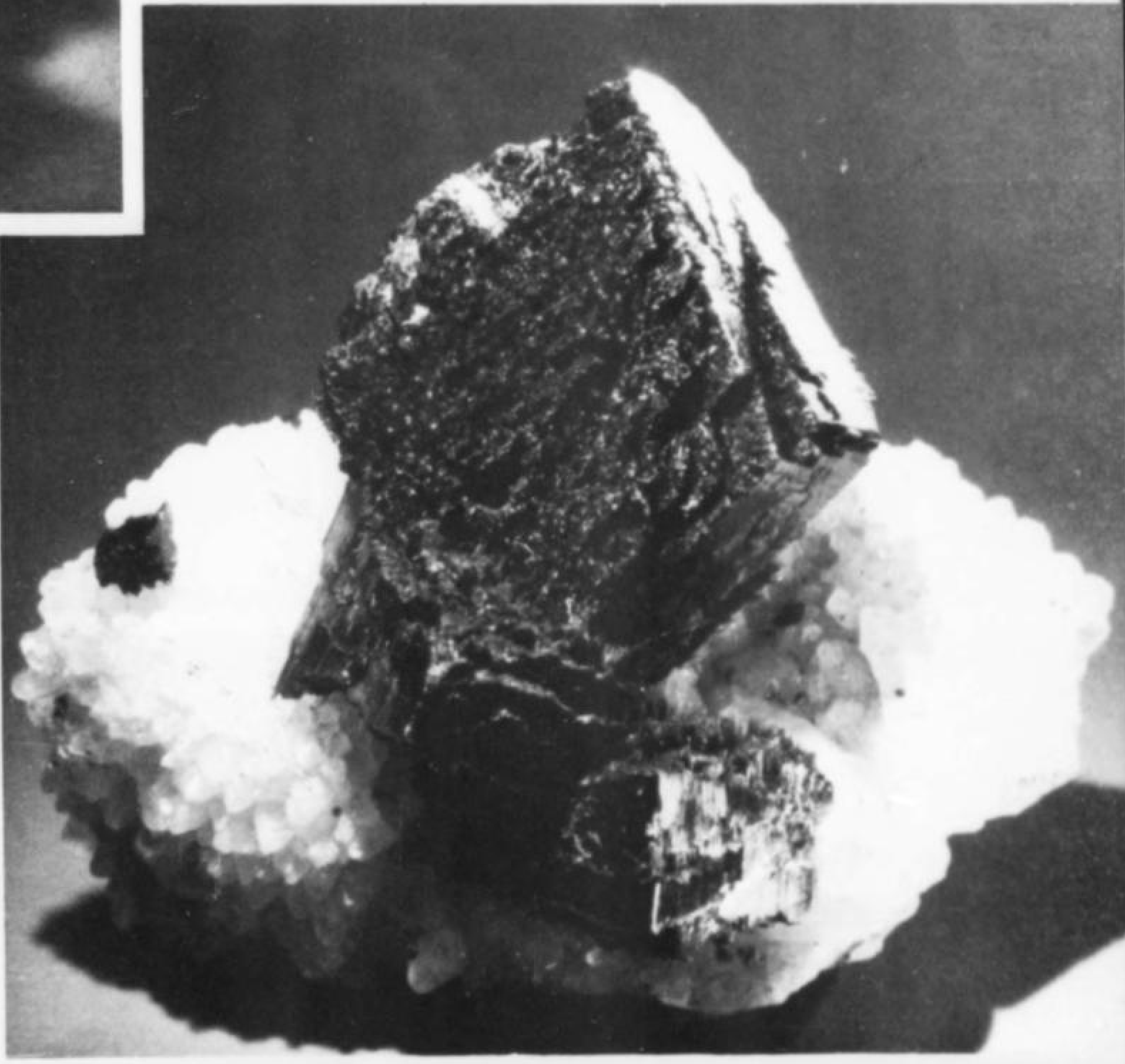


Figure 1. (left opposite page bottom) **Euclase** (colorless except for a brilliant blue irregular streak down the center, the doubly terminated crystal measures 9 by 18 mm) from Alto Santino, near the town of Ecuador, Rio Grande do Norte, Brazil. Miller collection.

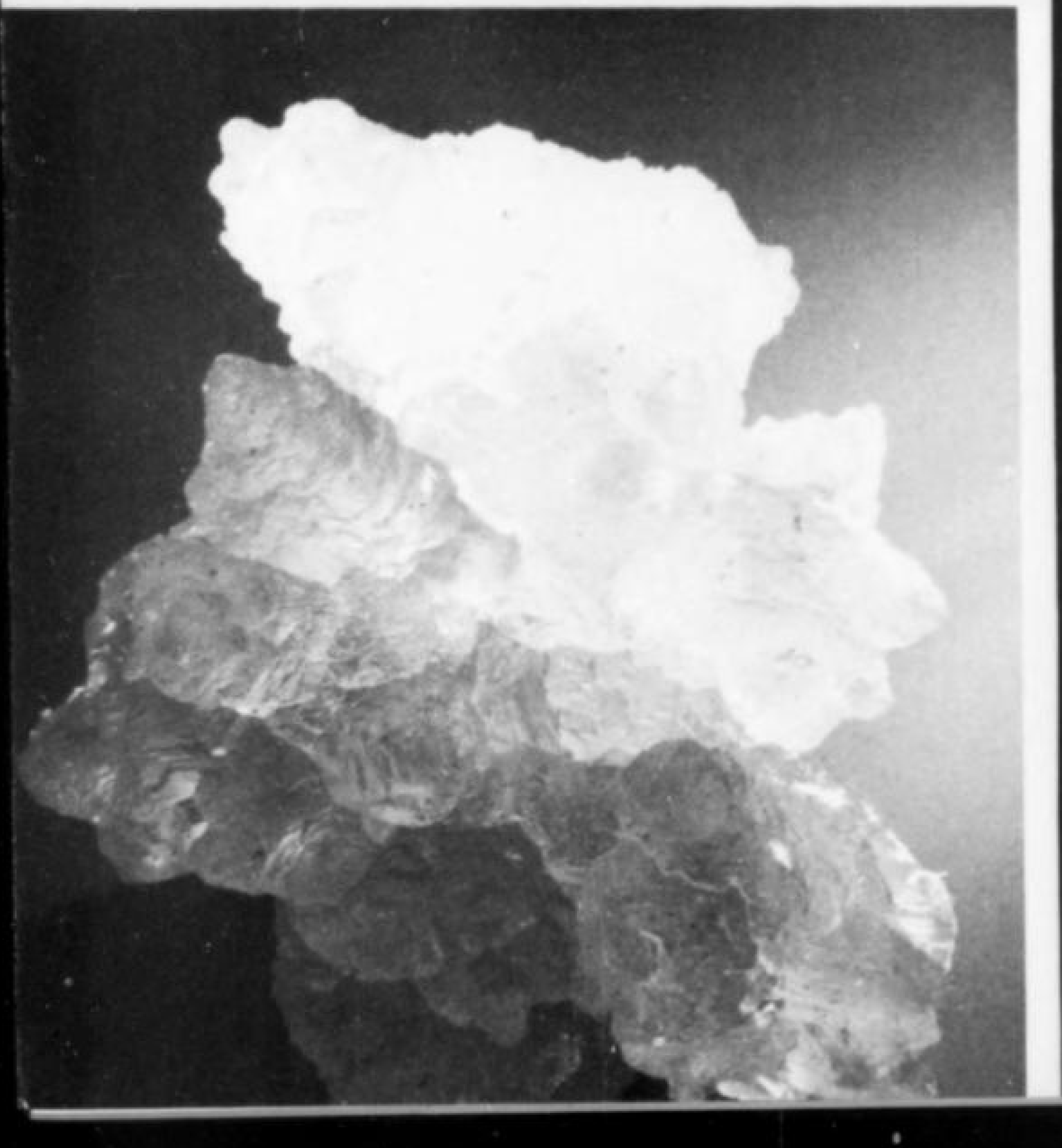
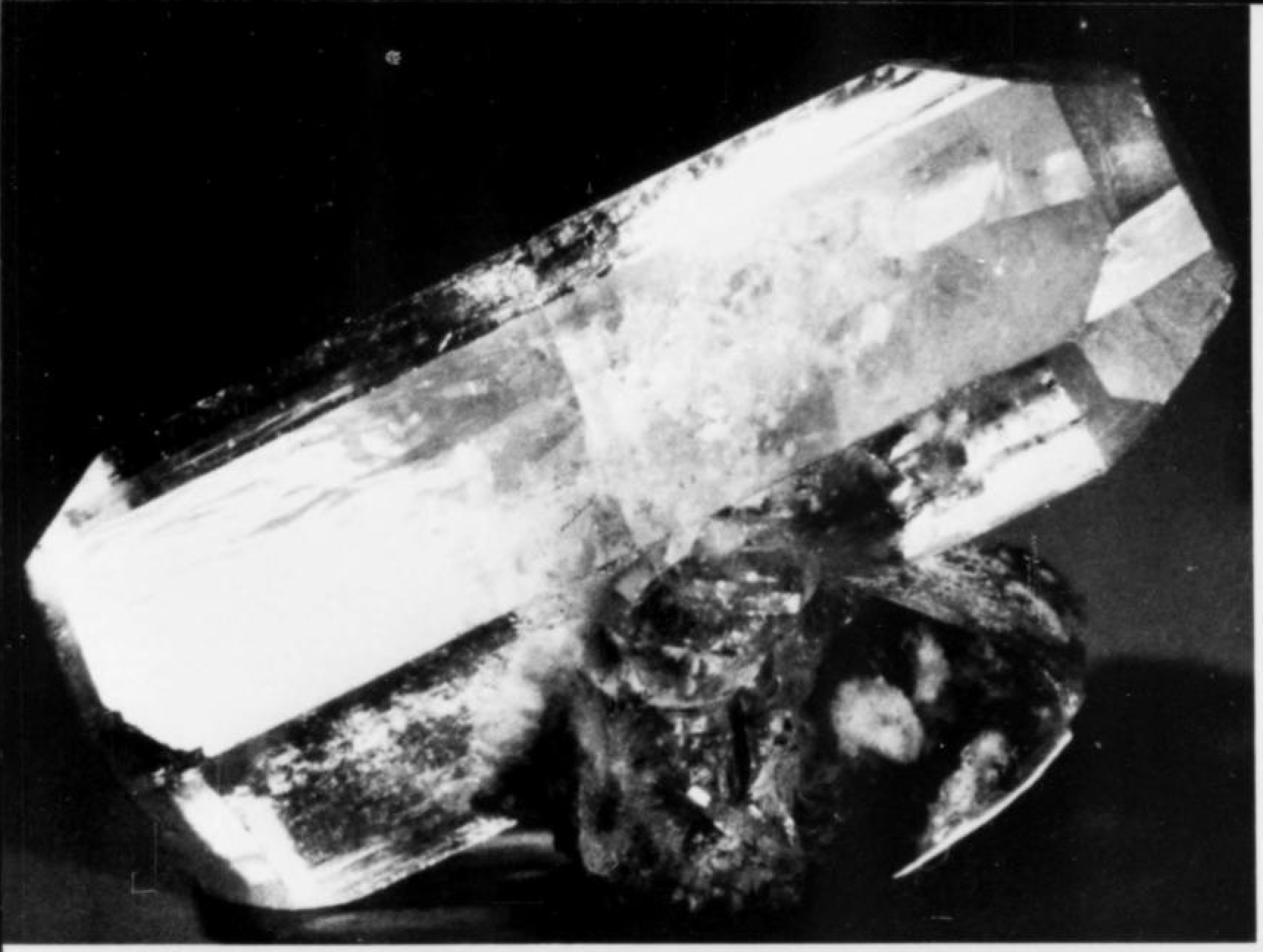


Figure 4. (left) **Willemite** (beige, the specimen is 4.2 cm tall), from Berg Aukas mine, near Grootfontein, Southwest Africa. Miller collection.



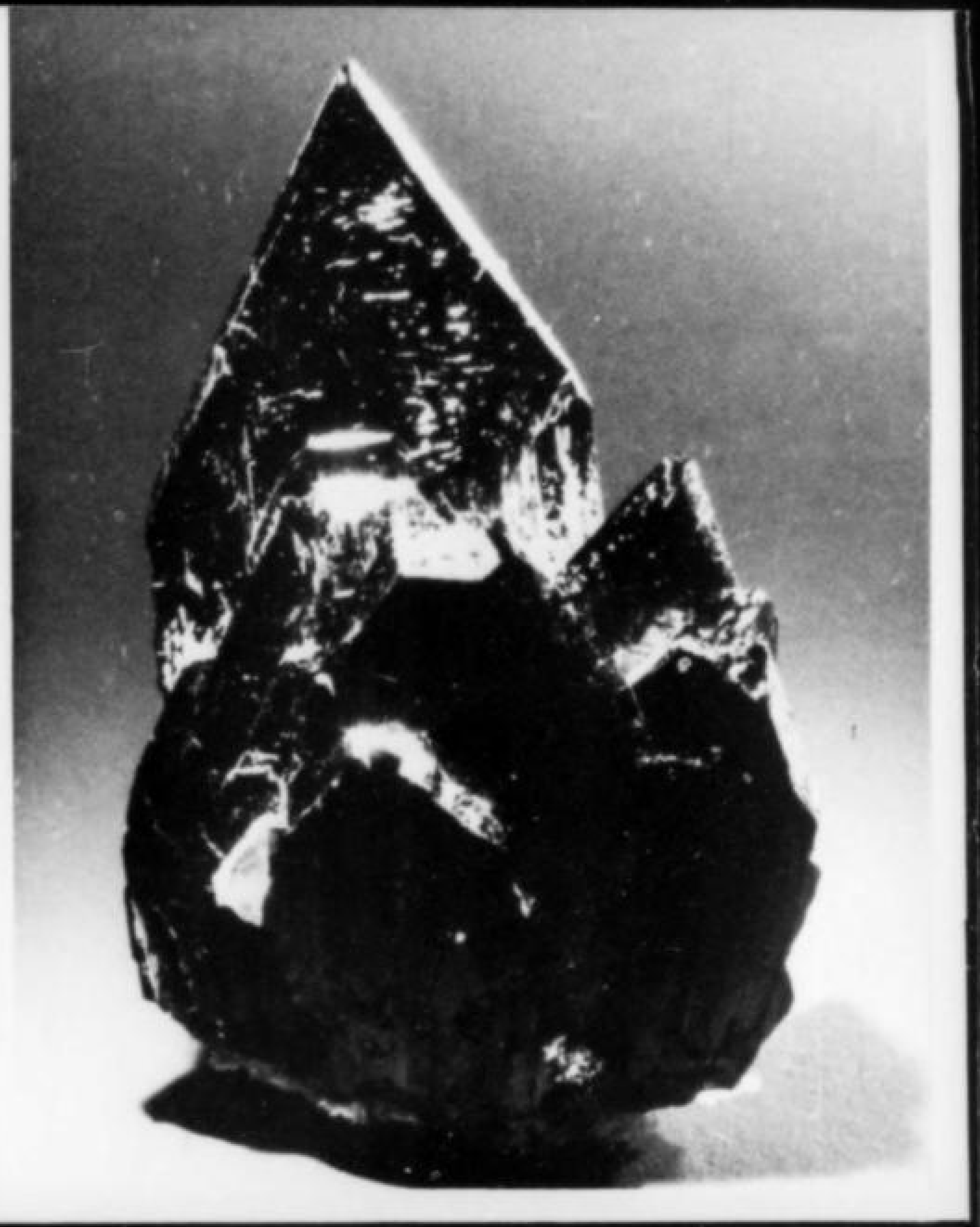


Figure 5. (above left) **Topaz** (pale sherry-colored crystal, doubly terminated, 2.1 by .7 cm), from Tepetate, San Luis Potosi, Mexico. Miller collection.

Figure 6. (above right) **Wolframite** (black, the specimen is 3.7 cm tall), from Tae Wha, Chungchongpukdo, Korea. It was about three years ago that these specimens were brought out of Korea by Pala Properties, Int'l. Olson collection.

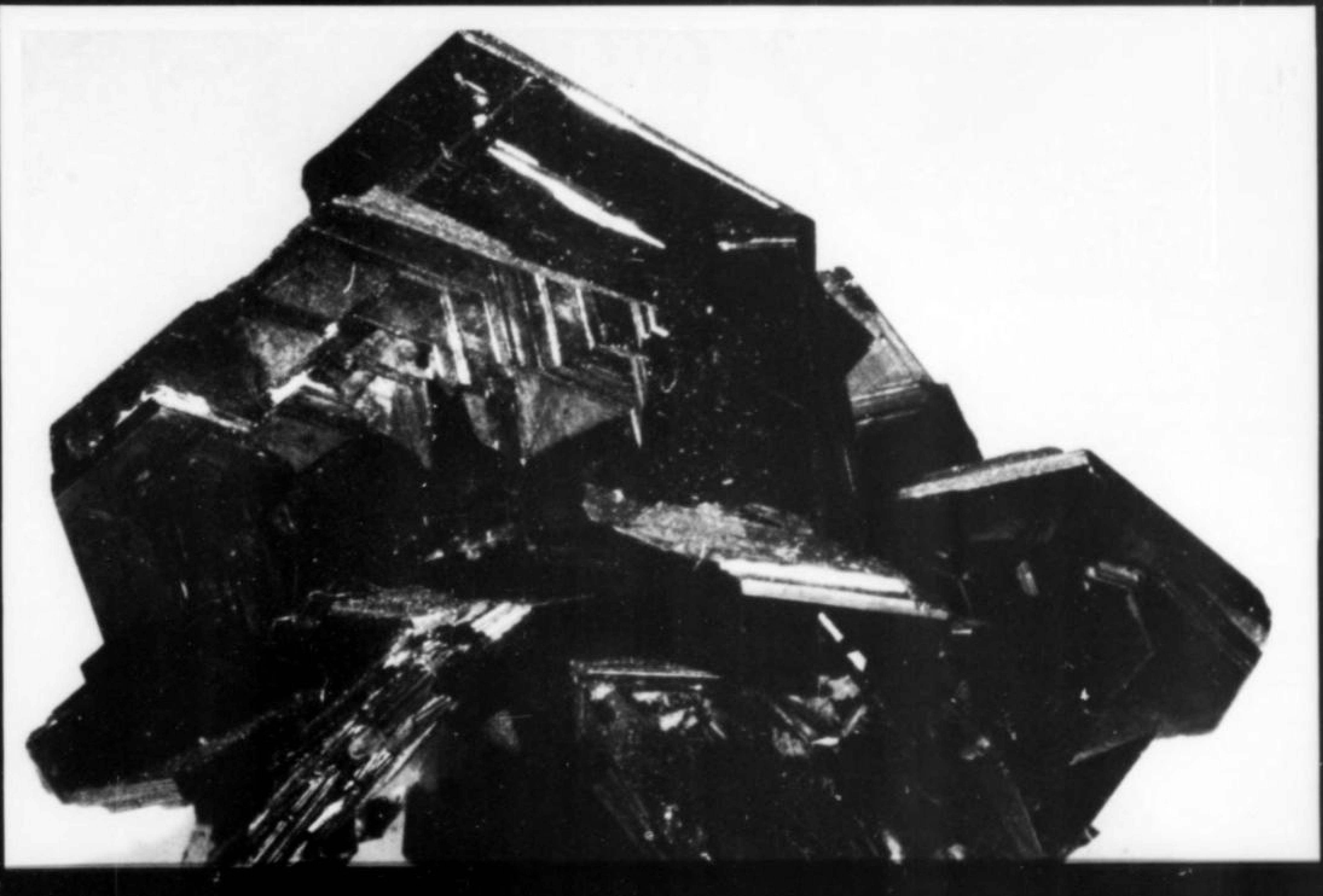
Figure 7. (below left) **Wulfenite** (yellow-orange 1.4 cm crystals cn pink barite matrix with micro mimetite crystals) from the Rowley mine, near Theba, Maricopa County, Arizona (see *M.R.* **5**, 10). Miller collection.

Figure 8. (below right) **Azurite** (black, the large crystal is 13 by 16 mm), from Tsumeb, Southwest Africa. Miller collection.

Figure 9. (above right) **Quartz** (colorless, with red hematite-coated phantoms, the large crystal is 7 cm long), from the Soudan mine, Soudan, Minnesota. These specimens are so popular with the inhabitants of the mining towns of Tower and Soudan that very few have ever shown up on the specimen market. They are hoarded like family heirlooms in memory of the old mining days. The Soudan mine was closed in December of 1962, but guided tours of the mine continued as a tourist attraction for many years. This group was found in 1962 on the 25th level. These beautiful specimens with their purplish red coloring, and sometimes green chlorite inclusions as well, should have a place among the world's most desirable quartz varieties. Olson collection.

Figure 10. (above left) **Quartz** (colorless at the ends, with epidote inclusions; a Japanese twin measuring 3 cm left-to-right, on a matrix of epidote), from Prince of Wales Island, Alaska. Japanese twins are well-known from this locality. Olson collection.

Figure 11. (below) **Polybasite** (black, 3 cm across), purportedly from the San Jose Gracias mine, Zacatecas, Mexico, but it may actually be from Arizpe in Sonora. I cannot find this mine in my references; if any reader knows of it I would appreciate the information. This is obviously one of the finest thumbnails around so it is important to be certain of the locality. Olson collection.



