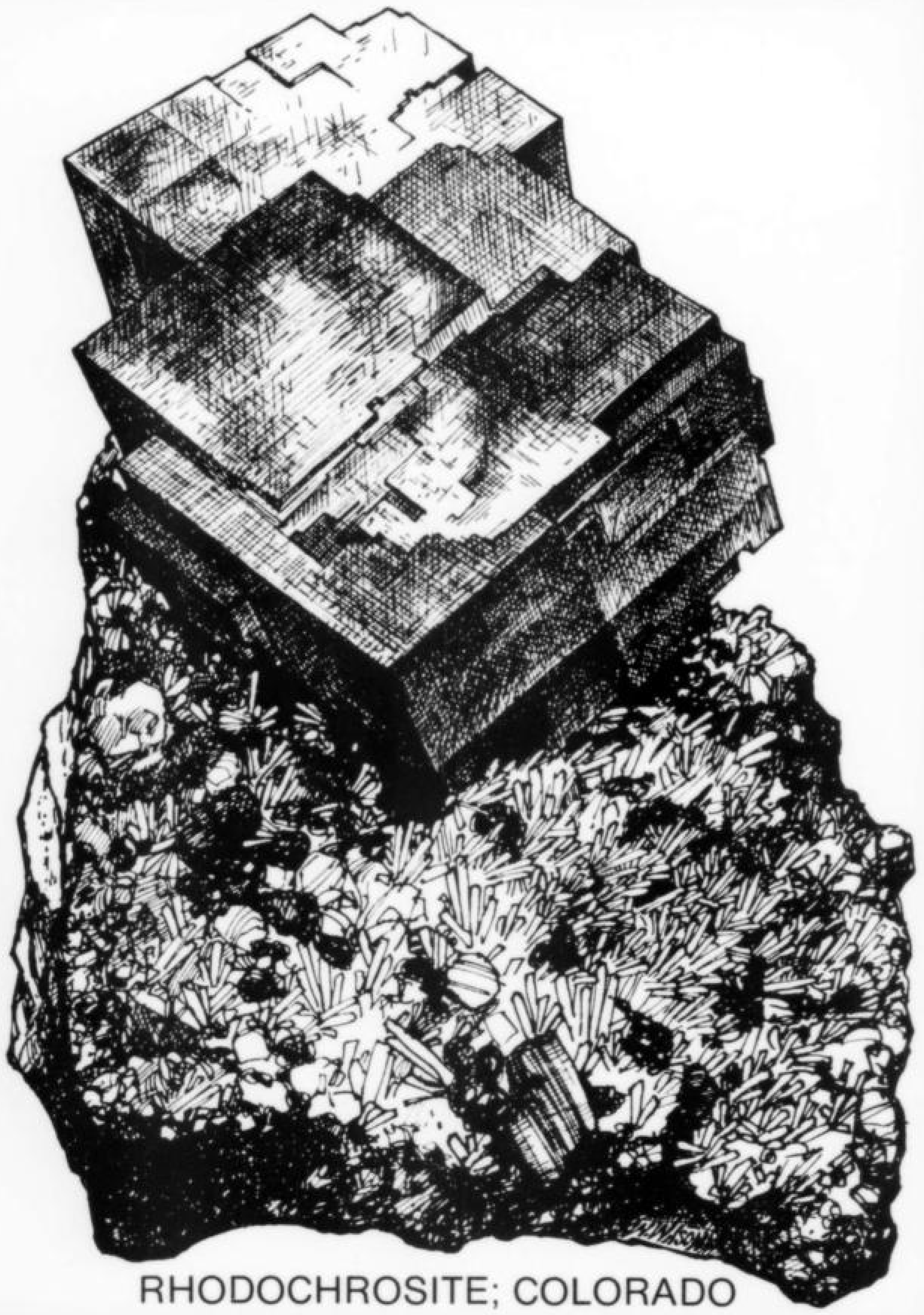
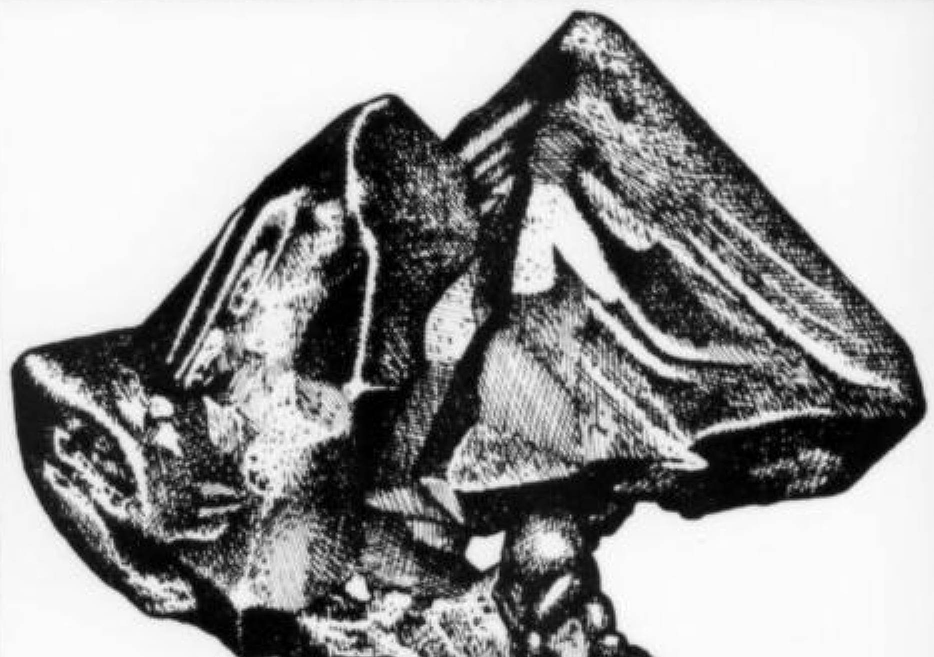
the Mineralogical Record