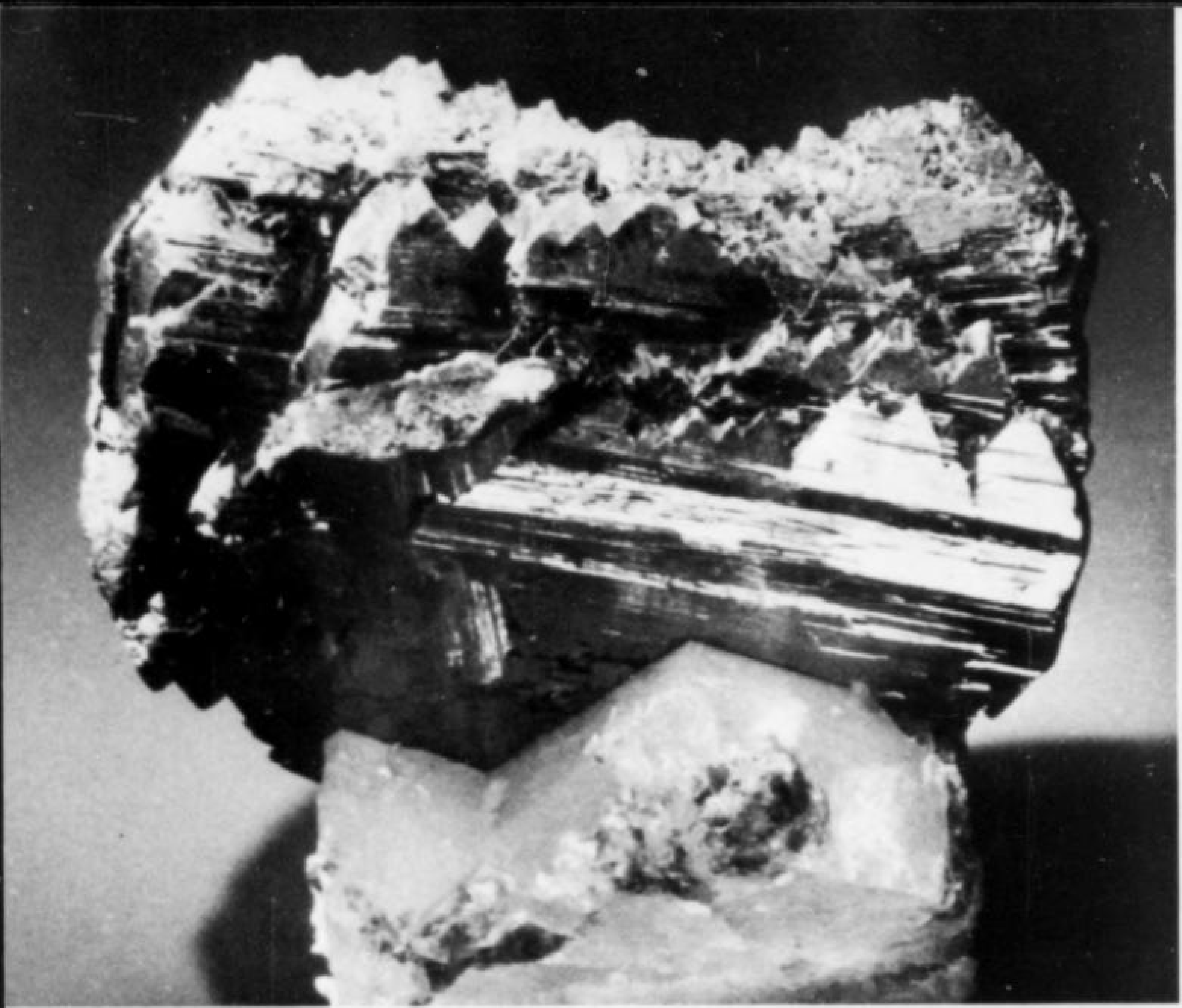
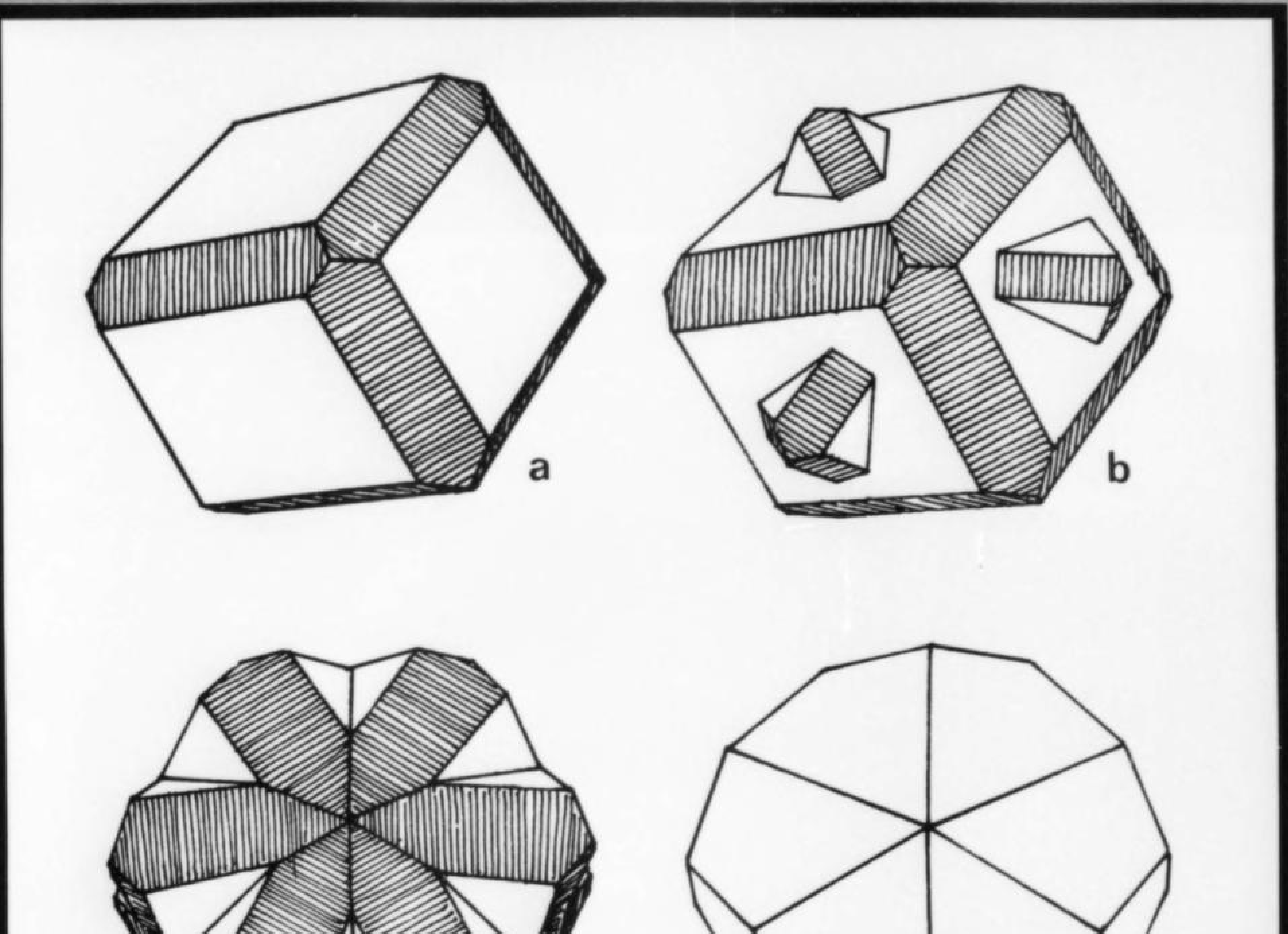


Figure 12. (above left) **Arsenopyrite** (silvery metallic, doubly terminated on quartz matrix; the crystal is 3.8 cm long), from Panasqueira, Portugal. Olson collection.

Figure 13. (above right) **Acanthite** after argentite on pyrargyrite (black, the large twinned crystal is 2 cm across), from the Freiberg district, Harz Mountains, Germany. This crystal is a penetration twin of cubes like fluorite twins, except the cube edges are modified by dodecahedron faces (striated). It would be hard to name a rarer old European specimen of any kind, and yet this was purchased for only $8 in 1966! Olson collection.

Figure 14. (below) **Crystal** diagrams illustrating the acanthite twin shown in figure 12. (a) An untwinned cube with dodecahedral modifications (striated). (b) A twinned crystal of two members as shown in (a), oriented like the crystal in figure 12. (c) Hypothetical twin with dodecahedron faces more fully and perfectly developed. (d) Hypothetical penetration twin of two dodecahedrons.

Olson collection.



GRAND JUNCTION BARITE

by F. A. Cajori, Honorary Curator

Department of Geology, Denver Museum of Natural History

An unusual occurrence of barite exists north of Grand Junction in western Colorado a few miles south of the Book Cliffs which are well known for their content of oil shale. This barite locality and the nature of the deposit are not well known except among local mineral collectors. Specimens occasionally appear on dealers' shelves.

Barite occurs in many localities in Colorado. It is a gangue mineral frequently found in good crystals in ore deposits throughout the Colorado mineral zone. Probably the best known locality is at Stoneham in northeastern Colorado where blue blades are found. Clusters of deep blue barite also occur in South Park near the town of Hartsel. The golden barite from the Eagle mine on Battle Mountain is splendid, but unfortunately no longer available.

The Grand Junction barite is unique in being water-clear, frequently flawless and with sharp edges. The crystals range in size from microscopic to 15 cm long. E. M. Gunnel describes a typical crystal as rhombic dipyramidal with the following crystal forms present: {100}, {210}, {101}, two dipyramids of different intercept values, and {011}.

The locality is on a bluff or mesa of clay. Buried in this clay are calcareous sandstone concretions from 5 to 15 feet in diameter and up to 3 feet thick. Cracks occurring throughout the concretions are a help in opening them to expose the hollow center which may contain crystals. The crystals may be loose in the cavity or attached to the matrix. Calcite is present in some cavities. Many cavities are devoid of crystals of any mineral.

The area is easily reached from Grand Junction or from the highway west of Clifton, and is on public land crossed with many jeep trails and roads. It is best to have a collector familiar with the area as a guide to the more promising parts of the area.

Al Look, in his *1,000 Years on the Colorado Plateau*, (1947), mentions the barite from this locality. The Denver Museum of Natural History has a large barite crystal on matrix obtained in 1946, so the initial discovery was prior to this date. I have been unable to learn exactly when the first discovery was made.

This is a dry, barren land. In working on a concretion, a tarantula may crawl out of a crack, but he is soon gone and the collector can resume his work. The successful collector will feel well rewarded for his trip and will have in hand, barite equal to any found in this country.

Figure 1. Ridge where barite crystals are found north of Grand Junction, Colorado. Photo by C. E. Withers.

Figure 2. Barite crystals on matrix from near Grand Junction, Colorado. Denver Museum of Natural History specimen. The specimen measures 7 x 8.5 x 13 cm; the large crystal measures 2.5 x 5 cm. Photo by Wally Brown.

EXAMINATION OF SULFUR-PYRITE SPHERULES FROM MT. BAKER, WASHINGTON

by John E. McLane, R. B. Finkelman, and R. R. Larson

U. S. Geological Survey, Reston, Virginia 22092

EXAMINATION OF SULFUR-PYRITE SPHERULES
FROM MT. BAKER, WASHINGTON

The highly magnified surface of the particle shown in Figure 1 is part of a sample collected from fumaroles in Sherman Crater, Mt. Baker, Washington. Increased fumarolic activity on Mt. Baker was first noticed March 10, 1975, when a large, dark-gray plume rose above the rim of Sherman Crater 350 meters below the crest of Baker, the northern-most of the Cascade stratovolcanoes. The summit, 3285 meters above sea level, has a year-round cover of snow and ice. Aerial observations made the following day revealed a marked increase in the fumarolic activity and a thin layer of ejected gray material on the snow surface around the fumaroles extending 100-300 meters outside the crater. Samples of the ejected material were collected by David Frank of the U. S. Geological Survey and Stephen D. Malone, University of Washington, at various locations in the crater as near to the fumaroles as safety would allow. Examination of the ejecta revealed a mineralogy closely resembling that of the highly altered andesitic wall rock and ejecta from previous eruptions (McLane, Finkelman, and Larson, 1976), with some newly formed phases such as the spherical particle shown in Figure 1. Spherical particles ranging in size from 100-300 micrometres are among the most conspicuous newly formed components of the ejecta, composing 30-40 volume percent of the greater than 10-micrometre fraction. Examination of the spheres by scanning electron microscopy and by energy-dispersive X-ray analysis has shown them to be sulfur spherules which have a layer of euhedral iron-sulfide crystals covering the outer surface. An X-ray powder patterns indicated that these respective phases are orthorhombic sulfur and pyrite.

Close examination of the surface features revealed bulges or ridges of sulfur around the edges of the pyrite crystals which suggest a physical or mechanical emplacement of the pyrite crystals on the surface of the sulfur spheres. In cross section, the spheres are made up almost entirely of sulfur with minor amounts of pyrite which were probably included when the sulfur was in a viscous state. There has been no indication of nucleation around the pyrite crystals or any other material. We postulate that the pyrite crystals and the sulfur spheres were formed entirely separate from one another and came together at some common point of travel in the conduit system of the volcano. Owing to increased heat in the crater, melted snow and ice, which have a rather low pH because of mixing with sulfur-bearing gases, may have leached large amounts of iron as they percolated downward. The measured pH of a small lake in the central part of the crater is 2.4, which

Figure 1. Pyrite octrahedra on a sulfur sphere. Scale bar is 10 micrometers.

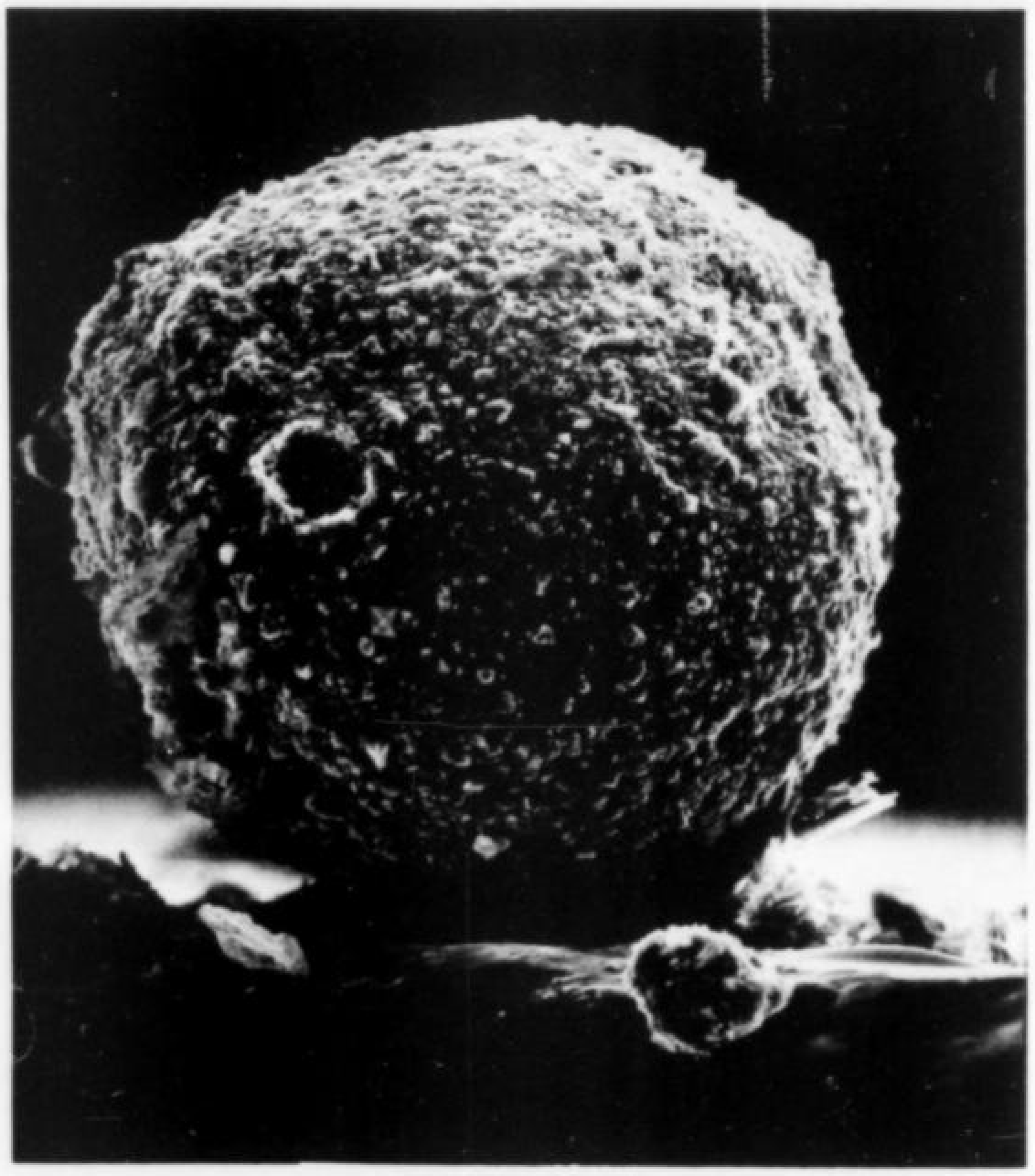


Figure 2. Pyrite octahedra on a sulfur sphere. Scale bar is 10 micrometers.

would be sufficiently acidic to transport iron. At some point, the iron-rich solution could have come in contact with the upward-moving hydrogen sulfide gas and pyrite precipitated from the hot aqueous solution. At some other area in the intricate volcanic plumbing system, steam may have melted preexisting sulfur deposits (which are common in volcanic vents) and carried the molten sulfur, perhaps in the form of spherical droplets, along to a point in the system where they could have come in contact with the pyrite crystals. At this time, the pyrite crystals could have become emplanted on the surface of the sulfur spheres which were still quite soft because of the high temperature.

The sulfur spheres appear to be absent in subsequent samples, suggesting that the source(s) of elemental sulfur may have been depleted. Because of the complete inaccessibility of the area in which the spheres were formed this mechanism of formation can only be postulated.

REFERENCE

McLANE, J. E., FINKELMAN, R., and LARSON, R., 1975, Mineralogical examination of particulate matter from the Fumaroles of Sherman Crater, Mt. Baker, Washington (State): EOS Trans. Am. Geophys. Union, **57**, no. 2, p. 89.

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TWO POEMS

There is an affinity between science and poetry which escapes attention in the set forms and progression of the various disciplines. The scientist defines the physical laws which have been found provable and builds on observable phenomena, propounds theses and seeks to, and often does, demonstrate their credibility. Few would quarrel with the observation that this is the Age of Science. Yet I think there is something of the poet in every scientist, certainly in every mineralogist, and there have always existed those poets who have inspired us with the wonder and the mystery of those worlds which preoccupy the scientist. The ornithologists have documented all phases of the life of nightingales, but it is Keats' Ode which enriches and uplifts, and does what Wallace Stevens says a poem should do—"It helps men live their lives".

Which brings me to Abbie Huston Evans, an American poet, certainly not a familiar name, who has written some of the finest poetry I know on the subject which interests readers of this Journal. My reading of her poetry has enriched my appreciation of what Paul Desautels has aptly termed "the Mineral Kingdom", and I have asked John White to publish these few poems* in the hope that all of you, with your proper concerns about crystal perfection, paragenesis, new occurrences, and the whole gamut of the mineralogical field, will find in the wonder of these beautiful words she has written an added reason for your continuing interest in the magic and the mystery of the formation of crystals, of "knittings and couplings known but to the atom".

Joseph L. Tucker

The Mineral Collection

I always knew the Ural Mountains glowed
And burned inside with emeralds and gold,
Copper in clefts, and platinum in rifts
Like tamped-in tin-foil; now my eyes have seen
Splinters from that great beam that braces Asia.
Here in the dark, awake, I see again
Rock out of Mexico, Siam, Peru,
Thrace, Arizona, and the Isle of Malta;
Rock out of Chile burning fiercely, furred
With copper-blue like a king-fisher's feather;
Rock out of Greece, imperishable blue,
Cool blue of the Argives lined with green of the sea;
Delicate rock of India, lightly dyed
With milky azure, peach and apricot;
Rock out of Maine, the ice-like tourmaline
In shattered spars, pencils of frigid rose
And chill black-green, of waters most dilute.
—All these the bright credentials of dark workings,
Compulsions, interminglings, strangest love,
Knittings and couplings known but to the atom.

The thought of those bright fragments wrenched from darkness.
Of cinnabar and slabs of malachite
And crusts of amethyst, dazzles me still
And raises me on my elbow in the dark.
Recalling topaz split and opal fractured
I tingle: great is life retired in stone;
Great is that obstinate impulsion launched
Against the opposition of the dust,
—Whereof are we; we, and the red-cup moss,
The blowing ree, the boulder, and the fly
In amber under water; quick and slow
Braided in one; one indeterminate life
Riddling the dust. Show me one mote inert.

Fact of Crystal

Who shall say that the rock feels not at all
In its obscure, slumbrous, geologic way
The pinprick of incipient demolition;
Or sensed not once the dream-faint, unremitting,
Electric stir of the crystal rising in its side—
The next-to-nothing gnat-sting, the dim prickle
Of flowering not-life making try at growth,
Prefiguring afar the flying fire
That runs in the veins of men, through coils of time
Bringing prodigious newness out of earth?

Motion, that far-off whisper—it was there
In quartz, in beryl, in the mica sheath.
In crystal-building and in fusion flash
The poles of speed declare themselves, and what
Is cataclysmic, loosed in a splintered second,
Innocuous creeps down its millionth year.

Locked in dragging ages black as Tophet,
Crammed into corners in split seams of the earth,
Down deep in torpor's dungeon lodged forgotten.
Accepting off-slant cramping of the facets
As incidental and of no importance,
These mounting shapes from formlessness arriving
Were not unmindful of their glorious axes
In at the center fixed, ordaining true
The ancient inmost pivots of pure selfhood.

Behold the beauteous sluggards and their work—
The slothful quartz, the lazing tourmaline,
And their great tardy dazzle. Envy rock's glory.
This that hung once thinner than breath in space,
Wraith of a wraith, earth's uncreated dust,

---

*reprinted from COLLECTED POEMS by Abbie Huston Evans, by permission of the University of Pittsburg Press. © 1970 by Abbie Huston Evans.

Now signals with the flung-down fact of crystal,
Its stern-decreed geometry achieved,
Its pattern worked out to a T, its tip atom in
    place.
Where current rode the illimitable streaming
Too slow for any swirl to break the surface,
At that old, creeping, archetypal snail pace,
With none to note it, chaos inched back,
    worsted.
How landfall-like august form stands delivered!
Here's most diffuse most pointed, peaked,
    compacted,
Here's most amorphous grappled into jewel.


Professor C. Douglas Woodhouse lecturing to Geology students, University of California, Santa Barbara.

C. Douglas Woodhouse

PERSONALITY SKETCH

by Dr. Peter Bancroft

Some knew him as "C. D.". Others called him "Doug". And there were those who addressed him as Dr. or Mr. or Professor Woodhouse. But all were in agreement—Charles Douglas Woodhouse was a cut above his peers. His life experiences were many and varied, but he was never far from his main love, that of working with minerals.

He was born in Burlington, Vermont, May 1, 1888, about nine years after the Lucky Cuss, Total Wreck and Tough Nut mines were discovered at Tombstone, Arizona. As a boy he was to read numerous stories about these mines, and a few years later he would visit them and obtain some of the first mineral specimens for his private collection. One can but contemplate the impact of these mines on this man's life.

Doug's education was extensive. He took his BA degree at Williams College in 1910, and LLB at Columbia School of Law in 1913, a Master's in Jurisprudence at the University of California at Berkeley in 1925, and then did graduate work in the years 1925-26 at the Sorbonne (The University of Paris), and at Stanford University in 1931 and 1932. As his interest in minerals increased, he enrolled in more and more geology courses until he was devoting nearly equal time to law and geology at both the Sorbonne and Stanford.

In between his studies he served his country in the World War I Signal Corps, by riding motorcycles among other jobs. He contracted Typhoid Fever while training in Maryland and was never able to go over seas.

In 1929 he became the manager of the Champion mine located high in the White Mountains of Mono County, California. His background in law and geology was of great help in the establishing and working of ore bodies as well as in patenting the claims. The Champion produced commercial quanitites of the aluminum silicate, andalusite, which is used in the manufacture of the porcelain of spark plugs. The mine was located at the 9000 foot level, and because of winter snows, could be worked for only 6 to 7 months of the year. The base camp was situated on a flat 1500 feet below the mine. Doug would make daily trips from camp to the mine, frequently on foot. Ore was hauled from the portal by mule-train, down over treacherous trails, often with disastrous results. Doug would also devote a part of his energies to the direction of the Oreana dumortierite mine in Pershing County, Nevada, nearly 800 miles to the North.

As time permitted, Doug traveled to many of the World's best known mining regions. In the far West alone he visited the famous old Nevada camps of Tonapah, Goldfield, Candalaria and Virginia City; the California mines at Bodie, Idria, Randsburg, and Grass Valley; and Bisbee, Tiger, Tombstone, Superior, and Jerome in Arizona.

He became a discriminating and astute mineral collector and as such had an eye for the perfectly formed crystals of gem and ore-bearing formations, and gradually put together one of the best private collections in America. He did not neglect rare minerals either, but his favorites were probably his large suites of gold nuggests and crystals, extensive drawers of tellurides and, of course, the sulfosalts.

In 1934 the Woodhouse family moved its home from Menlo Park (near San Francisco) to Santa Barbara, California. Doug's longstanding desire to move across the academic table from that of being a student to teaching young people became a reality when he received a teaching position at Santa Barbara State College. When informed that there was no budget, he replied "Then I'll do it for nothing." So, for his first year in teaching, he served as a lecturer without pay. When the State College became the University of California at Santa Barbara, he was appointed Assistant Professor and his rise in educational importance was rapid indeed. In 1945-46 he was Acting Dean of Men, and during the years 1945-48 he was Campus Coordinator of Veterans' Affairs. He collaborated with Dr. Austin Rogers, Professor of Mineralogy at Stanford University, and assisted numerous Stanford students with their PhD's and studies on the Champion mine. He worked closely with U.S.G.S. Geologist Dwight Lennon on many mining projects. During this time he established at U.C.S.B. the Woodhouse Geology Award with a Trust Fund of $5000.00.

Continued on page 189

MINERALS OF *MARBRIDGE MINES* LIMITED

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INTRODUCTION

Marbridge Mines Limited was incorporated in 1960 to mine a small nickel orebody in LaMotte Township, Range 5, Lot 9, in the Malartic mining district of northwestern Quebec (Fig. 1). The company was jointly and equally owned by Marchant Mining Company Limited and Falconbridge Nickel Mines Limited, with Falconbridge having management control. The author was manager of the operation throughout its life.

Ore reserves were estimated at 300,000 tons grading 2.0% Ni and 0.12% Cu to a depth of 600 feet. Plant construction started in July, 1960, first ore went through the mill in March, 1962, and the mine was finished and all surface openings sealed in August, 1968. The orebody had been extended down to 1500 feet, #2 mine, and #3 and #4 orebodies at #1 mine had been found and mined. A total of 775,000 tons of ore averaging 2.28% Ni, 0.12% Cu, and some recoverable platinum and palladium had been mined.

It started as a normal pyrrhotite-pentlandite-chalcopyrite orebody with no exciting minerals, or any collector specimens expected. The original (#1 mine) orebody lived up to these expectations. The second (#2 mine) orebody discovered in 1964 by electromagnetic and magnetometer surveys plus diamond drilling, produced a completely different mineral assemblage: - massive millerite with primary and secondary pyrite, a nickel-rich variety of pentlandite, three varieties of violarite with variable Fe:Ni:Co ratios, chalcopyrite, and very minor sperrylite, bornite, and gersdorffite. Several other mineral occurrences came to light during the course of the operation.

When it was realized that the massive millerite was unique, suites consisting of one cabinet specimen and two working specimens were prepared and sent (without fear or favour) to each of about fifty schools, universities, and museums. The letters of acknowledgement were intriguing. Several contained shudders and hopes that millerite occurrences hadn't been passed over because they looked like pyrite, several asked if they could do anything in return (bless them), all were very appreciative of the unsolicited specimens, and a very few wanted more and better pieces. It was about this time that I became a collector!

GENERAL GEOLOGY

The region was mapped by Dugas and Latulippe (1961). Intercalated metaperidotites, metasediments, and metavolcanics occur within an east-west belt lying between two batholithic intrusions - the Preissac and LaMotte adamellites.

Within the mine property, bands of steeply dipping volcanics and metasedimentary gneiss have been intruded by highly irregular bodies of ultrabasics. The contorted shapes of these small intrusives are evident in Fig. 2, which shows the local geology of the mine area. Many of the contacts are inferred from geophysical and drill hole data.

MINERALOGY

For purposes of this presentation only minerals which provided hand specimens, or which under study exhibited some special interest, will be discussed.

No. 1 Mine Ore

The main constituents of the orebody were pyrrhotite, pentlandite, chalcopyrite, magnetite and pyrite with minor amounts of sphalerite, galena, gersdorffite, and the precious metal group. In general the sulfides were massive on the hanging wall and graded to an assay wall of finely disseminated sulfides, locally called "salt and pepper" ore, on the footwall. With the exception of ore specimens of interest for structure, texture, or for local segregations of minerals, the only collectables were specimens of granular sphalerite and fine granular galena at the extremities of the orebody.

No. 2 Mine Ore

Millerite - the main constituent of the No. 2 orebody was millerite. The hanging wall side of the structure was composed of massive sulfides which graded to finely divided, evenly disseminated sulfides in the serpentinite footwall. This was occasionally embarrassing since 2 to 3% finely divided sulfides looked like road rock but was ore! The massive millerite often attained widths of 10 to 12 feet which could assay 40 to 50% nickel (Fig. 3). It was very friable and shattered thoroughly when blasted. A freshly blasted muck pile glistened with large cleavage faces of the massive crystalline material.

Buchan and Blowes (1968) report: "Millerite, the nickel monosulfide, NiS, carries most of the nickel in the ore. The conditions under which the ore was emplaced must have been ideal for crystal growth, because we find monocrystals of millerite up to 6 inches in diameter in certain areas of the mine. (Note - the author never found any that large)(Fig. 4). In addition to this habit, millerite also occurred as delicate intergrowths with violarite, apparently formed during the alteration of pentlandite. Microprobe analyses carried out on a group of millerite samples (Table 1) gave consistent nickel-sulfur ratios that were close to stoichiometric. The average of these analyses was 64.0% Ni, 34.7% S and 1.2% Fe with only traces of Co."

Pentlandite - (again quoting from Buchan and Blowes) "The composition of pentlandite from the No. 2 Mine

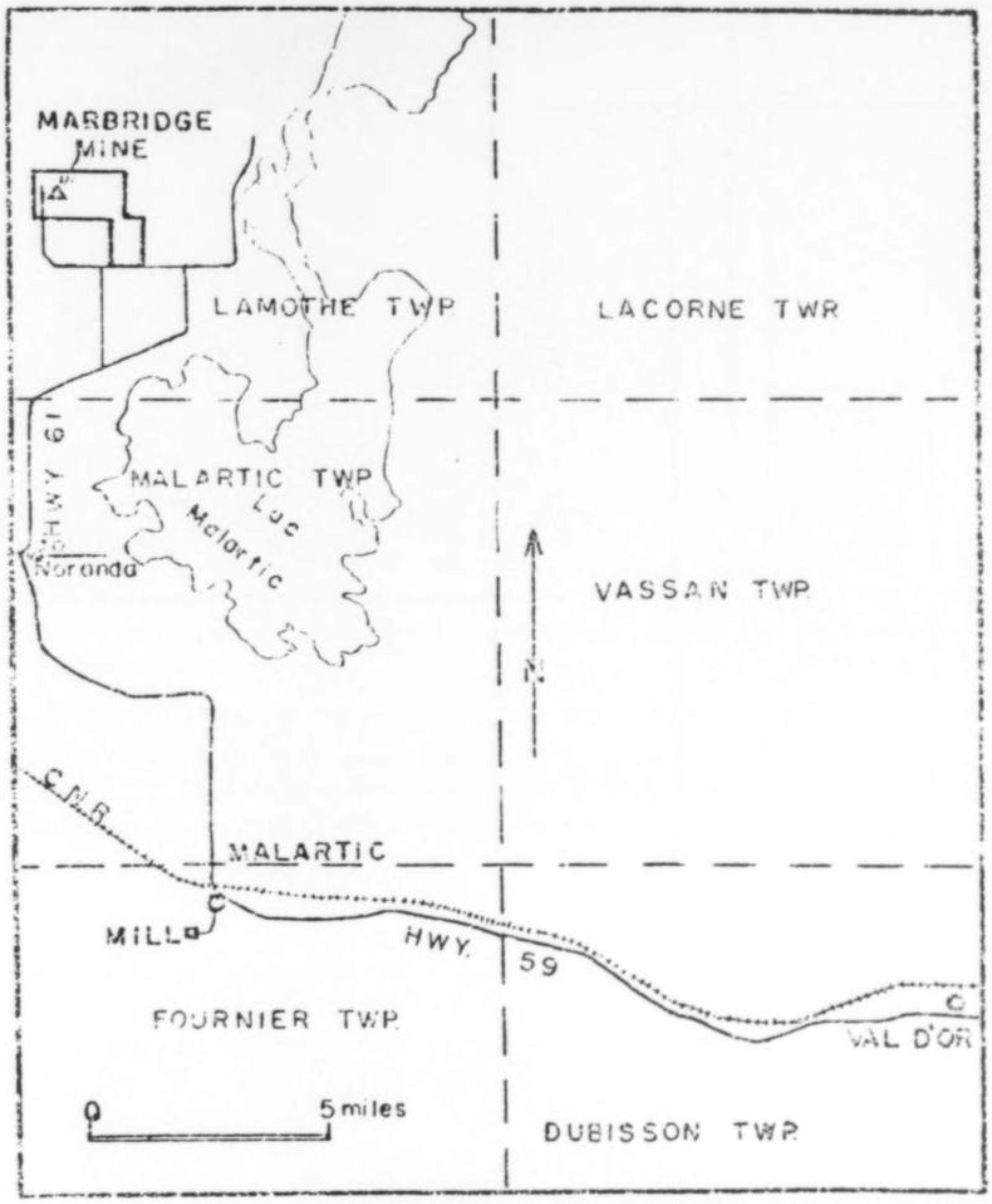

Fig. 1. (left) Location map of Marbridge Mines Ltd., Malartic mining district, North-west Quebec.

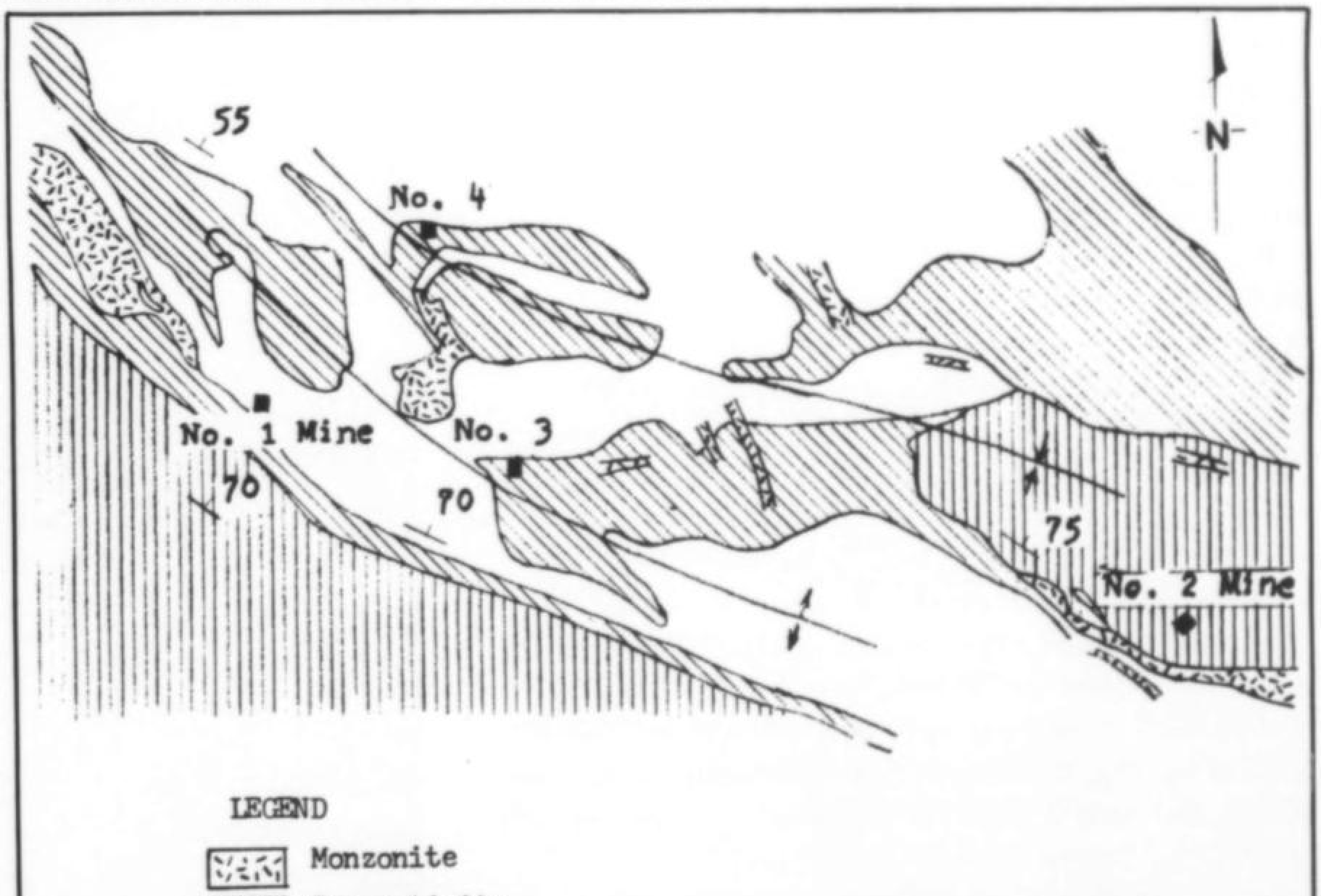

Fig. 2. (below) Surface geology of the Marbridge area (after Graterol and Naldrett, 1971).

Table I - Microprobe Analysis of Sulfide Minerals from Marbridge No. 2 Mine

Mineral	Average Composition		NiS		
	Ni	64.03	64.67		
Millerite	Fe	1.20	-		
	Co	0.13	-		
	S	34.73	35.33		
	Average Composition		$(Fe,Ni)_9$98		
	Ni	42.64	34.2		
Pentlandite	Fe	25.03	32.6		
	Co	0.16	-		
	S	32.17	33.2		
	"Grey"		"Pink"	"Lavender"	Ni_2FeS_4
Violarites	Ni	49.48	37.38	46.2	
					Violarites
Violarites	Ni	49.48	37.38	46.2	38.94
	Fe	9.38	21.03	7.5	18.52
	Co	0.24	0.43	6.7	-
	S	40.74	41.28	39.6	42.54

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Dr. J. C. Rucklidge, Analyst.

has been shown by microprobe analyses to be very unusual. Analyses averaged from a number of sections gave 42.6% Ni, 25.0% Fe and 32.0% S with very little dispersion about these figures. This is therefore considerably more nickel-rich than the classical pentlandites (those with Fe:Ni ratios of 1:1), which contain 34.2% Ni, 32.6% Fe and 33.2% S. Cell-edge determinations on No. 2 Mine pentlandites gave 10.026±002Å. Reported values (Knop et al, 1965) for classical pentlandites are all between 10.034Å and 10.067Å. This nickel-rich variety therefore has a smaller unit cell volume and consequently a higher density than usual."

Violarite - Buchan and Blowes also state: "Violarite is the normal supergene breakdown product of pentlandite. In the Marbridge ores three varieties exist. These varieties have chemical compositions that are substantially different, but the X-ray powder diffraction patterns confirm their structures as belonging to the linnaeite-violarite-polydymite group of minerals. The three types are: (a) a lavender coloured, cobalt-bearing variety which occurs with millerite as discrete grains in contact metaperidotites; (b) a grey coloured variety which in most cases replaces pentlandite but in several areas shows textures suggestive of a primary origin; and (c) a pink variety that was late formed, as it shows crosscutting relationships with pentlandite and grey violarite. A range of compositions was obtained for these violarites (Table 1)".

Morenosite/Retgersite - Where the massive sulfides did not contain massive cleavable millerite they were composed of a darker granular mixture of millerite, pentlandite, violarite, pyrite and magnetite (Fig. 5). This

Fig. 3. (below) Hanging wall of massive millerite, 301-11-15 stope, No. 2 Mine.

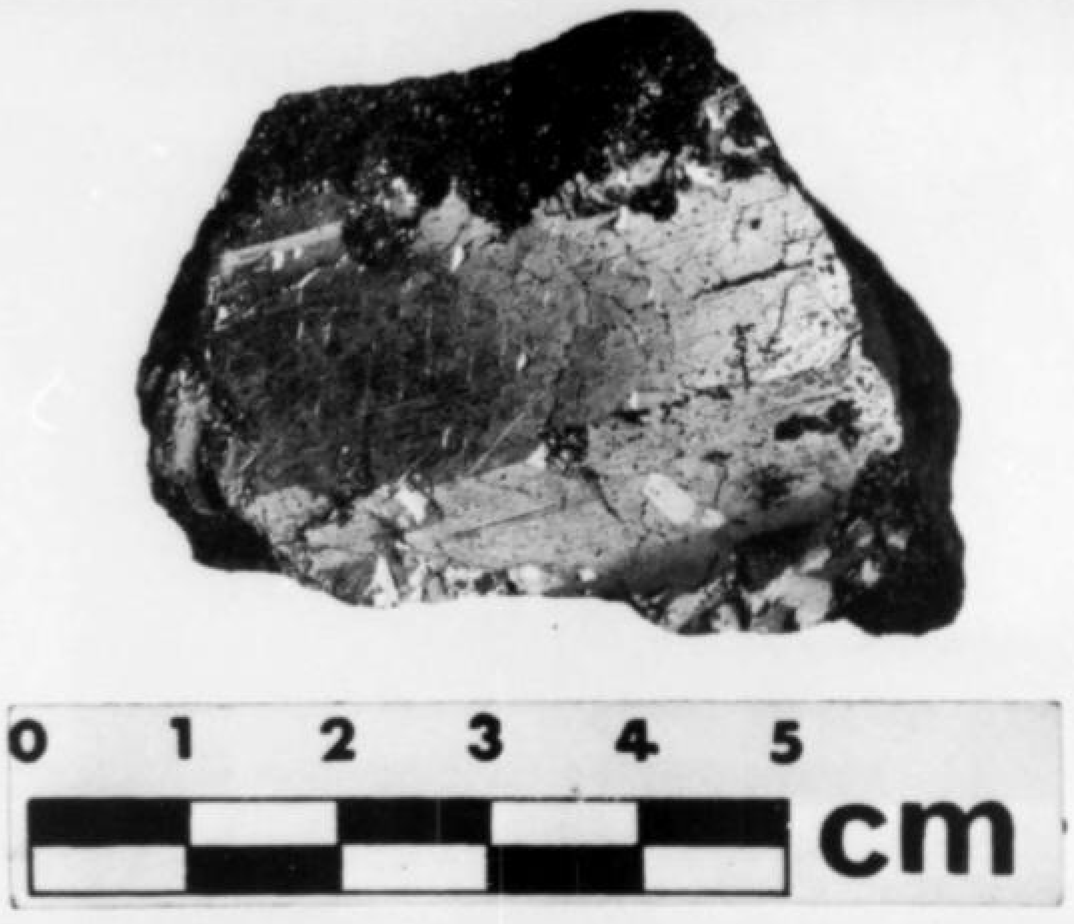

Fig. 4. Millerite cleavage faces, specimen from 301-11-15 stope, No. 2 Mine.

Fig. 5. Millerite cleavage faces and granular violarite-pentlandite-millerite, 401-13-15 stope, No. 2 Mine.

material, when blasted and exposed to the mine air and water, broke down very rapidly and produced a nickel sulfate. This showed up as a crust on broken ore left in drawpoints for more than two or three days and as stalactites under ore bins and conveyor ways. It ranges in colour from faint bluish-white through pale blue to darker blue-green. On some sulfide specimens it is a dense blue competent coating like an enamel, on others it is a porous pulverulent deposit. This material consists of both retgersite and morenosite.

Garnet - Two occurrences of garnet have been noted in the massive sulfides.

(a) a 15 x 10 mm vug was found in massive millerite which was lined with clear yellowish crystals to 5 mm size.

(b) several instances of small (1mm) dark green opaque crystals embedded in the violarite-millerite-pentlandite complex have been noted. The first guess was uvarovite, but subsequent measurement of the unit cell edges and the index of refraction indicated that in all cases the material was andradite.

Amphibole - An unusual structure occurred at several horizons in the serpentinite near the metasediment contact. Blocks of altered metaperiodotite occurred with the appearance of "volcanic pillows" in a matrix of chlorite-tremolite-talc material. The matrix had oval-shaped segregations of tremolite needles up to 4 inches long which occurred as felted masses or as needles growing from the periphery into the talc core. The crystals are glassy, medium to light green and translucent. Mainly they are badly fractured (Fig. 6).