Volume Six/Number Six
NOVEMBER-DECEMBER 1975

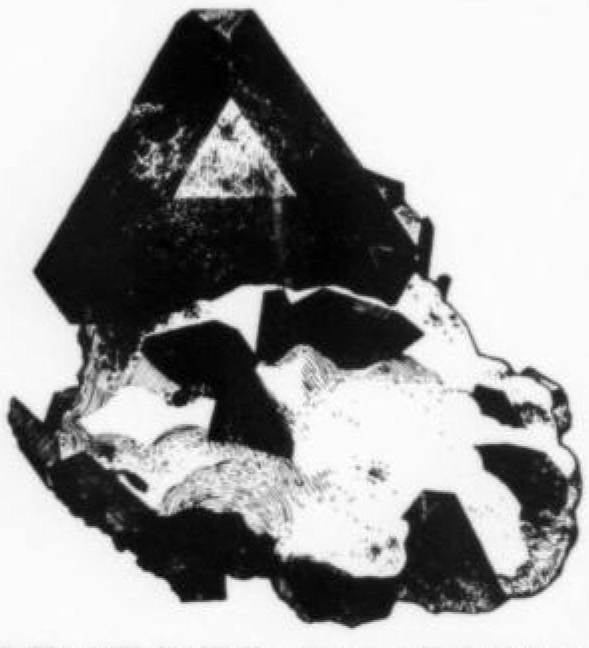
$2.00



RHODOCHROSITE; COLORADO



GOLD; CALIFORNIA



BENITOITE; CALIFORNIA

AZURITE from Zacatecas, Mexico. The crystal is 5 mm long, and resides in the Sorbonne collection, Paris, France. Photograph by Nelly Bariand.

the Mineralogical Record

Volume Six/Number Six
November—December 1975

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GUEST EDITORIAL

COMMENTS ON COMPETITION

By Neal Yedlin
129 Englewood Drive
New Haven, Connecticut 06515

This is my opinion, and does not necessarily reflect that of the publisher of this magazine or of its other editors. But for many years I have noted certain trends in this hobby of ours, some of which I approved heartily, and some of which drove me almost to despair. Let's take a look at some of the latter.

1. I resent, and so do most of those with whom I've discussed the matter, the American Federation's competitive rule that permits a contestant to label his specimens inadequately. If the locality of the mineral is within the United States the label need merely give the state; if outside the United States, all it need state is the country. This seems like a sop to the boys who refuse to divulge the sources of their finds, lest others locate and deplete the hoard before they themselves can do so. (Too many times have localities been inaccurately set forth; some have even been attested to by affidavits. Many of the dealer-collectors of Mexico have been guilty of this transgression.)

The inadequacy of such labeling is obvious. A specimen labeled New Jersey is meaningless. At least two world-famous localities are included in this state: Franklin in the metamorphosed limestones and Paterson in the Watchung basalts. Giving the detailed locality identifies the occurrence of the material and tells much more than the fact that the specimen is a large, black octahedron or a lovely botryoidal green. The student of mineralogy, as well as the casual looker, deserves this information more than he needs the chemical formula, which can be found in any good mineralogical book.

2. Why are the rules so mandatory about the insertion and accuracy of the chemical formula on the labels? Surely, one who is not at all concerned with the exact details of the locality is not interested in the "shorthand" formula required, which may vary from Fleischer to Hey to Dana to Strunz, all of whose works are acceptable authorities. Is it, perhaps, that many of the judges at competitions are not competent to determine the accuracy of localities, but can always open a book to see if the contestant copied correctly? I have seen a situation where the judges had calcium carbonate, and $CaCO_3$, and Ca-carbonate to contend with, and the exhibit, a superb array of minerals, lost first place because the exhibitor chose the last type of formula designation. Is the complex mumbo-jumbo (to the average mineral collector) of letters and numbers, on different line levels, of such importance that it adds an aura of mystique to the exhibit? Then, I feel, something is wrong. True, one who enters a competition must abide by the regulations governing it. It is the standing of these rules and regulations, as now constituted, that requires amendment.

3. For many years I have suggested that 25 percent of the total point score be devoted to what we are wont to call "concept". What is the purpose, the aim, the idea behind the exhibit? To me the word "collection" means systematic, for a purpose, the idea behind the whole thing. One specimen should somehow be related to all the others, and the field is wide open. It can mean many things - locality, copper, phosphates, isometric minerals, blue minerals, those from pegmatites, industrial,

medical; any unified purpose, save, perhaps, those costing over $500.00 each and the like. I do not believe that beauty, of itself, is adequate for a competitive assemblage, nor do I think that a wealthy collector should be able to buy a blue ribbon, my dealer friends notwithstanding.

4. How do you evaluate intangibles? Who can say that A is a better epidote than B is a chalcocite? No one, truly, so that it comes to the trivia to determine awards. Misspellings, ruffled cloth backdrops, oversized labels, with some lettering not in "caps", and an overall color not in keeping with some judges' likes the past weekend. I would suggest standardization of label size, of uniform backgrounds, etc., so that nowhere can a judge, in his own mind, determine a winner by the fact that one set of trivia is much better looking than another.

5. Attitudes: The past American Federation meeting at Denver, Colorado, spelled out a truly negative attitude. One of the circulars distributed prior to the meeting, and describing the events, listed exhibits of minerals, fossils, lapidary work and educational displays. In that order. Obviously the first three categories were of no educational value. This, I think, is what is wrong in the hobby, today.

FM friends of mineralogy

STATUS OF CURRENT ACTIVITIES OF FRIENDS OF MINERALOGY

by H. Earl Pemberton, FM President

SECOND BIENNIAL MSA-FM MEETING

In conjunction with our general membership meeting at Tucson in February, 1974, Friends of Mineralogy co-sponsored a successful winter meeting with the Mineralogical Society of America. It is now planned to hold such joint sessions on a biennial basis with plans now underway for a second such meeting in conjunction with our general meeting at Tucson in February, 1976. The Tucson Gem and Mineral Society will host the meeting. William Panczner, an FM Director, is serving as General Program Chairman and Paul Moore, FM Liaison with MSA, is Technical Sessions Chairman. The topic of the meeting will be "Crystal chemistry and parageneses of gem minerals". Twenty-four papers are solicited for the technical sessions, including 12 papers on gem mineralogy and 12 papers on general topics. Owing to the range of interests of the audience and participants, general papers of a broad scope will be favored over highly specialized topics. (See *Call for Papers* in the *Mineralogical Record*, vol. **6**, no. 4.)

Micromount symposium: A micromount symposium is scheduled for Monday evening, February 16. Speakers will be noted micromounters.