No. 3 & No. 4 orebodies (No. 1 Mine) ore

A paper describing the mineralogy of these deposits was published by M. Graterol and A. J. Naldrett (1971). Figure 2 shows the general environment. Again the mineral assemblage was different. The major sulfide minerals at No. 3 were millerite, pentlandite, violarite, pyrite, pyrrhotite and magnetite. Minor amounts of valleriite, and very minor amounts of heazlewoodite and chalcopyrite also occurred. At No. 4 the minerals were pentlandite, pyrite, slight millerite, no violarite, and very slight pyrrhotite, chalcopyrite and valleriite. Some good specimens of crystalline millerite with magnetite and chlorite came out of vugs in the No. 3 orebody.

Valleriite - In January, 1967, a section of drill core from a hole in the No. 3 zone was sent to the Falconbridge Metallurgical Laboratories for a mineral identification of a narrow (1/4") vein of very soft greenish-bronze material. It was identified as valleriite. At that time this mineral appeared to have been authenticated in only two or three localities. We were curious to encounter it underground. It occurred as narrow stringers in a sheared area of the serpentinite and constituted up to 25% of a narrow shear zone. It was associated with pyrite, chlorite and magnetite. It occurred as very soft bronze flakes and smears on slip faces and as massive sections up to 1/4" in thickness.

Serpentinite

About 375 tons of the serpentinite has been mined and sent to the Eskimos in the Arctic for carving. Locally this rock is massive with a hardness of 3 to 4-1/2, and ranging in colour from a light leek-green through dark green to black with a yellowish-green veining. It carves well, is competent and takes a high polish when required.

Serpentinization of the ultramafic rocks has been virtually complete. The main constituents are lizardite and antigorite. The antigorite appears to have been formed from the lizardite in a later or second stage of serpentinization and can vary in abundance from minor to predominant. Serpentine veins are associated with all stages of the serpentinization. Much of the serpentine in the veins is massive yellow translucent material. Other minerals occurring in the serpentinite and serpentine veins in minor or accessory amounts are - magnetite, sulfides,

Fig. 6. Tremolite crystals in talc.

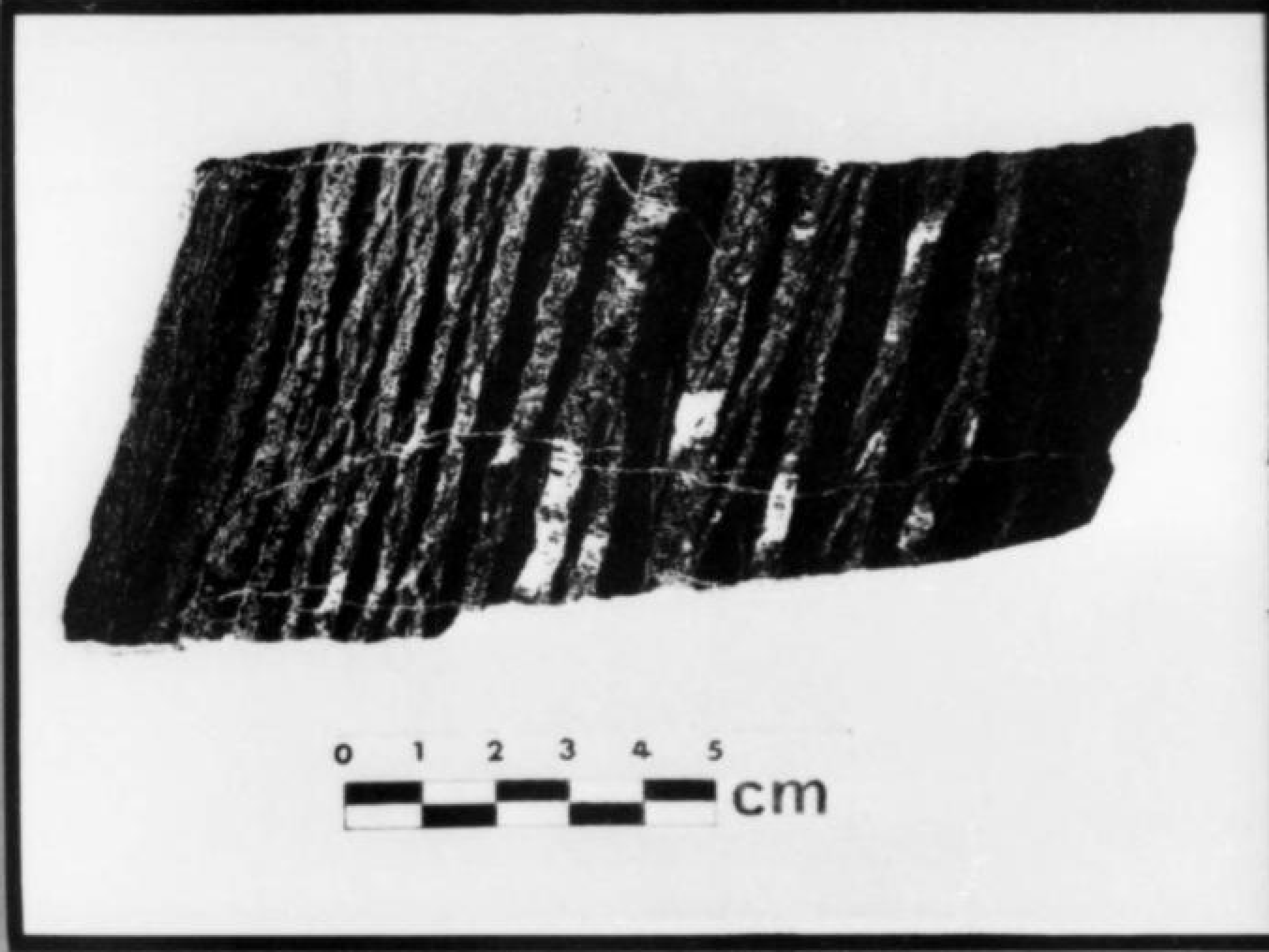

Fig. 7. Veinlets of chrysotile being replaced by pyrrhotite, pentlandite and chalcopyrite.

carbonates, chlorite, anthophyllite, stichtite, pyroaurite and epidote.

Serpentine Veinlets - some areas of the serpentinite contained veinlets and seams of cross fibre chryostile asbestos making up 25 to 30% of the rock. These were mainly 2 to 5 mm in width, but have been found up to 5 cm wide. The fibres were soft and silky, yellowish, sub-translucent and somewhat opalescent. The serpentine in the veinlets varies from massive to splintery and may be composed of chrysotile, a mixture of chrysotile and lizardite, or antigorite.

Chrysotile pseudomorphs - Unusual pseudomorphs after chrysotile asbestos were found as swarms of narrow 2 to 5 mm veinlets of chrysotile partly replaced by sulfides. The replacing sulfides are pyrrhotite, pentlandite and chalcopyrite (Fig. 7). The replacement is not complete. One specimen was found where "cross fibre" asbestos bounded by "slip fibre" asbestos had been completely replaced by magnetite.

Stichtite - Stichtite occurs as lilac "blobs" up to 3 mm in diameter in the lizardite phase of the serpentinite and can constitute up to 5% of the rock. It was not noted as occurring in the seams or veinlets.

Pyroaurite - Pyroaurite occurs in the serpentine veinlets with other carbonates as thin smears, and in thicknesses up to 2 mm. Its colour ranges from yellowish-white through yellow to almost a brick-red (the latter due to iron staining), and it has a pearly lustre. In checking a recent X-ray pattern R. Buchan noted some extraneous lines. An effort to isolate some of the foreign material for further testing has obtained meagre results to date. The indications were of a possible nickel hydroxide.

Anthophyllite - A gray-green fibrous material, splintery and almost columnar, occurred in the serpentine veins. It had been assumed to be a serpentine mineral - probably picrolite - but later, courtesy of the Royal Ontario Museum, it was identified as anthophyllite. It occurs in tightly bound fibres up to 6 inches in length.

Epidote - Several good-sized hand specimens of epidote were recovered from underground. Cloudy, fractured, pistachio-green crystals up to 10 mm covered a massive epidote matrix.

Any geology or mineralogy done at the mine was strictly ore-oriented. With the exception of the millerite no specimens were particularly showy, and to the best of my knowledge no serious collecting was done beyond my own packrat proclivity.

ACKNOWLEDGEMENTS

The writer wishes to thank Falconbridge Nickel Mines Limited for permission to publish the contained data. Dr. A. R. Graham and R. Buchan of Falconbridge Thornhill Laboratories were very helpful with information and suggestions. Dr. J. A. Mandarino was mentor for the project and he and Dr. F. J. Wicks were very patient with an amateur. Photography is by the Royal Ontario Museum photographic department.

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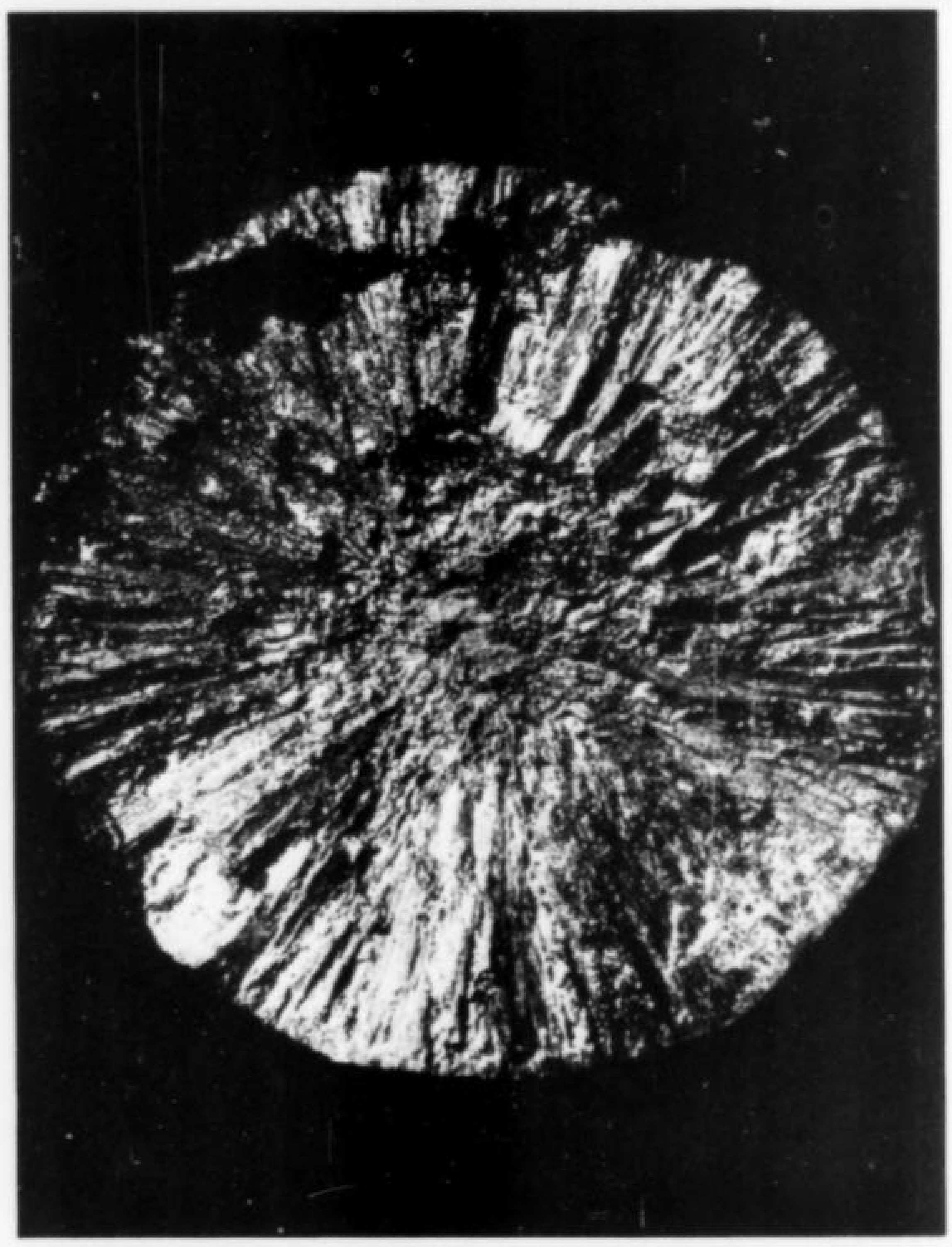
MORPHOLOGY OF THE PYRITE AGGREGATES FROM CAP-BLANC-NEZ [FRANCE]

by Paul Tambuyser **Jan Samijnlaan 37, B2100 Deurne, Belgium**



Introduction

The iron sulfide concretions from the chalk cliffs of Cap-Blanc-Nez, France, are very well known among European mineral collectors. The spherical, radiating aggregates, mostly known as "marcasite nodules", consist instead of pyrite. Recently this has been confirmed by means of x-ray diffraction and ore microscopy (Tambuyser, Plinke, Dillen, 1974). Marcasite also occurs at Cap-Blanc-Nez, but in typical spear-like twins.

In this short note, the morphology of these aggregates is described. The nature of the nucleus was examined by means of a scanning electron microscope. The crystallographic orientation of the surrounding radiating crystals was determined by x-ray diffraction measurements on a sawn specimen. From these observations, it can be concluded that the morphology can be explained by means of the concept of geometrical selection.

Morphology of the spherical pyrite aggregates

Macroscopically, the concretions can be described as consisting of a granular nucleus, surrounded by a radiating rind (figure 1). With the optical microscope one observes that the central nucleus is an aggregate of randomly oriented pyrite octahedrons and cuboctahedrons. The scanning electron microscope also reveals the presence of pyritohedron faces (figure 2a, b). In decreasing importance

Fig. 1. (left) Typical radiating pyrite aggregate from Cap-Blanc-Nez; width is 2 cm.

Fig. 2. (above) and (below). Scanning electron micrographs of pyrite crystals in the center of the concretions. Magnification: a, 100 x; b, 150 x.

one sees {111}, {100} and {210} (figure 3). These crystals are, in fact, a fine example of the law of Donnay and Harker* (1937); applied to pyrite (Pa3) one finds in decreasing importance: {111}, {200}, {210}, {211}, {220},...... The habit is also determined by impurities and conditions of formation, but the effects of these factors are not fully understood as yet.

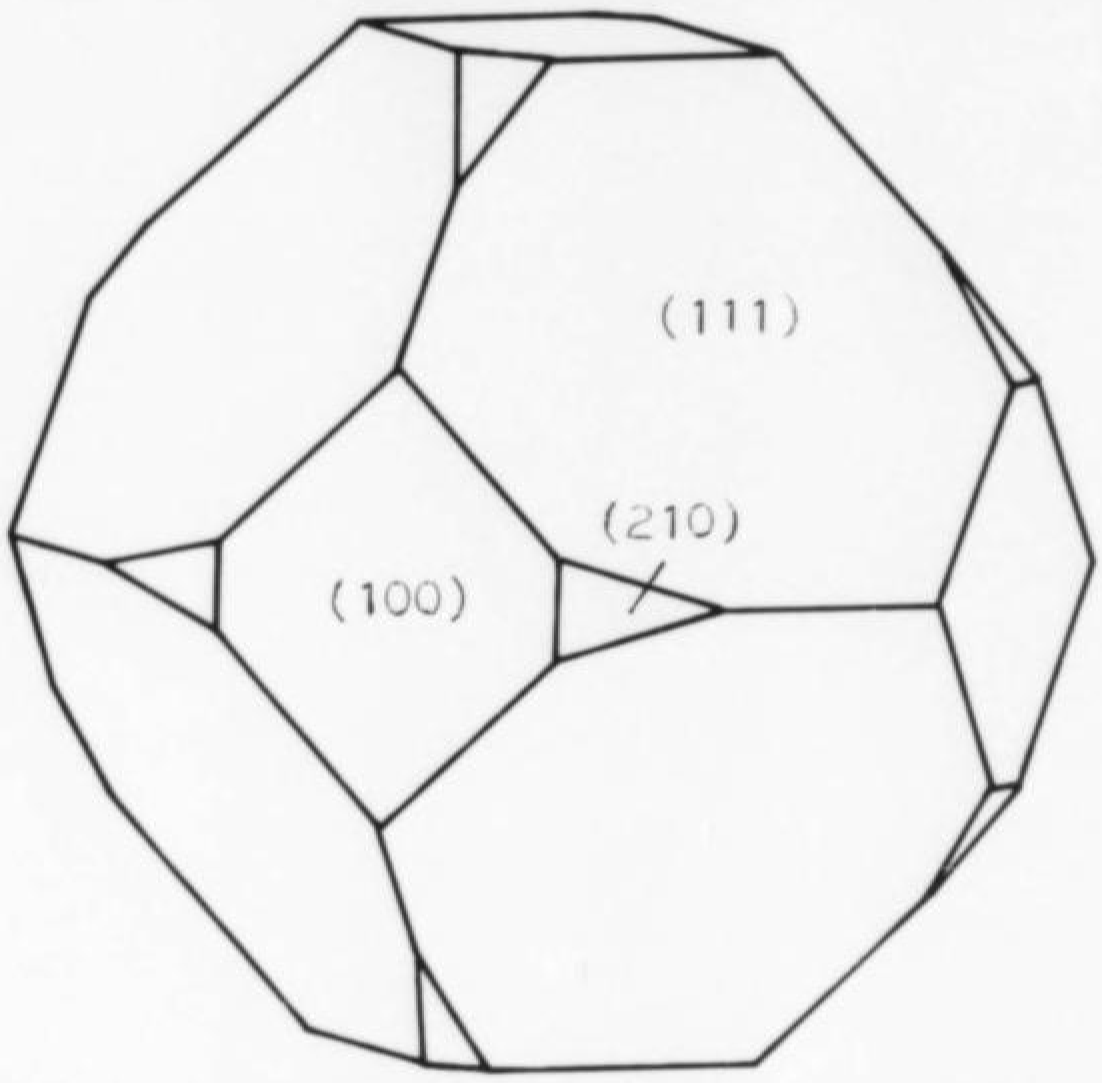
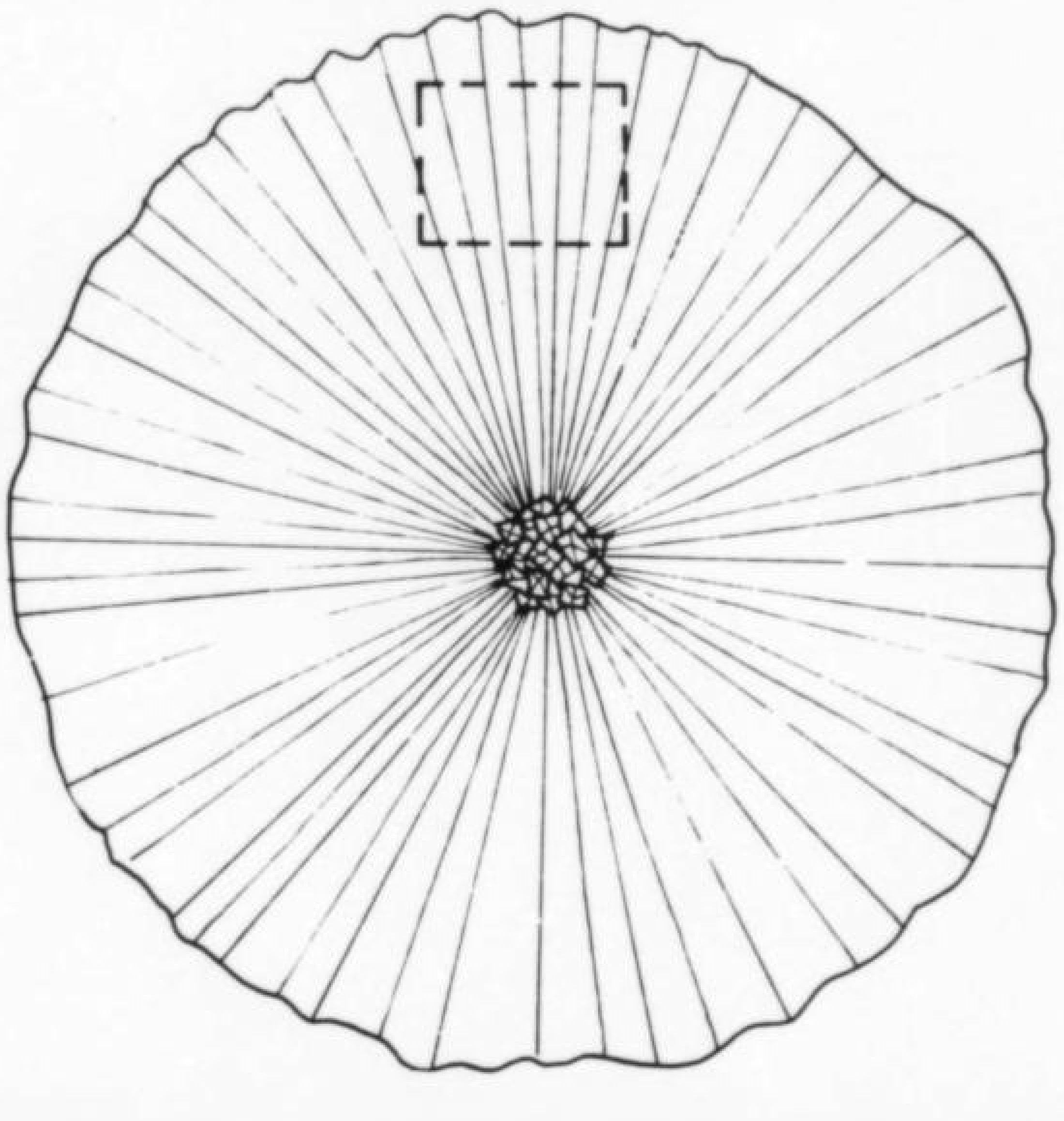


Fig. 3. (above) Pyrite crystal from the center of the concretion; in decreasing importance {111}, {100}, {210} are shown.

Fig. 4. (below) Spherical pyrite aggregate. The place where the sample is taken is shown with dotted line.