Field trip: A field trip to the Mammoth Mine, Tiger, Arizona, is scheduled for Tuesday, February 17. Transportation and box lunches will be available. The dumps of this famous locality will be freshly bulldozed. The trip should be especially appealing to micromounters. Participation will be limited to 70 persons. Accordingly, early reservation is suggested.

Registration: Registration for this conference should be sent to William Panczner, c/o Arizona-Sonora Desert Museum, P.O. Box 5607, Tucson, Arizona 85703.

The registration fee will be $25. A form for advance registration is provided as an insert in this issue of the *Mineralogical Record*.

Registration will include: (1) Ticket to Tucson Gem and Mineral Society show - valid every day. (2) Free parking tickets for parking area at Tucson Community Center - valid every day. (3) Copies of abstracts of all papers to be presented at the technical sessions, Sunday and Monday, February 15 and 16.

Program: Meetings will be held at the Tucson Community Center, 350 South Church Street, Tucson, Arizona.

Saturday, February 14

8:00 P.M. Rustum Kothavala, "Mineralogy of the Deccan Traps".

9:30 P.M. Mineralogical Record slide competition, auction.

SECOND BIENNIAL MSA - FM MEETING FEBRUARY 14 -15, 1976

ACCOMODATIONS:

Please reserve accomodations as indicated below. Please print or type

Name: ____________________

Address: ____________________

____

Expected time of arrival _____ a.m. _____ p.m. Expected time of departure _____ a.m. _____ p.m.

Please indicate total number of persons covered by this request: _______

Hotel or motel preference: ____________________

Single room ____ double room ____

Acceptable price range per day _____

($12-15; $15-20; $20-25, etc.)

I (we) will attend field trip _____ (number of persons)

I (we) will not attend field trip _____

Mail to: Mr. William Panczner, Earth Sciences Dept., Arizona-Sonora Desert Museum,
P.O. Box 5607, Tucson, Arizona 85703

ADVANCED REGISTRATION, PLEASE ENCLOSE CHECK PAYABLE TO MAS-FM, 1976

Number			Total
	Advance registration	@$20.00	______
	Banquet	@$ 8.00	______
	Field Trip deposit	$10.00	______
	Total enclosed		$ ______

MSA-FM BANQUET

Sunday, February 15-8:00 p.m.
$8.00

Plenary Speaker: Professor: R. H. Jahns

Topic: "The Study of Gem-bearing Pegmatites"

REGISTRATION:

Advance registration fee $20.00 (Before December 31, 1975)

Ordinary registration fee $25.00 (at Registration Desk)

FIELD TRIP:

February 17, (Tuesday) is being planned to Mammoth Mine, Tiger, Arizona. Transportation and box lunches will be available. Maximum number of participants: 70.

Deposit: $10.00.

Sunday, February 15

8:30 - 12:30 Gem mineralogy papers.
1:30 - 5:30 General topic papers.
7:00 - 8:00 P.M. No-host bar, Siesta Room, Santa Rita Red Carpet Inn.
8:00 P.M. Banquet, Siesta Room, Speaker: Richard H. Jahns, "gem-bearing Pegmatites".

Monday, February 16

8:30 - 12:30 Gem mineralogy papers.
1:30 - 5:30 General topic papers.
7:00 - 11:00 P.M. Micromount symposium

Tuesday, February 17

Field trip to Mammoth Mine, Tiger, Arizona.

LOCALITY NAME REGISTER

At the Tucson meeting in February the Board of Directors appropriated the funds required for preparation of locality name worksheets for review by an international panel of authorities. Using computer methods this work is now going forward under the continuing direction of Barbara Frank Muntyan. Richard C. Erd and John Sinkankas are serving as a technical overview committee on the project.

LOCALITY PRESERVATION

The Committee for Mineral Locality Preservation under the chairmanship of Mike Groben submitted to the Board of Directors the following proposed guidelines for mineral locality preservation:

Purposes:

(1) To preserve mineral localities of *great* mineralogical, geological, historical and/or economic value where no collecting will be permitted.

(2) To preserve other important mineral localities where collecting will be permitted in such a way as to: (a) slow depletion; (b) allow for accumulation of scientific knowledge; (c) permit access to the greatest number of collectors; (d) prevent the loss or destruction of localities due to changes in land use for such things as building sites, garbage dumps, land fills, etc.

Methods:

(1) Purchase or lease of property.

(2) Purchase or lease of mineral rights.

(3) Contractual arrangements with owners for collecting rights.

(4) Donations by owner of property.

(5) Staking claim on Federal land.

(6) Legislation whereby government sets locality aside for its historical, scientific or geologic value.

Carl Francis, a member of the Committee, is now working with Chairman Groben on the preparation of a handbook of cases illustrating specific actions which have been successful in preserving localities.

RELATIONSHIP WITH NATIONAL ASSOCIATION OF GEOLOGY TEACHERS (NAGT)

Friends of Mineralogy has established a cooperative relation with the National Association of Geology Teachers. Robert G. Middleton is serving as our liaison representative. It is hoped that this relationship will open up opportunities for FM-backed educational activities at the secondary school level.

Our first action in this relationship has been cooperation in the NAGT "B.E.S.T." teacher awards. Each year the NAGT, through individual regional committees selects an outstanding "B.E.S.T." earth science teacher within the secondary school systems in each NAGT region of the United States. The winners are honored at both national and regional science teacher meetings. This past spring 12 earth science teachers were chosen for the awards and FM has supported the program by contributing to each of the selected teachers a one year subscription to the Mineralogical Record.

ORGANIZATION OF FRIENDS OF MINERALOGY

The present regional organization of FM has proven to be unsatisfactory as an operating structure. Following extended discussion of the matter at the Board of Directors meeting in Tucson a committee was appointed to bring in recommendations covering the details of a possible organization on the basis of local chapters. Arthur Johnstone is chairman of the committee. Excellent progress is being made and it is expected that a preliminary report for comment by members of the Board will soon be available.

Officers of Friends of Mineralogy

President: H. Earl Pemberton, Santa Monica, California

Vice President: David Jensen, Pittsford, New York

Secretary: Dona Lee Leicht, Costa Mesa, California

Treasurer: Abel Selburn, Southfield, Michigan

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Werner Lieber, Heidelberg, Germany
Barbara Frank Muntyan, Boulder, Colorado

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Liaison Representatives to Other Organizations

Mineral Museums Advisory Council
D. Vincent Manson, Harrington Park, New Jersey

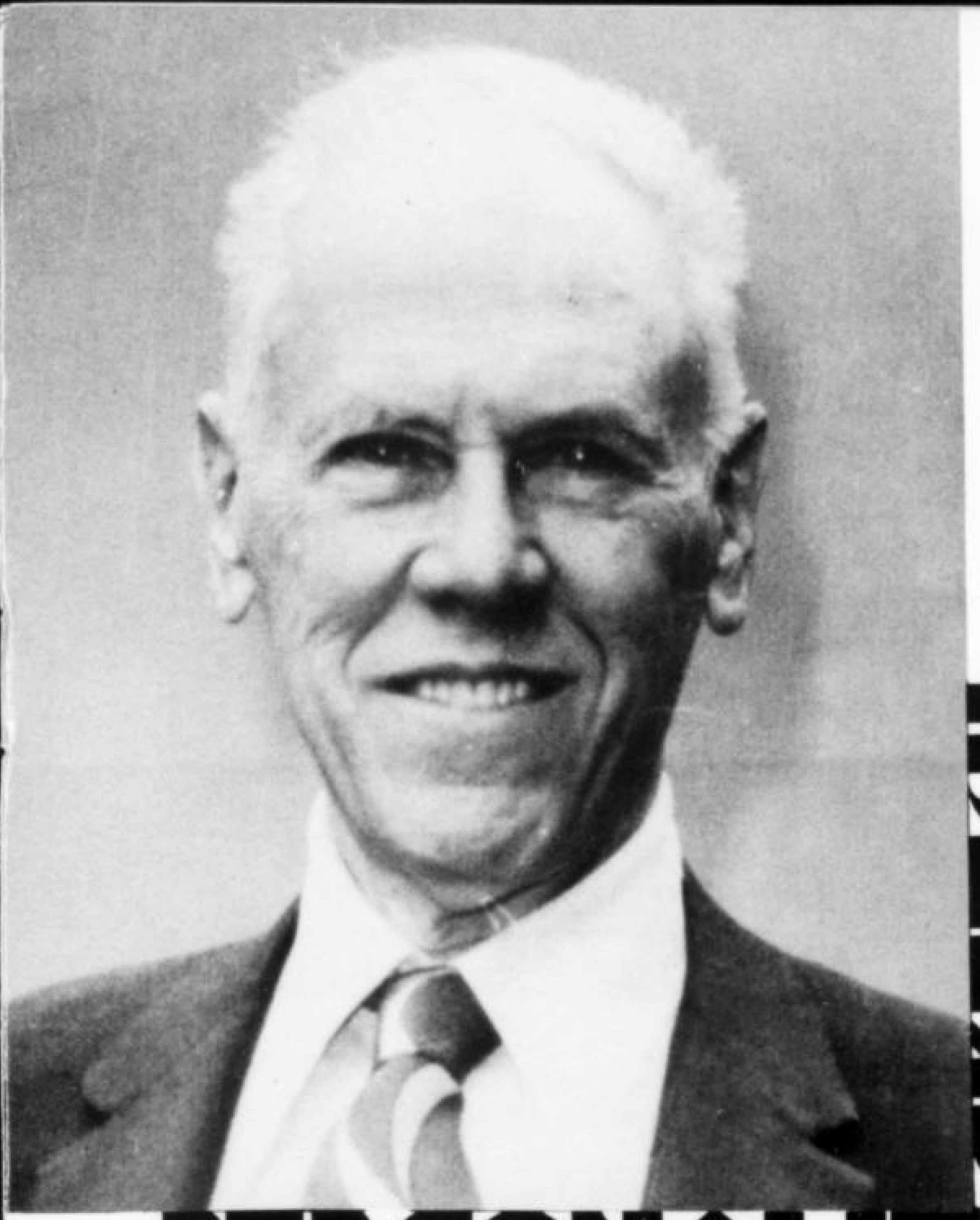
Mineralogical Society of America
Paul Brian Moore, Chicago, Illinois

National Association of Geology Teachers
Robert G. Middleton, New York, New York

ERRATA - Some Random Remarks About Collecting and Collectors.

(1) Volume Six, number five, page 230, author's name correctly spelled is: Russell P. MacFall

(2) Address correction for Russell P. MacFall is: 721 Foster Street, Evanston, Illinois, 60201



PERSONALITY SKETCH

CURT SEGELER

by Vandall King

Curt Segeler is one of the most advanced amateur mineralogists in this country. He works hard at the hobby he loves and never misses an opportunity to educate those willing to listen. In this day of increasing numbers of "mere collectors", Curt carries on the tradition of science within mineral collecting.

Curt began his interest in minerals in 1908 when he was seven years old. His family spent their summers in Paris. While there, he started visiting the museum at the Jardin du Plantes. Alfred LaCroix, the famed mineralogist, was then curator of mineralogy and taught Curt much in the appreciation of minerals.

As a member of several New York mineral societies every year he invites several interested collectors to study mineralogy at his home. He brings his students to a thorough understanding of minerals by extensive basic physical property and chemical determinations. Optical crystallography and elementary x-ray crystallography extend his students' knowledge.

His laboratory is well known for its array of exotic chemical reagents able to detect virtually every mineralogically important anion and cation. These reagents are used frequently in his teaching sessions. Indeed, one habit that makes Curt unique among amateur mineralogists is the way he *uses* his collection. To illustrate fine points, he will chemically analyze, cleave, and/or investigate optically his specimens.

His meticulousness in mineral identifications has come from the realization that many identifications are wrong even if they come from a "reliable source". While talking about forbesite, one day, he examined a specimen of his labeled Mapimi, Mexico. While checking its physical properties, he noted the absence of the characteristic blue-green color that should be present in nickel minerals. In short order, he had positive tests for calcium and phosphorus, negative results for nickel and arsenate, and a hint of a positive carbonate reaction during solution. Determinations with the petrographic microscope showed the mineral to be an apatite. Always cautious of sight identifications and ready to test them, Curt says he mistrusts all sight identifications, even his own.