The remaining part of the nodules consists of radiating crystals. The outer surface shows cuboctahedral crystals (although, most concretions found on the beach are rounded because of the tide action). The outer surface is mostly converted to goethite.

Morphogenesis of the spherical pyrite aggregates

The morphogenesis* of the pyrite nodules from Cap-Blanc-Nez can be described as follows. First there originates an accumulation of small, randomly oriented crystals (the central nucleus). On growing further, the radiating structure originates. Only those crystals, located on the periphery of such an accumulation, and whose direction of fastest growth lies parallel to the radii from the center of the accumulation, will continue growing, because the others will subsequently contact each other or their more favorably oriented neighbours. This is known as the principle of geometrical selection (Grigor'ev, 1961). So, if geometrical selection does occur, the elongation of the radiating crystals must be parallel to their direction of fastest growth; for octahedrons, this is [001]. The orientation of the radiating crystals was determined by means of x-ray diffractometry. From a rather large nodule, a slab incorporating the center of the nodule was sawn. From this disk, a rectangular plate was prepared (figure 4). This plate was fixed in an x-ray diffraction goniometer at the site where normally a powder specimen holder is placed, and positioned so that the x-ray beam strikes the sample perpendicular to the elongation of the crystals (figure 5). Because in the diffractograph, only reflections from planes lying paralled to the surface can occur, it is possible to determine the orientation of the crystals on the basis of the appearing reflections. In figure 6 the diffractograph of a pyrite powder specimen and that of the pyrite plate are compared (for both Ni-filtered CuKα -radiation was used). In the oriented specimen, only reflections derived from planes that belong to the [001] zone, occur. Hence it can be concluded that the crystals are all elongated in their [001] direction. When the outer surface shows crystals, their [001] direction lies perpendicular to the surface. Figure 7 gives an idealised representation of geometrical selection as it occurs in these pyrite aggregates. The thinner lines show different growth stages.

Conclusions

From these observations it can be concluded that the formation of the pyrite aggregates from Cap-Blanc-Nez originates from the crystallization of randomly oriented crystallites, followed by the geometrical selection of the [001] direction. It is frequently being shown that so-called marcasite concretions from various clay and chalk sediments actually consist of pyrite (e.g. Ramdohr and Strunz, 1967; Vochten and Geys, 1974). The morphogenesis of such nodules is probably analogous to that of the nodules from Cap-Blanc-Nez.

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* The law of Donnay and Harker states that the importance of a crystal form {hkl} (=frequency of occurrence, relative area) is inversely proportional to the interplanar spacing d_{hkl}. This law is, in fact, a modification of Bravais' Law, because it takes into account extra halvings in d_{hkl} due to the presence of screw axes and glide planes.

* literally, "origin of the form".

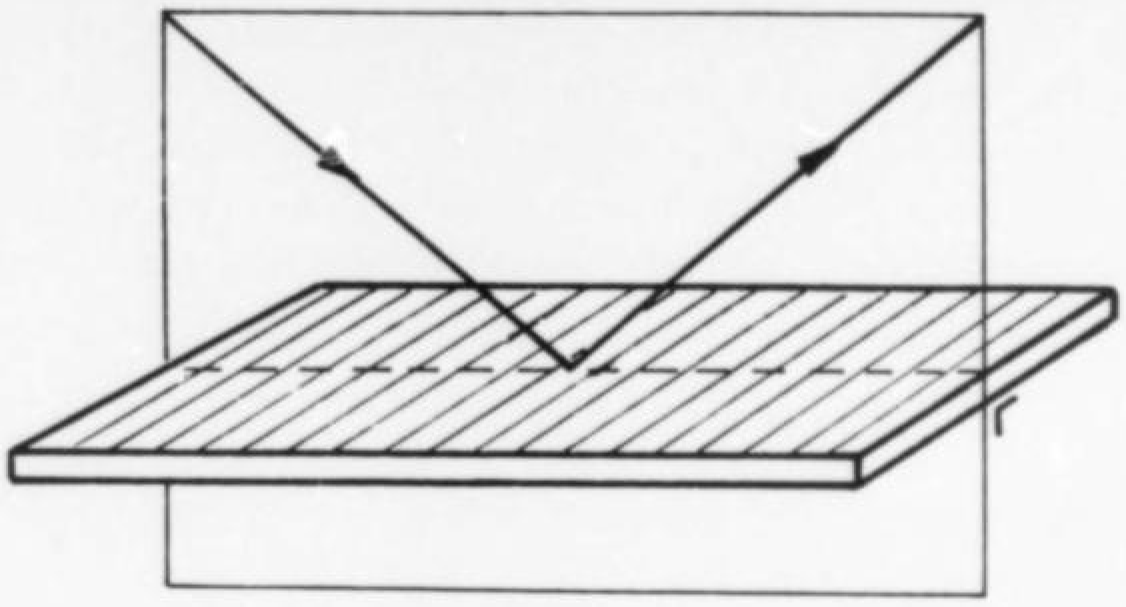

Fig. 5. (left) Diffraction at an oriented pyrite plate. The x-ray beam strikes the sample perpendicular to the elongation of the crystals.

Fig. 6. (right) Diffractograph of a pyrite powder specimen (above) and of a pyrite plate (under). Both were recorded with Ni-filtered CuKα-radiation. Along the horizontal axis degrees 2θ are indicated. In the lower diffractograph only reflection from [001]-zone planes occur.

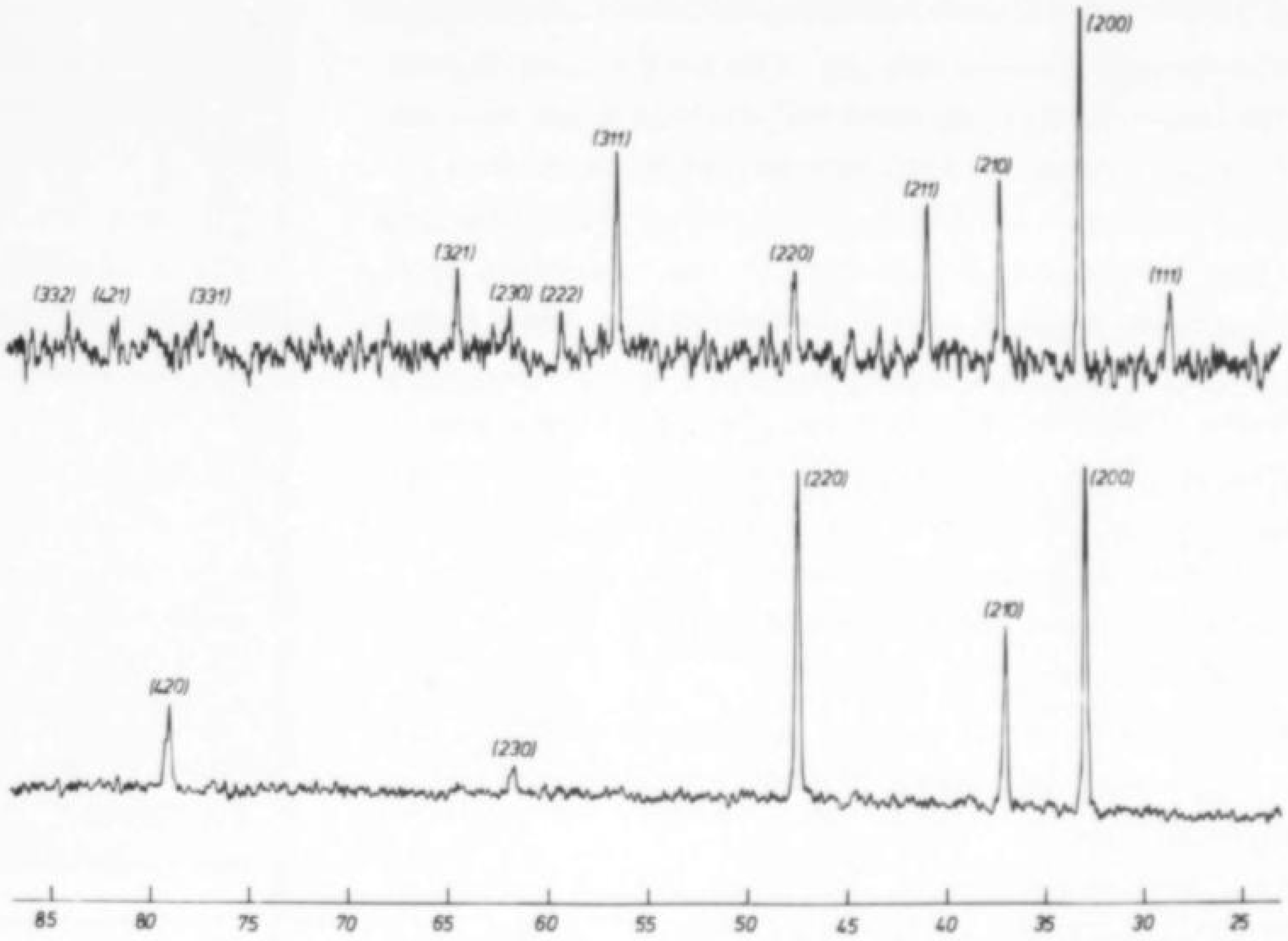

Fig. 7. (left) Geometrical selection as it occurs in the pyrite aggregates. The thinner lines indicate different growth stages.

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YTTROCRASITE FROM CENTRAL TEXAS

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Yttrocrasite is essentially an oxide of titanium and the yttrium rare earth group elements in which small amounts of thorium, uranium, calcium, and cerium substitute for yttrium and iron. In addition, columbium and tantalum apparently substitute for titanium, as trace percentages of these elements appear in all analyses. The mineral has been known only from the Southern Pacific Silica quarry at Nuevo, California, and from the type locality of a granite pegmatite in Burnet County, Texas. The color of the mineral is black when fresh and a dull, resinous, greenish-brown when altered. In transmitted light, yttrocrasite is normally isotropic due to metamictization, though fresh specimens can be feebly anisotropic.

Associated minerals include perthitic microcline, biotite, fergusonite, gadolinite, allanite, uraninite, and zircon (cyrtolite).

The original description of the mineral was presented by Hidden and Warren in 1906. Further mineralogical publications have cited this reference, giving the locality of the mineral as "a granite pegmatite approximately three miles east of the famous Baringer Hill pegmatite in Llano County, Texas". Subsequent investigation by the author (1975) has revealed the presence of this mineral in the Clear Creek pegmatite, some two miles east of the type locality.

The host rock is a crudely zoned granitic pegmatite composed of perthitic microcline and quartz. Mineralization within the zones is similar to the famous Baringer Hill pegmatite (Hess, 1908; Landes, 1932). This includes some of the largest concentrations of gadolinite, allanite, fergusonite, rowlandite, yttrialite, and zircon (cyrtolite) known. At Baringer Hill, before its inundation by Lake Buchanan in 1936, masses of gadolinite weighing 200 pounds and allanite weighing over 300 pounds were recovered. The Clear Creek pegmatite is an offshoot pegmatite of the same type as Baringer Hill, only on a smaller scale.

Yttrocrasite is found in perthitic microcline and biotite that is associated with hematite staining within the intermediate zone of the pegmatite. Small areas within the perthite are vuggy, and are filled with smoky quartz, hematite, biotite, and fergusonite. Clear Creek yttrocrasite is clearly associated with fergusonite and "cyrtolite" intergrown within the biotite plates. The biotite provides a protective shield in which the yttrocrasite and other radioactive minerals are sheltered from surface waters and alteration. Two distinct crystals were found, distinguished from the other radioactive species by their color (green-brown) and their shape (orthorhombic-dipyramidal).

There can be little doubt that the crystallization of yttrocrasite is contemporaneous with the other radioactive species with which it is associated. The fergusonite, gadolinite, allanite, and uraninite probably crystallized first, using up most of the available $(Y,Er)_2O_3$, $(Ce,La)_2O_3$, UO_2, ThO_2, and Cb_2O_5-Ta_2O_5. Yttrocrasite was then formed, acting as a "wastebasket" mineral for the remaining amounts of yttrium, thorium, uranium niobium, tantalum, etc., and titanium that was not used in the formation of ilmenite found throughout the pegmatite.

The new occurrence of yttrocrasite adds a third locality in the world for this mineral. Analysis and comparative descriptive mineralogy of yttrocrasite from the two Texas localities (Table 1 and 2) show a decrease in specific gravity between the localities due to the increase in hydration and alteration at the Clear Creek pegmatite. If there were active mining operations at Clear Creek, perhaps fresher, less altered, specimens could be found and analyzed. Today, however, there is very little yttrocrasite in the Clear Creek pegmatite. All that exists of the described

Figure 1. Crystal Forms and Habits of Yttrocrasite.

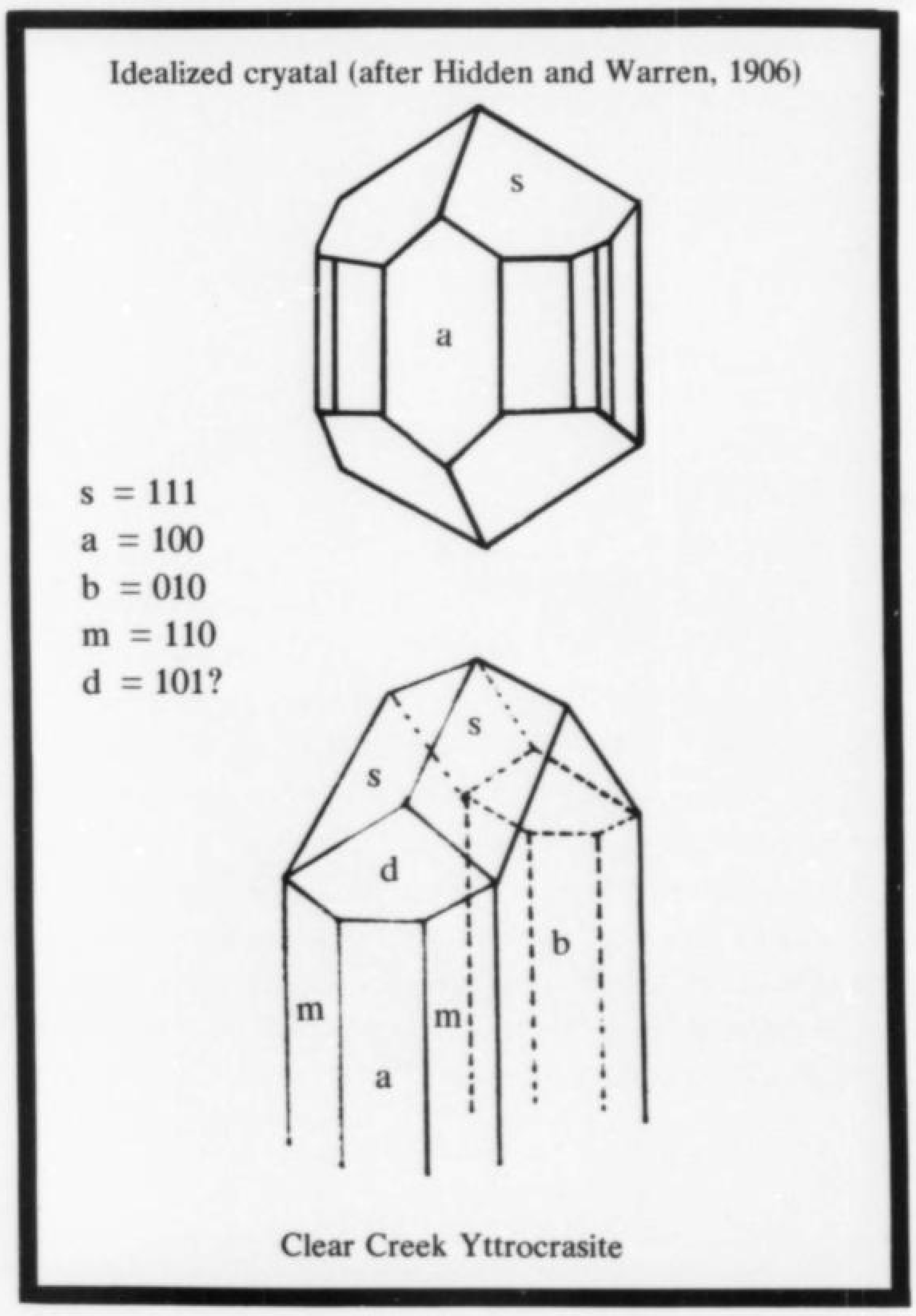

Table 1. Chemical analyses of yttrocrasite

	3 Miles East of Baringer Hill (Type Locality)	Clear Creek
CaO	1.83	2.36
MnO	0.13	0.19
MgO	trace	n.d.
PbO	0.48	0.14
$(Y,Er)_2O_3$	25.67	23.42
$(Ce,La)_2O_3$	2.92	2.14
UO_2	1.98	1.21
UO_3	0.64	0.32
ThO_2	8.75	8.21
WO_3	1.87	1.69
SiO_2	trace	n.d.
Fe_2O_3	1.44	1.68
TiO_2	49.72	50.38
Cb_2O_5	trace	trace
Ta_2O_5	trace	trace
CO_2	0.68	none
H_2O	4.36	7.23
	100.57	98.92

Formula: essentially $A_2B_4O_{11}$, with A = Y,Th,U,Ca; B = Ti,Fe^3,W; with water, proposed as (Y,Th)- $Ti_2(O,OH)_6$.

Table 2. Physical properties of yttrocrasite.

Crystal system: orthorhombic (dipyramidal) see figure 1.
Hardness: 5½ – 6
Density: 4.80 (fresh), 4.26 (altered)
Cleavage: none
Fracture: slightly conchoidal
Color: black
Luster: opaque to resinous, brown alteration coating
Streak: greenish-black
Optics: isotropic (metamict) to feebly anisotropic; $n = 2.12\text{-}2.15$

mineral are two small singly terminated crystals about 40 x 15 x 15 mm each. The basal section of one of these was used for the chemical analysis.

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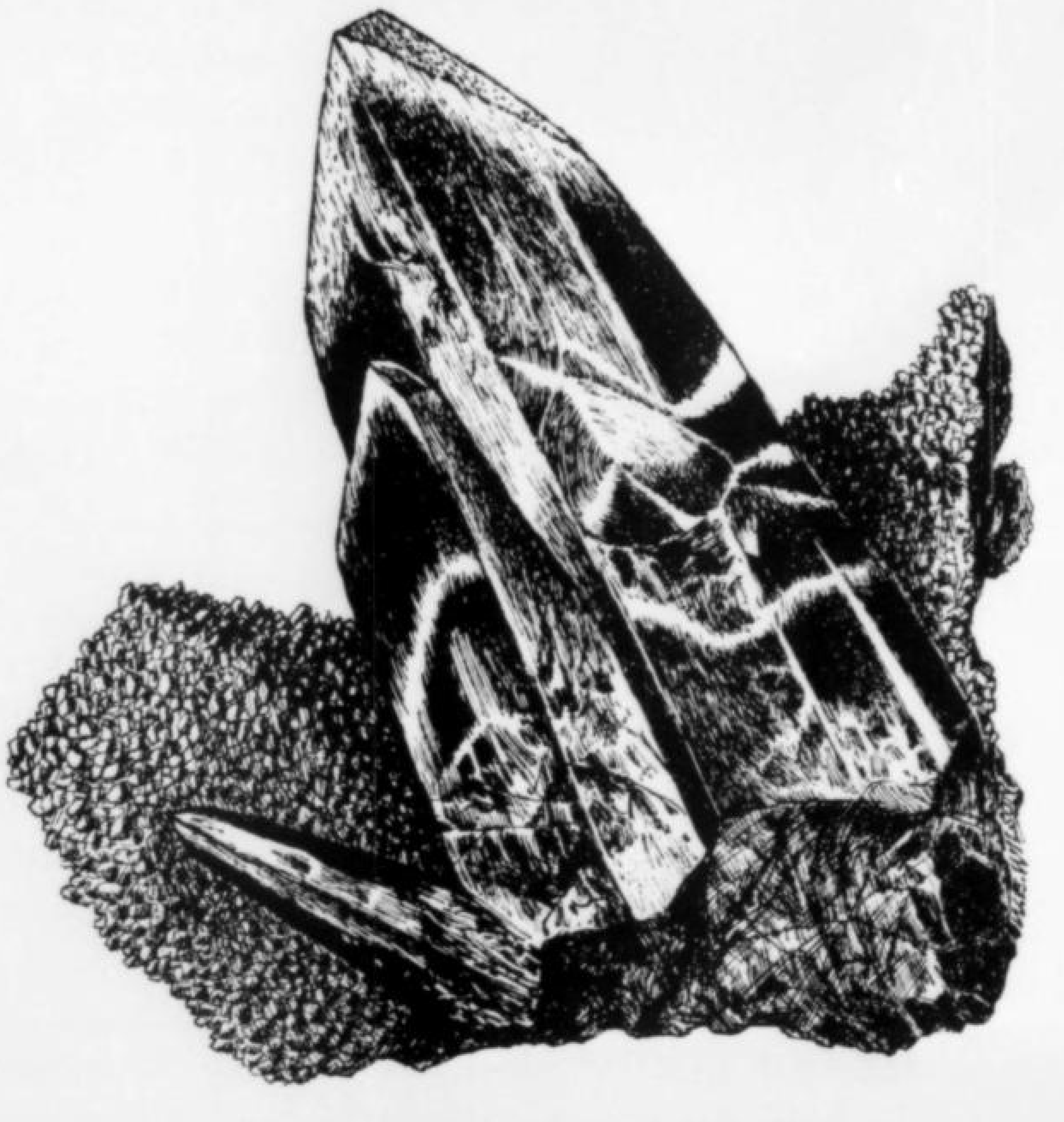

What's New in Minerals?

THE ROCHESTER SYMPOSIUM

The Rochester (New York) Mineralogical Symposium was held this past April. What sets this show apart from all the others (except perhaps from some events related to the Tucson Show) is that the emphasis is on lectures and education...a symposium. Dealers are present, to be sure, and they set up in their motel rooms. A small room is also set aside for non-competitive displays.

The nature of the show is especially appealing for a number of reasons. Personally I favor non-competitive display over competitive (the subject of a future editorial) and I enjoyed seeing fine specimens displayed with a cavalier disregard for "uniform rules". It was also a pleasure to see all of the dealers attending and participating in the lectures.