Aside from Curt's scientific approach is his philosophical view on minerals. Unlike most collectors, he is not possessed by his possessions and he is as generous with his specimens as with his time. He remarks, "a collection's value is our own amusement, it basically has no worth." In his entire lifetime, he has purchased so few specimens that their aggregate price would not pay taxi fare across town. However, those people who visit him are amazed at the variety and quality of his collection. He has collected extensively in the field and enjoys a voluminous correspondence. He believes it is better to find or trade for a mediocre specimen than to purchase a fine specimen for which one has no prior experience.

Curt adheres to his principles. He does not compromise his standards and does not equivocate his beliefs. He firmly believes in a right and a wrong way to collect minerals or run a life. This does not mean he is cold or unyielding. He is a warm, gregarious person. He merely does not settle for second best. A point of contention with him is "pretty picture" slide programs that basically have no educational focus.

His main interest is phosphates. This interest has led him to micromounting and a kind of species collecting. Aside from a zeolite suite which misses only edingtonite, his phosphate-arsenate suite comprises two thirds of the known species. "What is the use of collecting all of the silicates, most of which look alike chemically and physically." The remainder of his collection consists of minerals he has personally collected or traded during his many field excursions.

In recognition of Curt's mineralogical expertise, particularly with the phosphate group, $\mathrm{Ca\,Mg(H_2O)_4Fe'''\,(OH)(PO_4)_2}$ from the Tip Top quarry in Custer, South Dakota was named segelerite in his honor. This immortalization is more significant when it is considered that Curt did not first find the mineral as is the usual reason for naming minerals after nonprofessionals.

Though officially retired from his former position as head of the department of utilization with the American Gas Association, Curt now accepts assignments as a consulting engineer. Curt's professional life has dealt with various energy problems. His fields of expertise include heating and ventilation problems, explosive atmospheres, and educational programming in industry.

In his spare time, Curt is a Boy Scout leader. It is to his credit that one of "his boys" went on to be one of the more important pegmatite investigators - Vincent E. Shainin.

At age 74, Curt has more zest and enthusiasm for life than many people one third his age. In the field or around town, he often is out in front of his companions. He burns more energy than most younger men.

Louise Segeler complements Curt's mineralogical activities. Aside from being a devoted and charming wife, she is a specialist in post-Paleozoic ostracoda. She is actively co-researching an interesting Australian locality. This non-competitive mineralogical-paleontological atmosphere encourages much science in the Segeler home.

In brief, Curt is a thorough and out-going mineralogist. He knows and uses the tools of his trade and misses no opportunity to see that good mineralogy is practiced.

Note: The editor is anxious to have more readers submit Personality Sketches for publication in the Mineralogical Record. This will be a regular feature if only more such sketches are received. Ed.

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EXACTLY HOW TO FIND YOUR OWN GEMS AND MINERALS in S.E. United States. 2 GREAT BOOKS! Vol. II, GEM and MINERAL LOCALITIES of SOUTHEASTERN U.S. by Field Geologist, Dr. Leon D. Willman, $8.00 postpaid, 8-1/2" x 11", 250 pages, 29 info.-packed maps, covers Va., S.C., N.C., Tenn., Ga., Ala., Miss., La., and Fla., including 2,694 different pinpointed localities! Volume I, (all different localities from Vol. II), same title and author, $3.00 postpaid 6" x 9", 97 pages, 6 big maps, covers mostly Ga., Ala., some N.C.; Check or money order to: Dr. Leon D. Willman, Ramona Wood Building, Dept. MR, Jacksonville State University, Jacksonville, Ala. 36265.

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Dioptase
Weeksite
Apophyllite
Okenite
Mordenite
Smithsonite
Vanadinite
Wulfenite
Laumontite
Hessonite
Mimetite

SHOW SCHEDULE

1975
San Fran.—Aug.
Pasadena—Nov.
Sacramento—Nov.
Livermore—Nov.

1976
Concord—Jan.
Vallejo—Feb.
Tucson/Sands—Feb.
San Jose—Feb.
Antioch—Feb.
Castro Valley—Mar.
Stockton—Apr.
Plymouth—Apr.
San Rafael—May
Valley Springs—May
Amer. Fed./Austin—Jun.
Cal. Fed./San Fran.—July
East. Fed./Boston—July
N.W. Fed./Coos Bay—Sept.
Redwood City—Sept.
San Fran./Galileo—Oct.

1976 (Tentative)
Redding—Apr.
Reno—(?)
San Pablo—Sept.
Daly City—Oct.
Nevada City—Oct.

MINERAL SPECIMENS FOR COLLECTORS, INVESTORS AND MUSEUMS
OUR LISTS OF THUMBNAIL, MINIATURE, AND CABINET SIZE SPECIMENS FORWARDED UPON REQUEST. INCLUDE AIRMAIL POSTAGE FOR FASTER REPLY.

photo contest - 1976

The *Mineralogical Record* will sponsor its 6th slide contest in conjunction with the 1976 Tucson Gem and Mineral Show, Tucson, Arizona. Anyone (except professional photographers) may enter one or two 35 mm color transparencies and compete for the $25 cash prize and the pleasure of seeing your photograph used on the cover of a future issue of the *Record.*

HOW TO ENTER - mail your two transparencies, carefully packed and adequately identified to: Arthur Roe, 85 Calle Primarosa, Tucson, Arizona 85716. Enter mineral name and locality on the slide frame along with your name.

IMPORTANT - all slides will be returned, but **only** if return postage and addressed envelopes are provided with each entry.

DEADLINE — February 13, 1976

The winning slide is selected by the votes of the people attending the special meeting Saturday evening. We reserve the right to pre-edit the entries in order to keep the number shown Saturday evening from being too great. Don't wait, enter now!

Specimen Requests

WANTED: Hydroxyapatite ($Ca_5(PO_4)_3OH$). Stanford Research Institute needs 0.5 kg of the crystals, the size of teeth, for a project involving new fluoride polymers for teeth.

Please contact Kathleen Maloney, c/o Mass Spec., Stanford Research Institute, 333 Ravenswood Ave., Menlo Park, Ca. 94025 or call collect (415) 326-6200, ext. 3369.

Hydroxyapatite is commonly found associated with massive talc. If you have large amounts of apatite occurring in talc, you may reasonably assume that it is hydroxyapatite, Ed.

by John S. White, Jr.
Smithsonian Institution
Washington, D.C.

with microprobe analyses by Joseph A. Nelen

FERSMITE FROM NORTH CAROLINA

Fersmite, $CaNb_2O_6$, the calcium analog of columbite, was described in 1946 as a new species by Bohnstedt-Kupletskaya and Burova. The type localities are two syenitic pegmatites in the Vishnevye Mountains, Central Urals, USSR. The color of the crystals found there is black, the luster resinous.

Associated minerals include biotite, pyrochlore, hornblende, apatite, titanite and quartz.

In 1959 Hess and Trumpour published a description of the "second occurrence" of fersmite, this in the Bitterroot Mountains, Ravalli County, Montana. Here it was found as anhedral inclusions and intergrowths in tantalum-free columbite, associated with monazite, ancylite, barite, quartz and apatite in a fine-grained, buff-colored marble, a locally (?) metamorphosed limestone. This fersmite is described as dark-brown to black and resinous.

Fersmite has now been found at the Foote Mineral Company spodumene mine, near Kings Mountain, Cleveland County, North Carolina. The host rock is a lithium-tin pegmatite that is mined primarily for spodumene. This pegmatite is becoming famous for the new species it has produced (switzerite, eakerite, brannockite and tetrawickmanite) as well as a great variety of fine specimens of such pegmatitic species as bikitaite, eucryptite, lithiophilite, lithiophosphate and fairfieldite. More than ninety species have been identified thus far in a continuing study of the pegmatite by the author and others.

Fersmite is found in massive platy albite, intimately intergrown, in part at least, with columbite. Small areas within the massive albite are vuggy, and are filled with chlorite, bavenite, muscovite and tetrawickmanite. Common primary minerals associated with fersmite and columbite, which are also considered by the author to be primary, are manganapatite (green in color) and pyrite.

Foote fersmite is clearly epitaxial on columbite. The two species form a mineral "sandwich" where fersmite is the

Table I. Analyses of fersmite.

	Montana[1]	Urals (complete)[2]	Urals (partial)[2]	North Carolina[3] NMNH #128083
CaO	15.02	14.49	15.53	18.1
Nb_2O_5	74.44	70.12	71.51	56.5
Ta_2O_5	n.d.	trace		13.4
REO	6.36[a]	4.79[b]	3.98	0.25[c]
TiO_2	2.01	3.21	2.94	0.8
SiO_2	0.32	0.72		1.1
MnO	0.11	0.48		0.11
Fe_2O_3	0.34	1.71	1.25	0.17 (FeO)
ThO_2	0.10			
Al_2O_3	0.10	1.28		n.d.
MgO	n.d.	0.98	0.97	0.16
Na_2O	n.d.	0.46		0.07
F	n.d.	1.87		n.d.
U_3O_8	0.08			
H_2O	0.18	0.72		
	99.04	100.83	96.18	
SrO				0.10
P_2O_5				0.13
Cl				0.07
				91.0

n.d. - not detected

[1] Hess and Trumpour (1959)

[2] Bohnstedt-Kupletskaya (1946)

[3] Nelen. low summation attributed to poor standards for Nb and Ta. analysis by microprobe.

[a] essentially La_2O_3. minor CeO_2

[b] 80% Ce group. 10% Y group. 10% ThO_2

[c] 0.09% La_2O_3, 0.16% Ce_2O_3

Table II. Microprobe analyses of columbite associated with fersmite from the Foote mine.

	Grain #1	Grain #2	Grain #3	Grain #4
MnO	6.3	6.1	6.4	5.0
FeO	17.1	17.3	16.9	17.3
Nb_2O_5	59.8	61.5	60.5	50.2
Ta_2O_5	7.1	7.4	8.8	16.8
	90.3	92.3	92.6	89.3

Specimen #128083 (NMNH)

Analyses by Nelen. low summations attributed to poor standards for Nb and Ta.

bread on either side of columbite, which is the filling. On one end of the composite crystal examined, columbite extends beyond the limits of the fersmite. The two species are readily distinguishable as this fersmite is brown and quite resinous while the columbite is typically black and lustrous.

There can be little doubt that columbite crystallized first, systematically rejecting calcium, until there was no more iron and manganese available; at which time the remaining columbium and tantalum combined with calcium to form fersmite. The fersmite is practically iron/manganese free. The same sequence is suggested in the Montana material. Anhedral fersmite is described as filling small cavaties in subhedral columbite.

The new occurrence establishes that substitution of tantalum for columbium, as is to be expected, does occur. The three earlier analyses (Table I) are all of tantalum-free fersmite, while the mineral from Foote contains 13.4% Ta_2O_5. Equally apparent, and again as expected, is that there is no significant substitution of calcium for iron and manganese. No calcium was detected in the Foote mine columbite (Table II).

There was very little fersmite found by the writer at the Foote mine. All that exists of the described specimen is a small crystal about 2x2x0.5 mm in matrix and the section that was prepared for microprobe analysis. The specimen and section carry N.M.N.H. catalog number 128083.

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THE OCCURRENCE OF CREEDITE AT COLQUIRI

Inquisivi Province, Department of LaPaz, Bolivia

Figure 1. **Main upper adit and mine office, Colquiri tin-zinc mine.**

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INTRODUCTION

Creedite is a highly unusual mineral belonging to a small, select group of chemically anomalous compound halides. Based on chemistry alone, one would suspect that its occurrence would be quite restricted, however, it is reported from at least six locations representing three apparently different parageneses. The type locality at Wagon Wheel Gap, Creede Quadrangle, Mineral County, Colorado, is with gearksutite in the upper oxidized portions of a small fluorite-barite vein. A second paragenesis is in the limestone replacement lead-zinc-silver orebody at Santa Eulalia, Mexico. A third occurrence is in the tin-zinc orebody at Colquiri, Bolivia. Creedite is also reported from Darwin, Inyo County, California; Granite, Nye County, Nevada; and Kazakhstan, U.S.S.R.

Although the superb colorless-to-purple specimens of the recent find at Santa Eulalia are known and admired by most American collectors, few are aware of the outstanding material produced at Colquiri. Creedite was first identified at Colquiri approximately 25 years ago (Herzenberg, 1949). Small quantities of mediocre-to-superb specimens have been produced ever since with only a depressingly small number ever reaching the general collector's market.

Out of curiousity and on the outside chance of collecting a few creedite specimens, a trip to Colquiri was made on Monday, December 16, 1974. The experiences of this trip including examination of the mine and lengthy conversations with mine officials and geologists, and the translation of several Bolivian technical publications suggest that, once again, a location of unusual specimen-producing potential has essentially passed into non-existence without careful study or adequate collection and preservation of important data and samples.