Among the displays were two fine collections for sale by their owners (Phil Gregory of Denver and Bob Thompson of Phoenix). Also on display were three(!) cases owned by the Bolicks, and various things belonging to David Wilber, Prosper Williams, Charles Key, etc. A special feature this year was an emphasis on old labels and, in fact, the show program even contained several pages of copies of fascinating old labels. Label collecting, it turns out, is quietly spreading as a sideline interest among mineral collectors. An effort is being made by these collectors to acquire labels only through trades or gifts to each other so that money will not rear its ugly head and spoil an enjoyable little diversion. I had the opportunity to look through the voluminous label collection of Ron Bentley, and was thoroughly amazed. These labels may be the only remaining evidence of significant collections and collectors of the past, and are therefore historically valuable. I hope that all collectors will make an effort to have their own individualized labels printed up so that they may follow their specimens around forever. It adds an extra dimension to mineral collecting.

One of the most important features of the show was a morning-long panel discussion (with audience participation) of "What's New in Minerals". Naturally much of what was said is suitable for this column. The following is a transcription of several portions of that panel discussion.

William Pinch (chairman) to Robert Gait*: I'd like you to talk about the lazulite, arrojadite, kulanite, etc. [from the Yukon Territory of Canada].

Robert Gait: You've about said it all.

William Pinch: Thank you!

Robert Gait: Well the list is getting longer and longer, and there are a few new minerals being described. Some of them have been accepted recently: kulanite and the magnesium analog of vivianite, which is being called baričite ("bah-ree-chite"). It looks like vivianite; it's a pale green. There's quite a lot of it around so it should become available soon. Bill mentioned a few of the other minerals; I'll just run through some of them. There's lazulite of course, and wardite (Fig. 1), brazilianite, augelite, vivianite, kulanite, apatite and quartz. It's a very complex deposit. Most of the new descriptions will be appearing the *The Canadian Mineralogist*.

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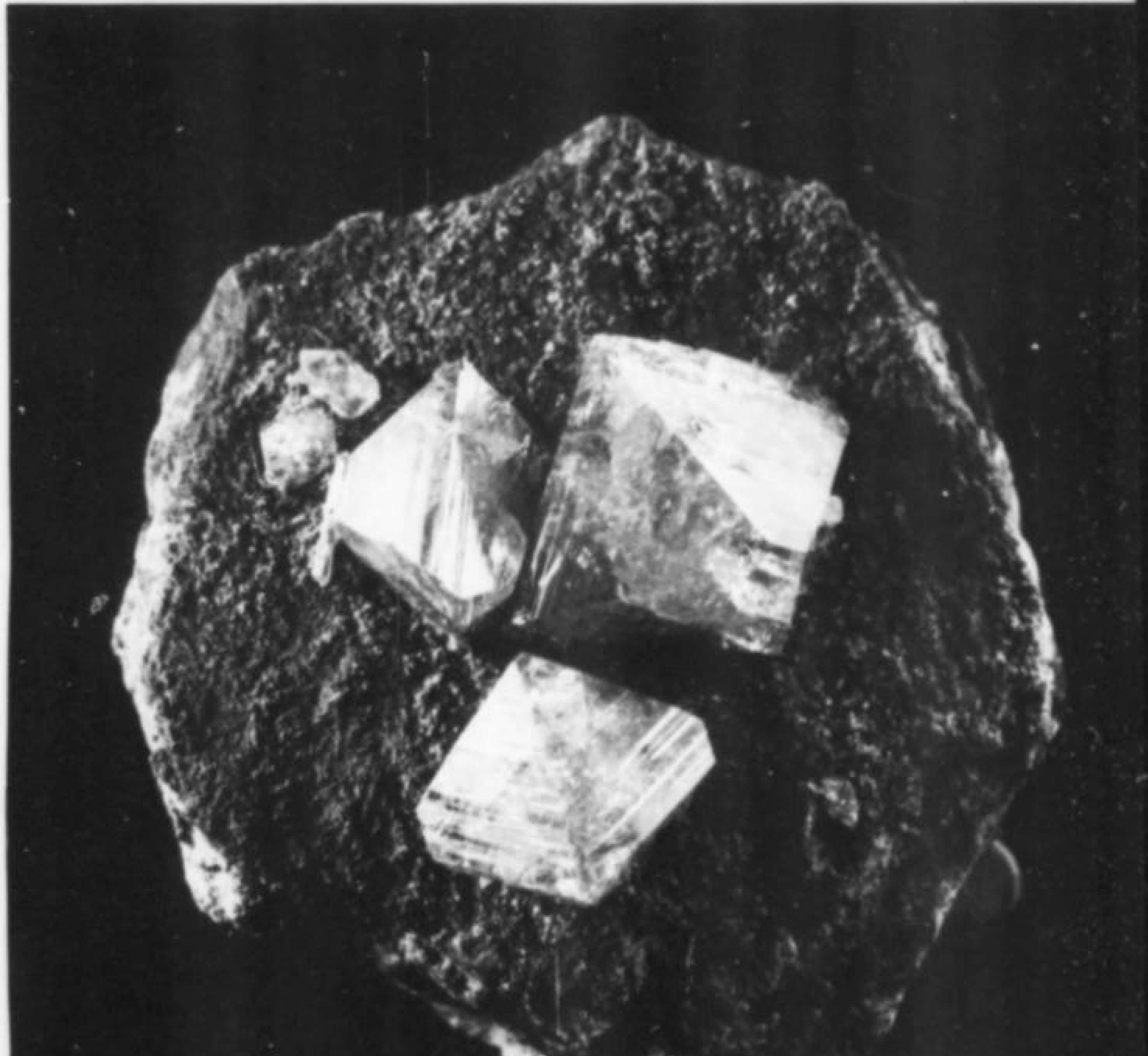

Figure 1. **Wardite**, from the Yukon Territory, Canada, The crystals are colorless; the largest is 1.5 cm. Smithsonian specimen.

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* curator of minerals at the Royal Ontario Museum.

William Pinch: What about the symplesite-parasymplesite-köttigite problem?

Paul Desautels: Well the problem is an old one. In the first place köttigite is the zinc analog of vivianite, and what is surprising is that the only described köttigite in the literature is *pink*, because the original köttigite found in Europe happened to be a cobaltian köttigite. Anyway köttigite turned up about ten years ago in Mexico [Ojuela mine, Mapimi, Durango]. With the new lot (Fig. 2) that recently came out—and it was only one lot which got split up about half a dozen ways—the problem immediately reared its ugly head again because now it seems that köttigite is a member of a series. Much of what has been called köttigite could be parasymplesite. The x-ray data are not diagnostic so the only recourse at the moment seems to be chemical analysis. The work is being done at the University of Arizona.

Figure 2. **Köttigite** (or **symplesite** or **parasymplesite**), Ojuela mine, Mapimi, Durango, Mexico. The crystal spray is about 3.5 cm tall and is a bluish black. Wayne Leicht (Kristalle) specimen.

John White: I recently talked to Robert Chambers at the University of Arizona and he is doing a very systematic, thorough analysis. The problem is that köttigite and parasymplesite give identical x-ray powder patterns, and that they are apparently, according to Bob, indistinguishable optically as well. At Mapimi they find almost the entire series from nearly pure köttigite to nearly pure parasymplesite with everything in between. So there is no way that any collector is going to be able to determine where in the series his or her specimens belong, short of a chemical analysis. I think most of us will probably have to be content with labelling our specimens something like "köttigite/parasymplesite". I see no alternative.

Robert Gait: My colleague at the R.O.M., Dr. Sturman, has been doing some work on köttigite/parasymplesite, and he mentioned to me recently that many crystals are zoned and have different compositions from one part of the same crystal to the next. It really is a very complex matter.

• • •

Charles Key: Last year when I talked about Tsumeb minerals it seemed to me that the time scale for having access to the country looked like it might be five to ten years. Well I've reduced that now to possibly one to two years. I don't think there's anybody who travels there who doesn't firmly believe that the country will be off-limits to Americans, probably within 12 months. The situation in the area of Tsumeb is such that there has been terrorist insurgence activity in the town of Grootfontein, which is about 60 km from Tsumeb. Several farmers have been murdered. I perceive the situation there as being much like the situation in Mozambique four or five years ago. There had been much guerrilla warfare in the northern, mineral-producing area of Zambezi. Finally the government simply forbade anybody from visiting that area. I see a similar situation as an imminent possibility in the area of Tsumeb. It's only a hundred-and-some miles from the Angola border. The situation I think is pretty tenuous to say the least. I would imagine that even if Tsumeb had unlimited specimen possibilities for the untold future, with guerrilla activity so close to the mine, a very likely target would be the mine itself. And there has been a lot of talk that if the mine were sabotaged, which would be an easy thing to do, it would shut down forever. Even beyond that I suspect that the political situation is such that Southwest Africa is going to be off the map for collectors very soon.

Vincent Manson: I may be not quite as pessimistic about the future of Southwest Africa as Charles is, although it's certainly going to change. Nevertheless one should think of the many minerals that come from there—not just the Tsumeb minerals and the Onganja cuprites—there are many other minerals that come from there for which probably this is as fine a time to acquire as any. Some of the malachite from Onganja, molybdenite crystals from there, and Karabib tourmaline, which is very fine; in fact any Southwest African minerals are probably good acquisitions at the present time.

William Pinch: Not too long ago Charlie Key called me and said he had some nice things from Tennessee...calcite, sphalerite, fluorite...and if Charlie says they're nice they gotta be nice. They include probably the world's finest examples of twinned calcite. Charlie can you elaborate?

Charles Key: It's a new zinc mine in central Tennessee called the Elmwood mine. It's owned jointly by New Jersey Zinc Company and [the Belgian] Union Miniere. It promises to be the first of several mines in the area. From the information I have at this point it is apparently the biggest zinc basin in North America. The potential for specimens is nothing short of frightening. I got word of specimens there two years ago, and have been trying to stay abreast of what was happening. Last November they hit a pocket of mostly calcite of exceptional quality [Ed. note: much of the calcite is orange with a peculiar reddish-purple tinge that is very striking. Crystals are often exceptionally transparent], on limestone with little-bitty fluorites. It was about four feet wide and three feet high and about 120 feet long! To give you an idea of the specimen possibilities, the area where they're operating right now is in a formation of limestone about 30-40 feet thick at most. They're sinking a second shaft right now in the same formation about two miles away. Where they expected to intersect that same formation the limestone is about twice as thick, and according to the head geologist who has examined core samples from this area, the pockets average twice as thick. It seems like there's every indication that many of the pockets they are bound to encounter are going to contain fantastic combinations of superb calcite and superb sphalerite; the fluorites, I think, are certainly impressive but they don't reach the quality, aesthetically, of some other localities; also some dolomite and some barite.

[Ed. note: Charles Key has just signed a contract with the mining company for recovery of these specimens]

Paul Desautels: Have you seen any galena?

Charles Key: Yes, there is galena there, but for some reason it's very inferior galena. One of the more impressive things that I've seen were some of the fluorites that came out quite recently. I got a phone call sometime in March saying that they had encountered a pocket 42 feet long of incredible...to use the words of the geologist who called me: "a pocket of *humongous* crystals!"

Apparently this zinc-bearing formation persists through much of central Tennessee and goes right up into Kentucky! How much of it is specimen-bearing is anybody's guess, but on the basis of what's been cored it seems the entire strata is vuggy, and will produce good specimens. Obviously they are not going to collect everything; they'll collect selectively.

William Pinch: The sphalerite is very beautifully twinned.

Paul Desautels: I should mention that the calcites are *universally* twinned on the pinacoid, so they have V-shaped faces and re-entrant angles all the way around their centers.

Some items of interest at the Rochester Show: Prosper Williams had a large cabinet piece of milky quartz with inclusions of blue and green ajoite and papagoite, not from Ajo, Arizona, but from Messina, Transvaal province, South Africa. He also had on display a rare specimen of cerussite with thick, green inclusions of tsumebite and malachite, and large superb pieces of Tsumeb dioptase, cerussite and wulfenite.

Rustam Kothavala (Crystals of India) had a large, single crystal of golden, partially gemmy powellite [$CaMoO_4$] (Fig. 3) from the state of Maharashtra, India. He received one such specimen about three years ago, and after an extensive search, has finally located the quarry where powellite occurs. Only three good crystals have thus far been recovered, but the occurrence is geochemically startling; where could molybdenum come from in a trap basalt, and why, of all places, should the world's finest crystals of powellite occur there?

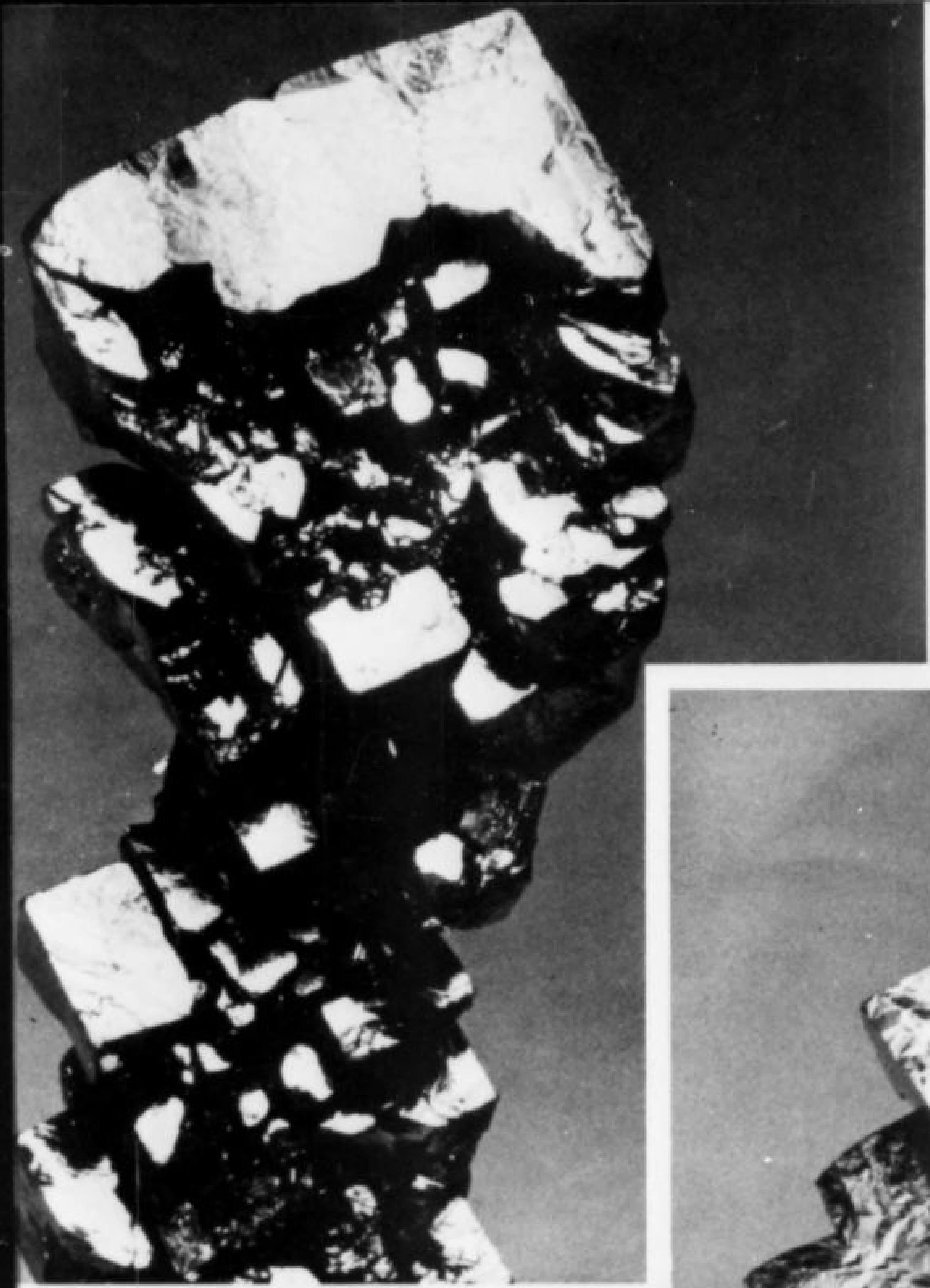
Figure 3. **Powellite**, Maharashtra, India, (pale yellow-brown, 36 x 34 x 29 mm, with scolecite needles). Rustam Kothavala specimen.

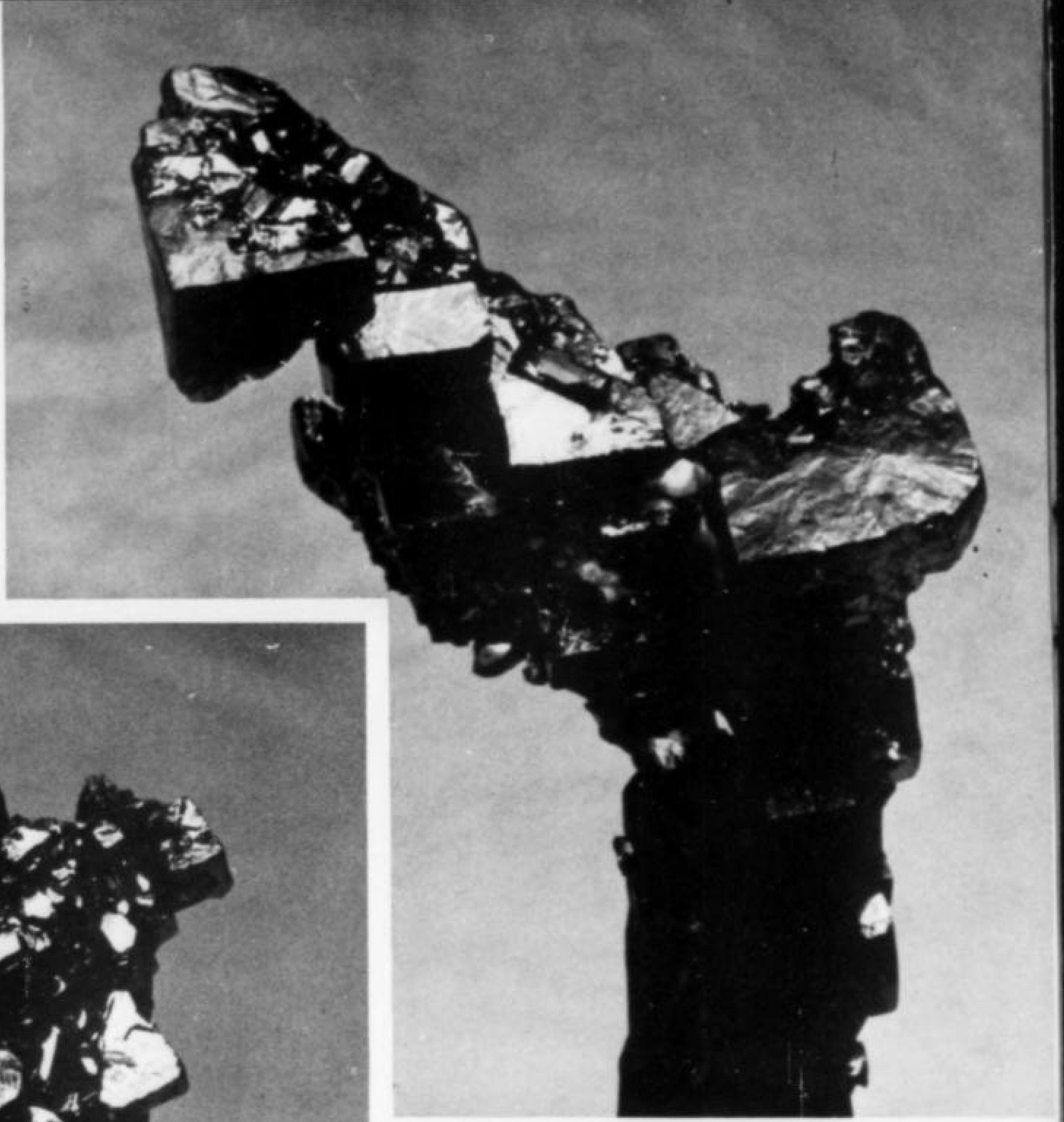
Gene Schlepp (Western Minerals) had a very choice selection of specimens of acanthite (after argentite) crystals which were found early this year at the Reyes mine (?), Guanajuato, Mexico (Fig. 4). The superb crystal groups are as good as any but the largest specimens that have ever come from Guanajuato. He also had a flat of very nice paradamite specimens from Mapimi which were subsequently dealt off to the Smithsonian.

WASHINGTON, D.C., INTERNATIONAL SHOW

The Washington International Gem and Mineral Show (commonly known as the "International Show" rather than, for instance, the "Washington Show" or the "D.C. Show") was held the weekend after the Rochester Symposium. Although the lectures and slide shows are directed to rockhounds and lapidaries, the rest of the show (exhibits and dealers) easily qualifies it as the East Coast's best.

Nearly all of the best dealers in minerals and crystals were there, and they unanimously reported good sales. The Sklars (of Oceanside Imports) had just returned from a trip to Brazil and had a variety of interesting new things. Little, brown, gemmy brookite crystals from Minas Gerais were the most unusual. Specimens from Lavra da Ilha continue to come out despite the estimation of all experts that because the mine is down so far below the river level (it is an island, you will recall) it cannot be mined any longer. Who knows how long the ingenious garimpieros there will keep it going? Virgem da Lapa specimens were still available, including some tourmaline crystals over a foot long, but such availability cannot continue for long. In fact, production there has now ceased as new discoveries at nearby Goiaz have drawn off all of the miners.