CHEMISTRY

As originally described by Larsen and Wells (1916), creedite is a basic hydrated sulfate-fluoride of calcium and aluminum having the formula $Ca_3Al_2F_4(OH,F)_6(SO_4)\bullet 2H_2O$. Later work by Foshag (1922) seemed to confirm this formula; however, Herzenberg (1949) demonstrated by analysis of Colquiri material that creedite is a basic sulfate-fluoride-hydroxide of calcium and aluminum having the formula $Ca_6Al_5F_5(OH,F)_9(SO_4)_2$. More recent study (Borisov, Brusentsev, Klevtsova, and Belov, 1965) suggests the formula $Ca_3Al_2(F,OH)_{10}SO_4\bullet 2H_2O$ for material from Kazakhstan. This formula is currently accepted and presented in the *Glossary of Mineral Species* (Fleisher, 1971).

CRYSTALLOGRAPHY

Creedite is monoclinic in the 2/*m* class. Two distinct habits are described by Foshag (1922) for type material from Wagon Wheel Gap. The first is represented by simple prismatic crystals exhibiting equal development of the pyramidal faces *p*{111} and *n*{111}, and local modification by *c*{001}, *d*{221} and *ζ*{201}. The second habit (Figure 2) is similar to Colquiri material and exhibits extreme development of *p*{111} at the expense of *n*{$\bar{1}$11}, and modification by *c*{001}.

Ahlfeld and Muños Reyes (1955) describe two distinct habits for Colquiri creedite; however, it would appear from their diagrams that the two habits ascribed by them as that reported by Frenzel (1953) and type-2 from Wagon Wheel Gap are in fact identical. All material examined from Colquiri exhibits the simple prism *m*{110} and, in almost every case, termination by *p*{111}. Only rarely are *n*{$\bar{1}$11} pyramids present. In some instances *p*{111} is developed almost to the exclusion of the prism. Rare modifications are *a*{100} and *c*{001} as shown in Figure 3, and *d*{221}, *b*{010}, and a face tentatively identified as {021} as shown in Figures 4 and 5. Twinning on {111} and {110} was noted in a few crystals on a single sample.

OCCURRENCE

Location

The old mining camp of Colquiri is located on an undulating, deeply eroded plain at 4200 meters (13,860 feet) above sea level. It is 55 kilometers north of Oruro and accessible by good dirt road from the Altiplano highway connecting LaPaz and Oruro. The deposit was discovered very early in the history of the Americas and was initially exploited by the Spaniards for silver. Today the camp is the third largest tin producer in Bolivia and contains the largest zinc reserves in the country. The mine is actively worked at depths to 300 meters with exploration to about 500 meters. It is one of the best managed and well-organized government (COMIBOL) operations. The most characteristic feature of the mine is the uncomfortable heat. Temperatures in inactive or poorly ventilated portions of the mine (including the creedite occurrence) reach 115 to 120 degrees Fahrenheit.

General Geology

The Colquiri deposit is somewhat anomalous with respect to other Bolivian tin deposits in that it cannot be directly related, either spatially or genetically, to batholithic granitic rocks. The deposit consists of a series of veins occupying northeast-trending faults in a sequence of folded Devonian quartzite and shale.

Campbell (1947) has described two distinct phases of mineralization separated by a period of intense tectonic activity. The primary phase was one of hydrothermal replacement of the sedimentary host rocks by chlorite, cassiterite, fluorite, quartz, pyrrhotite, arsenopyrite, pyrite, chalcopyrite, stannite, sphalerite (marmatite) and galena. The period of tectonic activity resulted in brecciation of prior mineralization and the development of open spaces in which were deposited siderite, pyrite, magnetite, and marcasite. Besides creedite, the mine occasionally produces excellent specimens of chocolate brown, prismatic cassiterite crystals in a matrix of light brown, massive siderite.