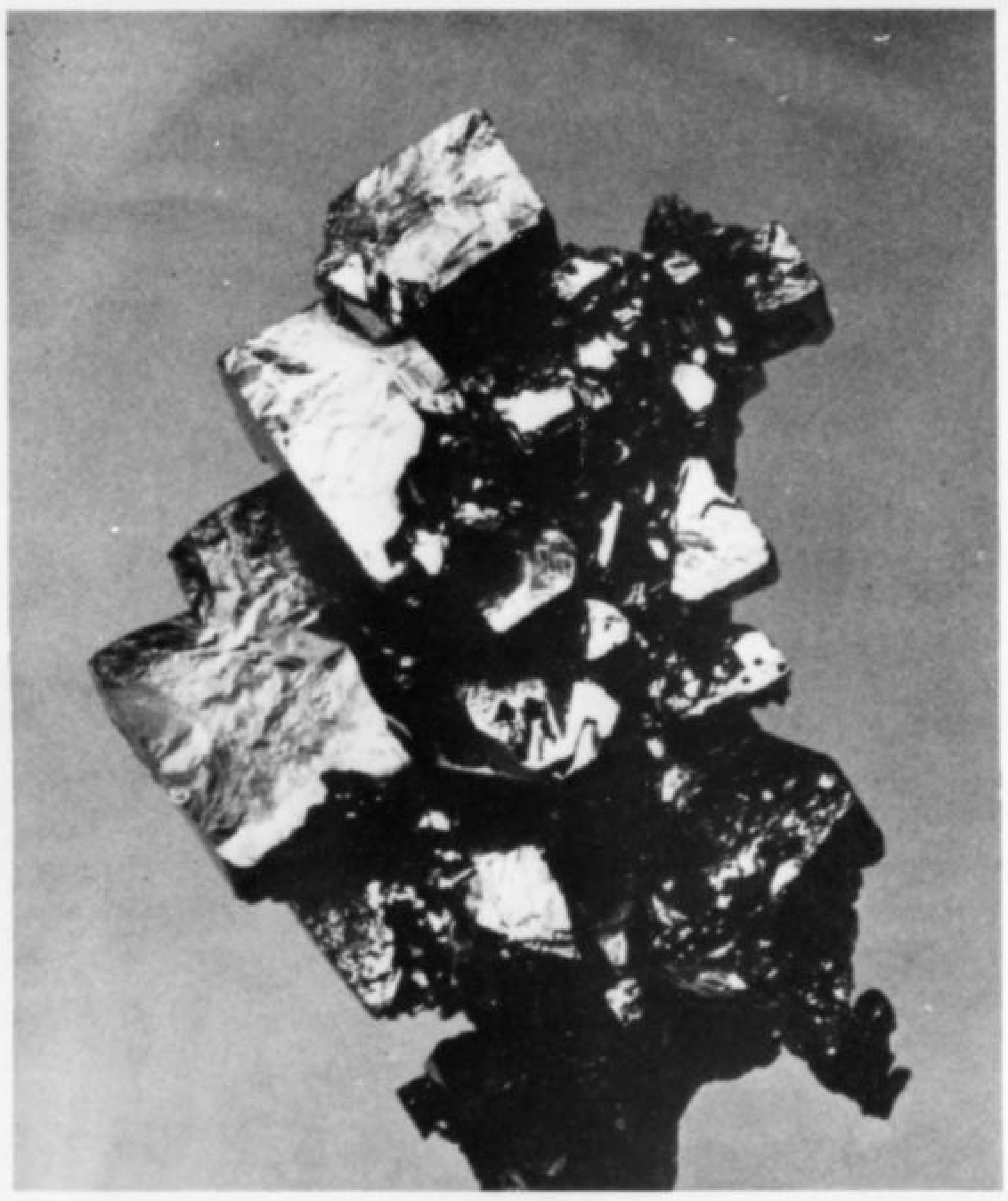


Figure 4. **Acanthite** after argentite, Reyes mine (?), Guanajuato, Mexico (black, **a** (top left) = 5.2 cm long, **b** (bottom center) = 4.3 cm long, **c** (top right) = 3.3 cm long). Gene Schlepp (Western Minerals) specimens.

NEW PERUVIAN FERBERITE

Rock Currier, of Jewel Tunnel Imports, reports the following:

Located in the Junin Province of Peru is a source of ferberite crystals which may prove to be the finest yet for the species. The crystals are typically twinned and take the shape of thin, broad, spear-shaped, striated crystals sometimes associated with pyrite and quartz (Fig. 5). On occasion the crystals are untwinned and of a stepped, chisel shape. Crystals measuring more than an inch were found. Preliminary indications are that the locality will not be prolific.

Also pictured (Fig. 6) is a specimen from Casapalca, Peru. Casapalca is probably the most productive specimen mine in central Peru for species other than pyrite. The reason for this is more than likely not because of the nature of its ore body, but because of its close proximity to Lima and the relatively large number of people who visit the mine in search of specimens. However, the remoteness of many of the mines in Peru, the mine personel who are unaware of specimen values, the weather conditions, the road conditions, the altitude and the living conditions at most Peruvian localities make it doubtful that Peru will soon compete with Mexico as a source of specimens.

(Mention should also be made that the calcite with the tetrahedrite fluoresces deep red under long and short wave ultraviolet light.)

W.E.W.

Figure 5. **Ferberite** with minor **pyrite** and **quartz**, Junin Province, Peru (black, scale bar is one inch; smaller division is 1 cm). Rock Currier specimen and photo. Some of the ferberite crystals are twinned in a fashion similar to rutile cyclic twins.

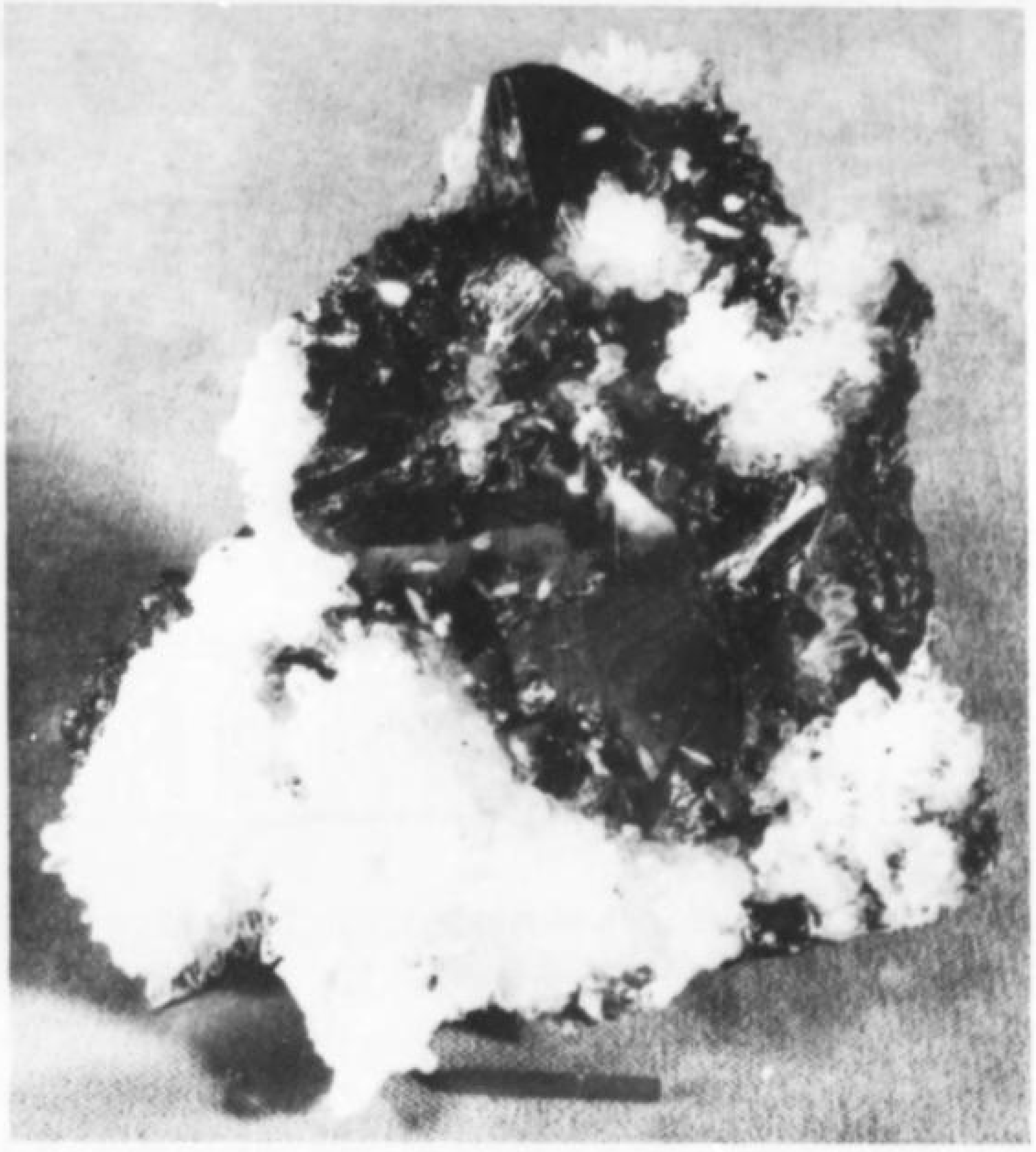


Figure 6. **Tetrahedrite** and **quartz**, **Casapalca**, Peru (black, scale bar is 1 inch). These tetrahedrite crystals have a very faint coating of chalcopyrite on some of the faces, which gives the faces a glittering, golden look when viewed from certain angles. Rock Currier specimen and photo.

Continued from page 173

In his home city he was Vice-President and served for more than 40 years on the Board of Trustees for the Santa Barbara Museum of Natural History, donated funds to establish its Mineral Hall, and gave numerous fine mineral and gem specimens from his personal collection to help fill the new display cases. He was also a member of the Red Cross Advisory Board.

He was a Fellow in the Geological Society of America and the Mineralogical Society of America, and was a member of Sigma Xi.

As his interests in mineral collecting grew, he devoted more and more time to groups of collectors, and these activities finally paid off with his founding the California Federation of Mineral Societies. He became one of its first presidents. He was also instrumental in the Federation's acquisition of the now famous California Golden Bear Nugget, which is the official emblem of the group.

For many years he had been giving valuable units of his mineral and gem collection to the University. One of his last gestures was to bequeath the balance of his collection to the Geology Department of the University.

These are but a few of Professor Woodhouse's credentials and accomplishments. But for those of us who were privileged to know and work with him, we shall longest cherish the memories of him as a man: Kindly, deeply perceptive, and born with a sense of humor that would completely destroy the aplomb of the most sophisticated groups. We, as his students, would anticipate each lecture or laboratory session as a Woodhouse mixture of sharing the physical delights of the World with stories (not all completely probable, I'm sure) which captivated our imaginations.

The highlight of the Geology Department's school year would be the Professor's remarks at the annual Woodhouse Geology Award. Even in advanced age, one of his great interests was in his students, and they knew it! A field trip with him was truly a unique experience.

In 1974, at the Southern California Mineral Society's show at Pasadena, Doug stepped up to my wife, planted a kiss square on her mouth and said, "Well, I guess old age has its advantages."

Is it any wonder that we loved this man? But such respect and affection has its dangers. We had, over the years, become subtly infused with the idea that C. D. Woodhouse was indestructible. This myth was destroyed with his death in August, 1975.

He is survived by his wife, Muriel, a son, Charles and two daughters, Michelle and Barbara.

Doug was appropriately honored when a new calcium, aluminum sulfate - phosphate mineral was named Woodhouseite. He had found this unusual mineral in the Champion Mine in Mono County. Woodhousite remains a rare species today. And in December, 1972, his University paid tribute to him by naming its newest building the C. Douglas Woodhouse Geology Laboratory.

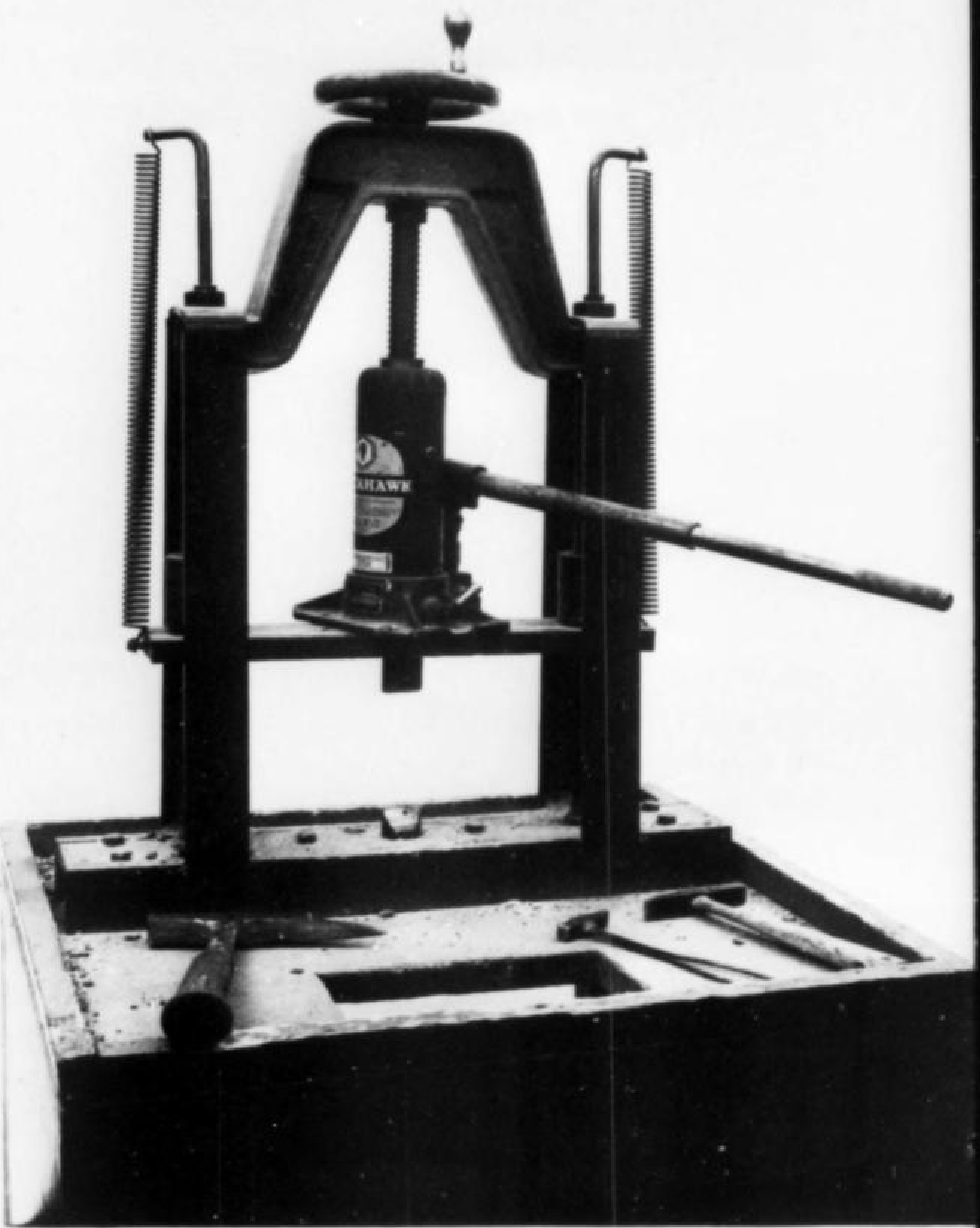
yedlin on micromounting

We're always on the lookout for ways and means of obtaining material for micromounts. Collecting, great. Purchasing, great. Exchanging, great. So that when a new source appeared we were eager to partake of the feast, and we were most successful. Dick Hauck, 8 Rowe Place, Bloomfield, New Jersey 07003, has just come up with his *Mini-Mineral Indoor Field Trip*. Yep, you buy *5 pounds of crystal bearing mine rock* (his description) from the famous 79 mine at Hayden, Arizona and go to work. He says: "Careful breaking of this rock will produce micro, thumbnail, and miniatures of at least four of the following minerals: aurichalcite, cerussite, chrysocolla, hemimorphite, malachite, rosasite, smithsonite or wulfenite."

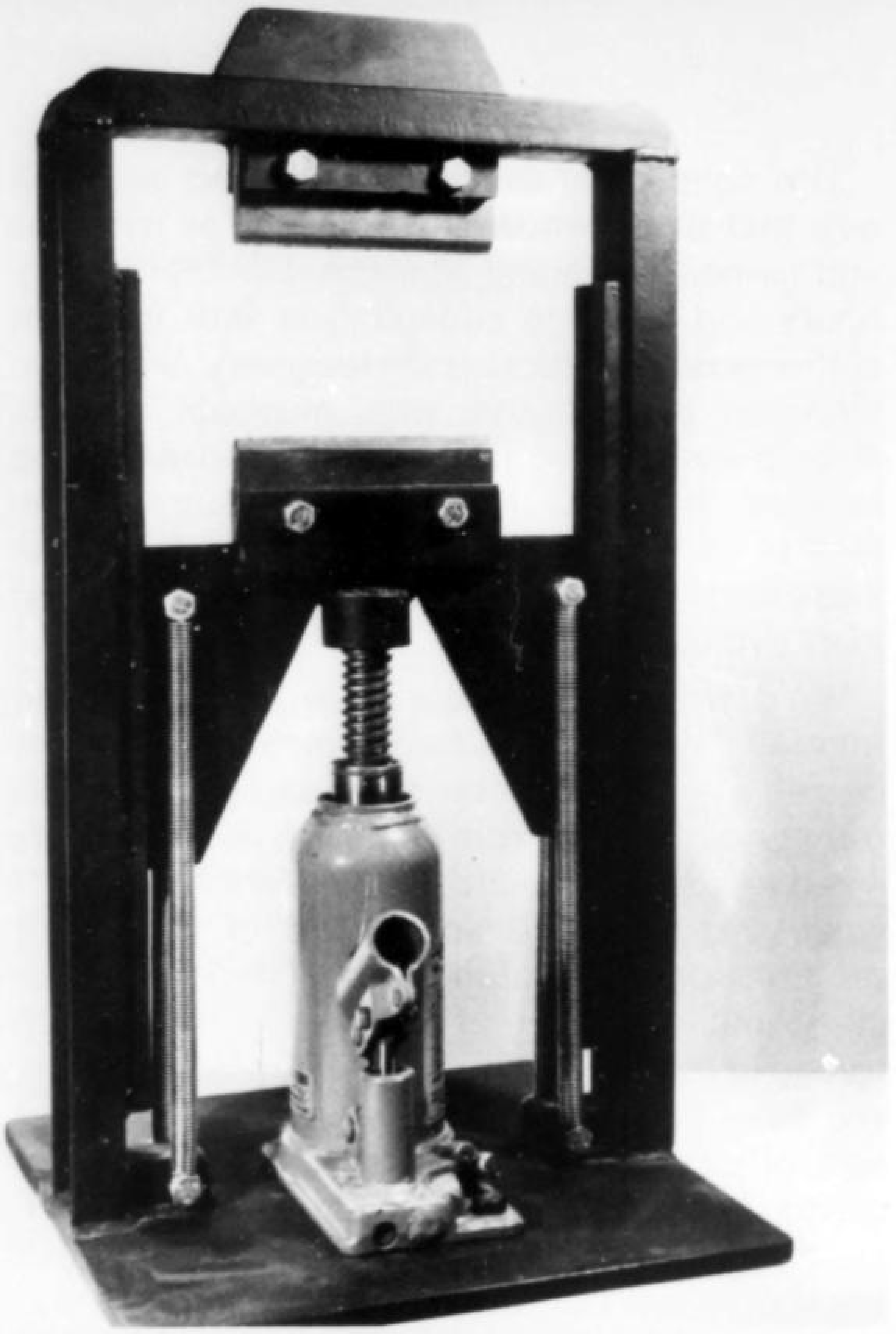
Well, we invested the ten bucks for a more than generous portion of the mine, and came up with five of the listed species, all good enough to replace some specimens already in our cabinet. Postage was extra, but imagine having the 79 mine delivered right to your door for immediate operation. For more details of the 79 mine see the articles in *Mineralogical Record*, Vol. 3, no. 6, by Stanley Keith and Wendell Wilson.

Getting specimens down to reasonable size has always been a problem. We've sketched and described various breakers from time to time, usually those capable of trimming reasonably sized specimens. And we've alluded to tools used for doing a massive job, like the one at the Smithsonian. Well, we have two photographs of such; the one at the museum and another, same principle, with reversed application of force. The hydraulic jack exerts immense, even pressure to split samples where desired. It has been suggested that the upward pressure might give greater ease of operation and control. The Smithsonian's is mounted on a box table, permitting unwanted excess to be dumped to a removable container underneath. There is no record of the manufacturer of the breaker at the Smithsonian. The other is the prototype distributed by Davis Minerals, 3200 East Linden Street, Tucson, Arizona 85716. There is no listed price yet, but an inquiry to Suzy Davis, with a self-addressed, stamped letter should advise.

We've mentioned, too, the conversion of a machinists' vise to a breaker. Here's a sketch, made from a drawing by Sid Wayland, 5266 Bursill Street, Vancouver, British Columbia, V5R 3Z5. Sid's a machinist by profession, and has designed many types of micro splitters and breakers. To fashion this breaker use a regular steel vise - one that has removable jaws that are held in place by bolts. The substitution of jaws that can hold hardened steel cutters is quite easy.



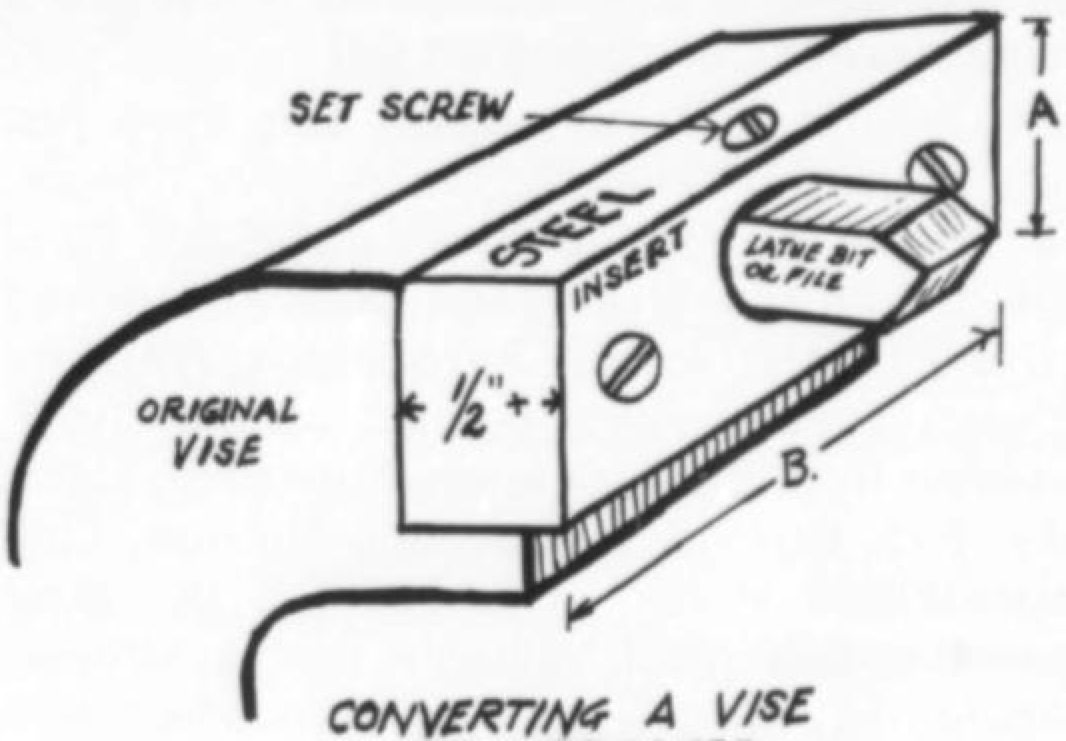
Photograph courtesy National Museum of Natural History.



Photograph courtesy of Jeffrey J. Kurtzeman, Phoenix, Arizona.

Note the measurements of A and B on your vise. Obtain 2 pieces of mild steel, the same size as these dimensions, and at least half an inch thick. Drill 3 holes in each - 2 to match the tapped holes in the vise, and the center one to fit the size of the cutters. A high speed lathe tool, or an old square file can be used for these cutters (obtainable at hardware stores that sell machine tools). Be sure that the cutters fit the drilled holes as snugly as possible. Now a 13/64 inch hole is drilled through the top of the jaws and is tapped 1/4 inch—20 N. C. to accomodate a set screw that will hold the cutters firmly in place. Both jaws should be identical, and the drilling for the cutters must be accurate, for it is important that the chisel edges meet. The cutters should not be too long - say an inch and a half. If larger specimens are to be broken, wider cutters are needed, requiring larger drilled holes.

While we're on the subject of equipment we saw a fine micromount cabinet at Wards Natural Science Establishment. We were a participant in the Rochester Academy of Science mineral symposium in April, and this included a field trip to Wards. There it was, a new thing for the famed dealer, a cabinet of five drawers, each holding some 200 mounts of the 7/8 inch size (or 130 of the 1 1/8 inch square ones). It is constructed of wood with Formica laminate finish, brass pull knobs and card holders. Price $92.50, complete.



CONVERTING A VISE TO A BREAKER

Some of the minerals available at Wards were relatively new materials, or recently obtained. Köttigite, from Mapimi, Mexico; anatase on and in quartz, from Norway; carminite and duftite in minute crystals from Caborca, Mexico (quite a good deal of this latter), and a host of others. We got a piece of phillipsite from Capo di Bove, Italy, not only for the individual crystals, but for the potential cahnites, repeat - cahnites, found in this stuff in minute clear tetrahedra, on the surface of the vugs. They're still potential, but a cleaning in the ultrasonic bath may yet disclose some. This is another mineral that you shouldn't pass up. Cahnite or not, it still provides superb specimens. Some of the old labels of collectors and dealers from whom Wards obtained specimens of minerals, were most interesting. Especially was it noteworthy that some specimens had three different identifying tags, all from Wards, of three types, indicating that the minerals had come and gone many times in the past years.

The Rochester meeting was one of the finest we'd had the good fortune to attend. While not a micromounter's milieu there were plenty of things to interest him, from the history of mineral collecting; the specimens *NOT* on view at the Smithsonian, American Museum of Natural History, Royal Ontario Museum, and Harvard University; to preparation and preservation of minerals, and the monetary evaluation thereof; and a discussion of one of Brazil's important localities. Next year there will be a session on micromounting, and we have been asked to do it. The viewing of Bill Pinch's fine collection was one of the scheduled events. The assemblage is his personal mineralogical museum, available for study by appointment, and fully qualifies as such. Its plethora of species and fine housing are outstanding. We even got a micromount of ludlockite from Bill.

Two published mineralogical aids have just come to us, a bit late, but timely nevertheless. The first is something every collector must have. It's an eighty-six page booklet, entitled *CLEANING AND PRESERVING MINERALS* by Richard M. Pearl. Third revised edition, 1973. Available from Earth Science Publishing Company, P.O. Box 1815, Colorado Springs, Colorado 80901. Priced at $2.75, it is the least expensive and most valuable tool a mineral collector may have. It is the difference between a disintegrating group of minerals no longer proudly exhibited and a fine ornamental array. It covers all phases of deterioration and its causes, prevention, remedies, and sources of information.

The second is the reissuance of an important tome, R. V. Dietrich's *Mineral Tables, Hand Specimens of 1500 Minerals*. This was originally issued by Virginia Polytechnic Institute, but was quickly exhausted, and was unavailable for some ten years. Now it is again on the market. McGraw-Hill Book Company, Box 402, Hightstown, New Jersey 08520 distributes the volume. With tax and postage its cost is about $6.50, a bargain tool. The tables are broken down to minerals with metallic luster, minerals with non-metallic luster (and then subdivided by color), and a third division according to chemical compositions. The one-line descriptions are the most space-inclusive we've ever seen. Under "metallic-red" as an example, the line includes, for cuprite: hardness 3.5-4; xl sys. isom; specific gravity 6.14; chem. class oxd; remarks - submet (some), octah, hairlk, msv; common-oxidized zones of cu-deps. And more. So here are two mineral books you should buy and use.

By the time this column is in press the new mineral hall at the American Museum of Natural History in New York will have had its formal opening. We've seen a preview. It is one of the most modern, beautiful and useful exhibits in any educational institution anywhere. Notables in the mineral field from all over the world have been invited to attend the formal ceremonies on May 18, 1976. An invitation to all the mineralogical and gem societies of New York City and environs has been extended for a special viewing on June 17, 1976.

The concept of such a mineral and gem hall was that of the museum's curator of minerals and gems, D. Vincent Manson. He spent many hours and years in consultation with museum authorities, architects and designers, with construction people and with museum experts throughout the world. Long needed and long awaited, the new Henry Frank Guggenheim Hall of Minerals will be a tribute to his ideas and efforts, as well as to those who participated in its evolution.

We'd written an editorial in this magazine entitled *"Where Are Tomorrow's?"* We've received a number of responses, and cite portions from one of them. From Bob Crifasi, 84 Atlantic Avenue, Staten Island, New York 10304: "I would like to make you aware of the junior program of the Staten Island Geological Society, Inc. For several years...we have been trying to maintain a workable junior program. We have had trips to collect....artinite, amber and other minerals. We have had slide programs, talks on lapidary work, and mineral identification workshops. We feel that we have a good program but the turnout of juniors is becoming smaller. This sounds contradictory but we find that it is the parents who lack the interest to encourage their children. How can we make the parents responsive to our junior program?"

We can't answer this. Some clubs are successful in their junior activities. The New Haven, Connecticut Mineral Club is extremely active in promoting its sub-senior group. A report of their activities appears regularly in *TRIASSIC VALLEY BULLETIN*, the club's monthly publication, written by one of the juniors. This provides a modicum of prestige, and together with the activities, has swelled the ranks. Nick DiPaolo, 43 Pineridge Road, Waterbury, Connecticut 06706, is senior leader of the group. Perhaps some of his ideas would be of help. Suggestions, anyone?

Buy and read those two books herein mentioned.

Neal Yedlin
129 Englewood Drive, New Haven,
Connecticut 06515

Thinking of writing something for us?
see: Suggestions to Authors
in Vol. 7, no. 3, p. 127, or write
for a copy. It will help both of us!

Letters

FREE PUBLICITY?

Dear sir,

I've noticed that in the last "What's New in Minerals?" (v.7,n.3) you have changed your policy by including dealers' names along with some of the new minerals. Personally I'm pleased. It should help collectors like myself to actually find our way to some of the exciting new material covered in the column. But aren't you afraid of alienating the dealers to whom you do not give such free publicity?

Douglas K. Miller
Alexandria, VA

Not really. The idea of including dealers' names came about for three reasons. You mentioned one; it assists readers in finding sources for specific new materials. Another reason is that we hope more dealers will bring new mineral finds to our attention. We need help in compiling "What's New", and are willing to make it worth their while through this free publicity (with no guarantees, however). Hopefully dealers will approach John White or myself at shows and through the mail when they get something new and interesting; we cannot be everywhere and see everything. It is unfortunate when a dealer receives a rare lot, and it quickly disappears into private hands without ever having been described. Furthermore we wish to give credit where credit is due, and if a particular dealer is handling unusually fine or interesting minerals we think he (or she) deserves the recognition.

Ed.

TO THE NEW EDITOR

Dear sir,

I was about to let my subscription lapse but your renewal card arrived the same day as *M.R.* I put the card aside to look over *M.R.*—giving it a last chance. I was delighted to hear of Mr. Wilson's plans for *M.R.* I'm looking forward to the non-technical abstracts in particular, and so I'm re-subscribing.

The last year I've only enjoyed a few photos and Mr. Yedlin's fine essay-like articles...but $10 a year seems a lot to pay for that.

I'm delighted too with the idea of an entire issue devoted to a single subject.

Iris Bell
New York, New York

Dear sir,

Although we expect perfection immediately, we will be generous and allow you up to two issues to cure the magazine's economic problems, change its editorial content, and produce all color issues. Wishing you the best of luck...in dealing with that most varied and excitable creature, the *serious mineral collector* (especially the famous green-backed editor-biter).

If you think it would be any help, we would be happy to man (or is that person?) an M.R. booth at any of the Northwest shows this summer.

Rick and Lynne Stinchfield
Moscow, Idaho

You're hired. I have to stay home and nurse my bites.

Ed.

Dear John,

In geologic time when the Mineralogical Record is reviewed and evaluated, the finest crystals would have come out of the magma in the first six years—Let's see what your successor does with the residual liquid.

Joe Rothstein
New York, New York

If all I have is the residual liquid I guess I shall have to be satisfied with the pegmatite crystals and the hydrothermal crystals, not to mention, of course, the alteration products!

Ed.

EAST OVERSHOE?

Dear sir,

How about interviews with people selected from the mineral collecting fraternity? Such as: prominent dealers, a curator or two, a professional or two, like the article on Paul Moore, but rather a rambling interview much like Playboy does. ("MR: And Professor Frondel, what do you think about the scorodite question in East Overshoe? Prof F: The fate of the free collecting world definitely hinges on it!")

Terry Szenics
Midland, Texas

That's a great idea. Prompted by your letter, we purchased a portable tape recorder and recorded three different interviews at the last Tucson show. They will appear in this and future issues; where possible the substance of the interview will relate in some way to other articles in an issue. As envisioned at present, most interviews will be for the purpose of recording mineral and locality data from people who are very knowledgeable, but not the type who are inclined to write articles themselves. Interesting collecting stories or people with unusually interesting backgrounds will be sought for these interviews, and we think it will add an interesting, personal new aspect to the Record.

Ed.

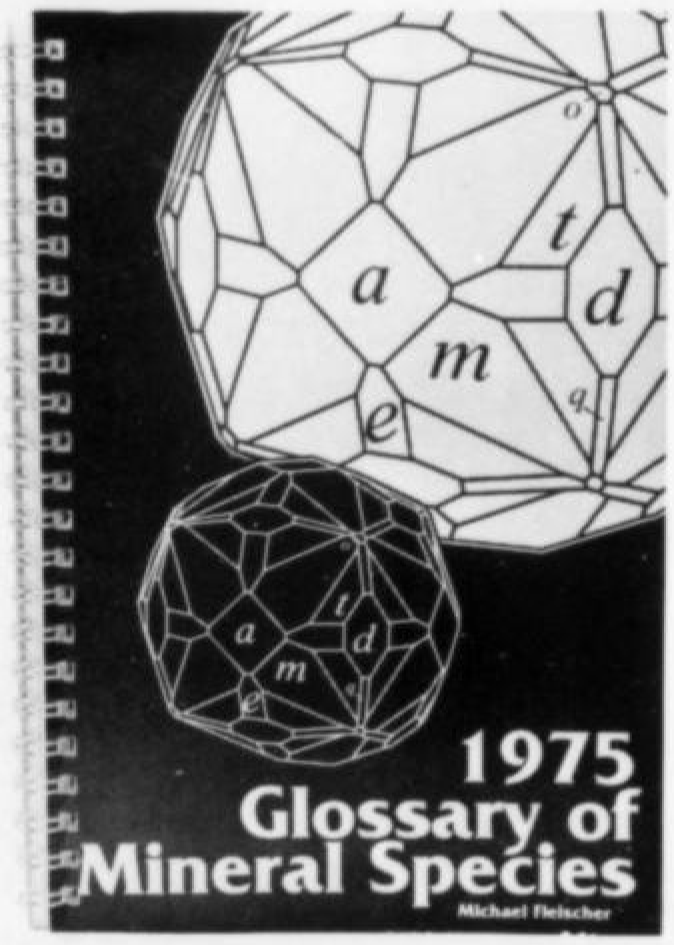
SETTING THE *RECORD* STRAIGHT

Dear sir,

[regarding the FM column in V. 7 no. 2] The first questionable point is the description of xenotime which is yttrium phosphate and not a titanium mineral.

I am further puzzled as to the idea that native bismuth and bismuthinite should be confused. If the latter is in crystals that should serve to distinguish them. If massive would not a test for sulfur be readily made? Native bismuth also has a distinctive pinkish cast that would be suggestive at least.

Curt Segeler
Brooklyn, New York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1975 Glossary of Mineral Species
Michael Fleischer

Another error in Dr. Heyl's note is the misspelling of the Wheatley mine (not "Wheatly"). Incidentally the FM column is now being edited by Dr. Richard C. Erd, U. S. G. S., 345 Middle field Rd., Menlo Park, California, 94025. All FM information for the column should now be sent to him.

Ed.

Dear sir,

I was a bit disturbed in John White's effort "A new mineral almost--III" to note that he attributed to K. C. Brannock the rediscovery of the Wood mine (prospect) Burnett Gap, near Del Rio, Cocke County, Tenn. This is not correct. As I noted in my article *(Gems & Minerals,* October this locality was rediscovered by a gentleman from the Knoxville area who then shared this information with the rest of us in Kingsport. [He is] David Brantley, Concord, Tenn.

Douglas J. Berndt
Kingsport, Tenn.

THE SILENT MINORITY SPEAKS:

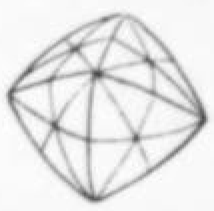
Dear sir,

I am forever grateful to the friend who turned me on to M. R. -- it's the only summit in this vast wasteland of cab cutters that I've found myself in. Don't get discouraged; you mean a lot to us "silent minority".

J. Coleman
Binghamton, New York

AUTHORS SHOULD NOTE:

Due to several instances of duplication lately, we have been forced to make a policy. All authors *beginning* work on articles for us should communicate to us their subject. These will then be entered in our file of promised articles and authors need not worry about being "scooped". They will have as long as they wish to complete the articles, unless someone else subsequently expresses an intention to write on that same subject, in which case the first author will be given a deadline of four months. If the article has not been submitted to us within that time, the second author will be given a chance. *Protect yourself by registering your topic.*



Specimen Requests

Dear Sir:

This year we incorporated Geoscience into our curriculum here at West High School and from the response of the students the program will have to be expanded next year.

At present we have a small display of good specimens that were donated by *MR* readers. A group of students have decided to try and enlarge the collection. Fund raising projects are now underway in order to purchase display cases. It is hoped that specimens will be donated by *MR* readers in the interest of promoting mineralogical education. If you would like to know more about our program and projects, or if you would like to help, please feel free to write.

John C. Beam
Geoscience Teacher
West High School
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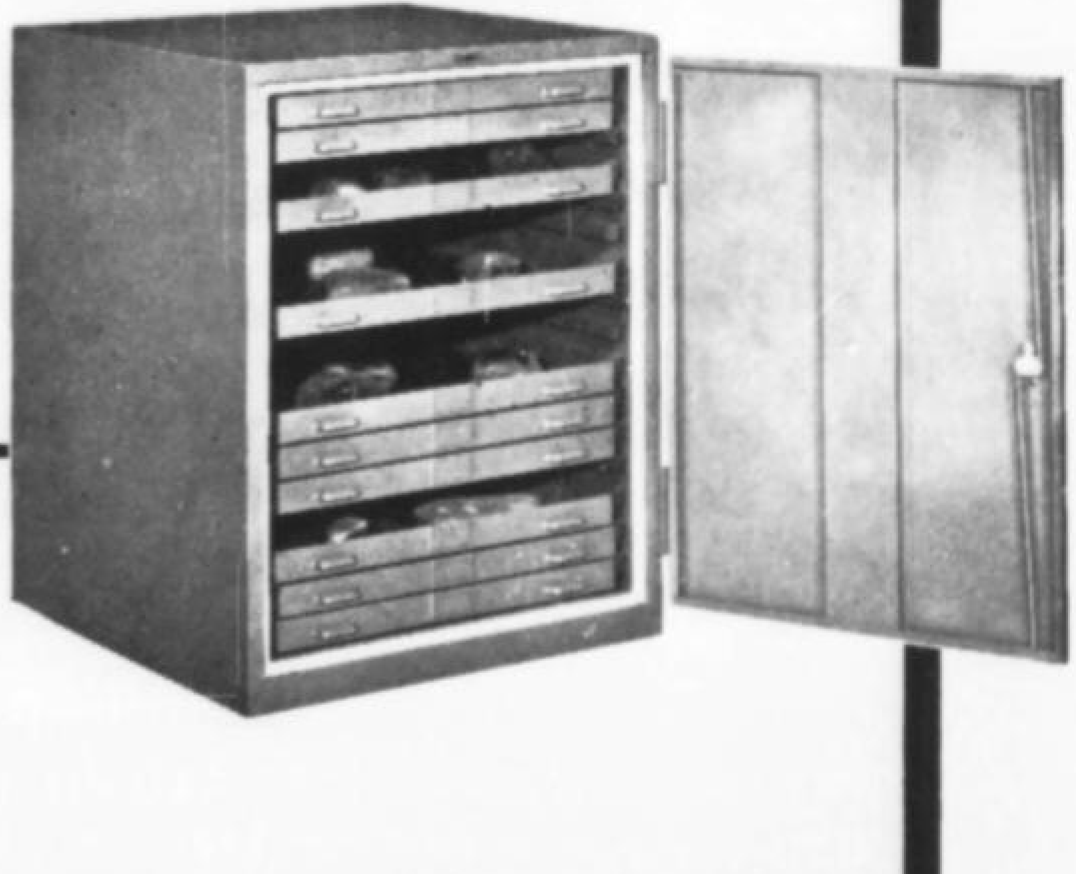

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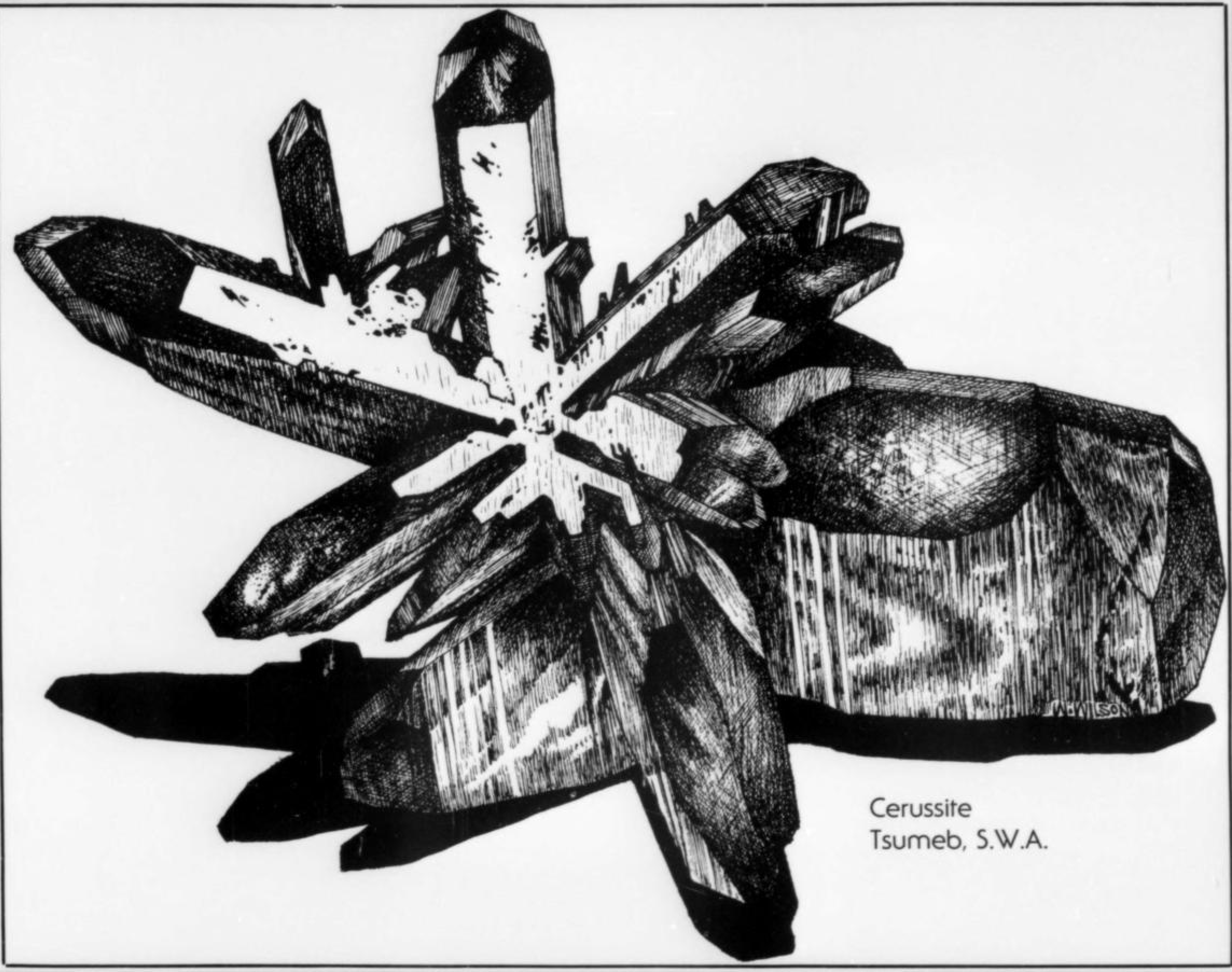

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