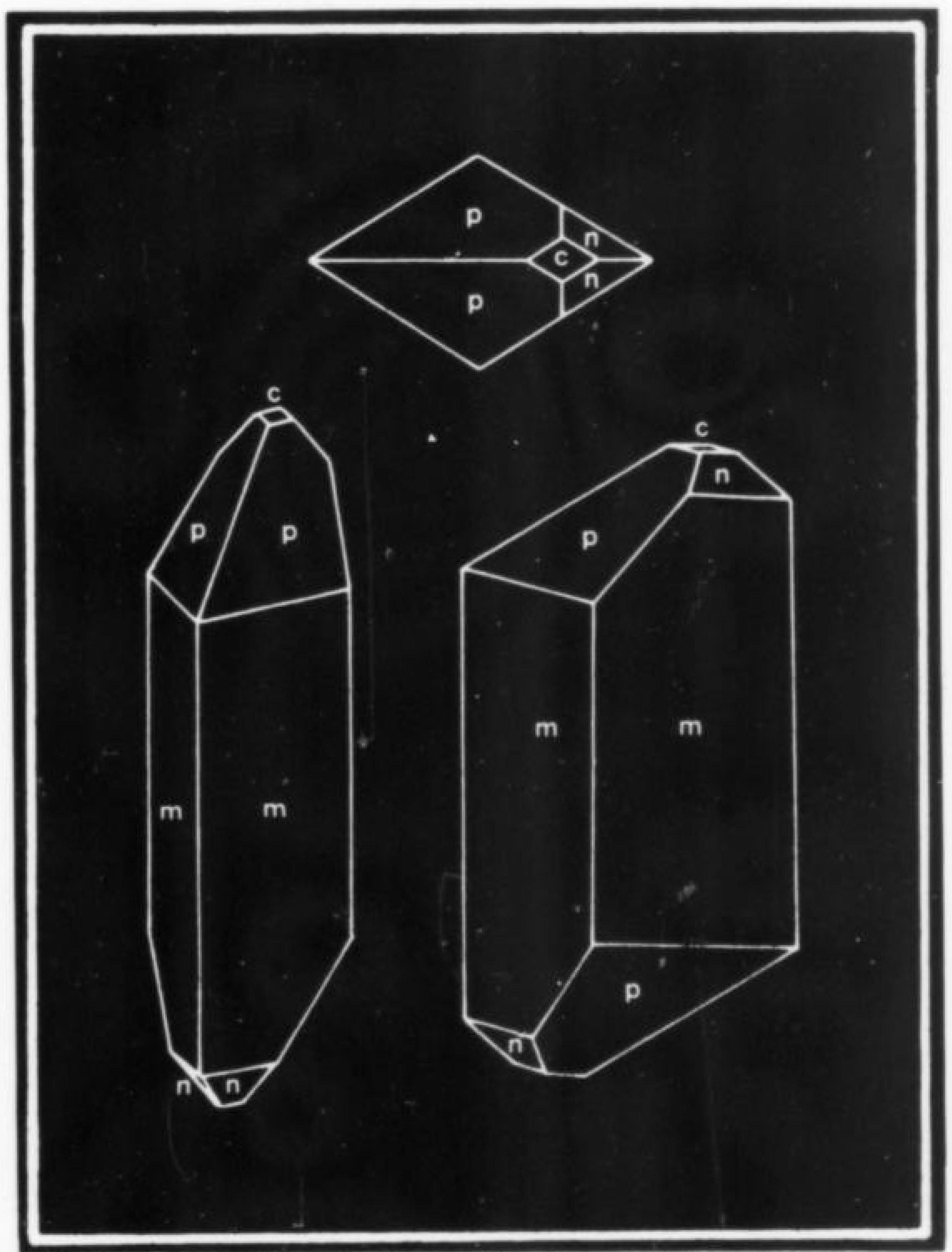

Figure 2. **Type II creedite of the Wagon Wheel Gap occurrence (after Foshag, 1922).**

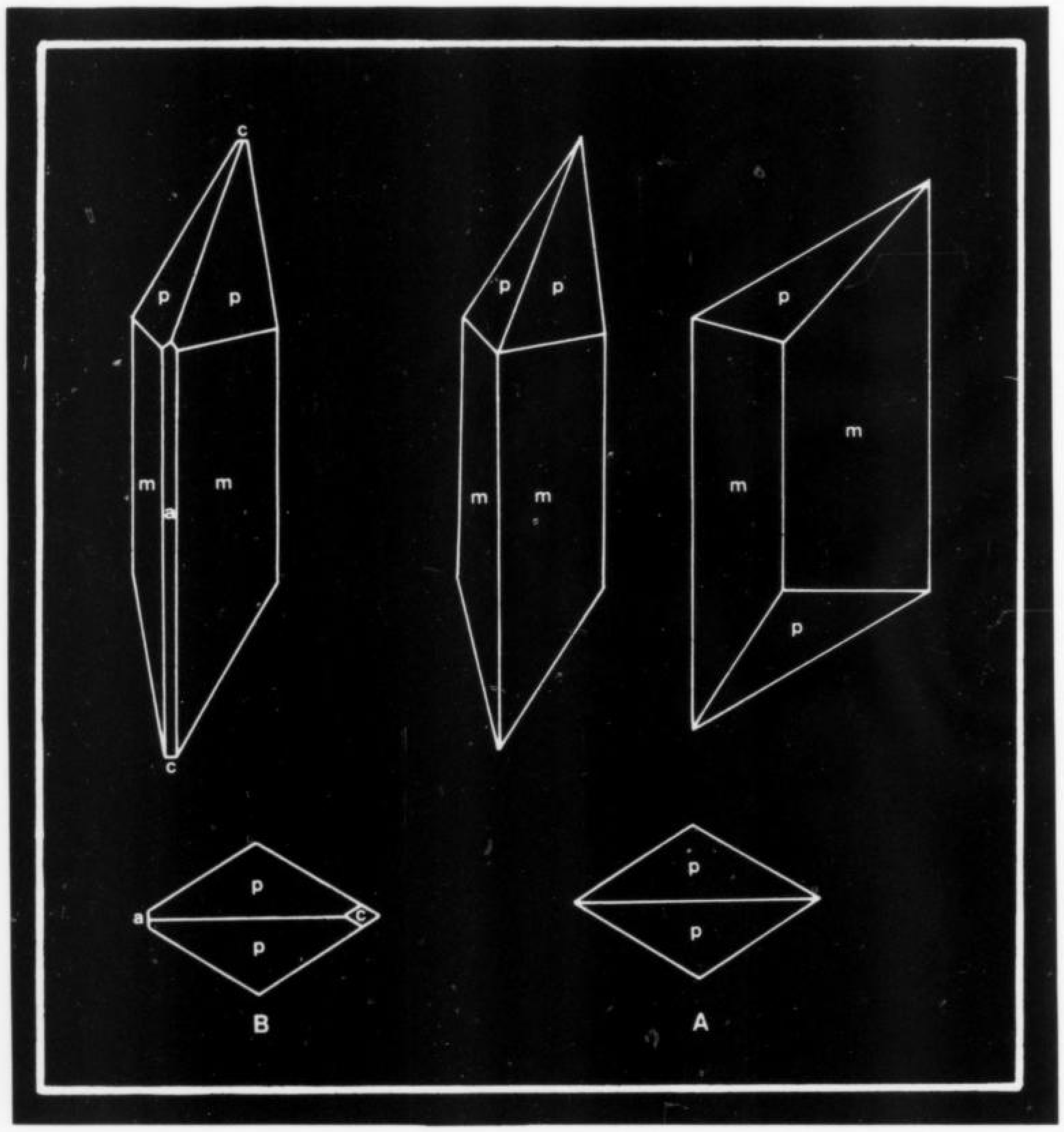

Figure 3. **Typical forms of Colquiri creedite. Crystal A exhibits the simple prism and pyramid only. Crystal B is modified by a (100) and c (001).**

Creedite

Creedite occurs in vugs and as massive cement for brecciated quartzite, shale, and sulfides in post-mineral faults cutting the main vein system on the 205- and 236-meter levels. The areal extent of the creedite-bearing zone is small, not exceeding 100 square meters. The single accessible occurrence is an abandoned, partially-caved stope off #4 crosscut, level 205, within a faulted, vuggy area approximately four meters long and 20 centimeters wide. Creedite occurs here as druses of approximately 2 mm colorless crystals among which rest scattered grey, opaque crystals averaging 1 cm in length. Crystal-lined vugs in massive creedite containing brilliant, glassy crystals up to 5 mm in length are common. Creedite at this location gives every indication of being of primary origin, probably related to a third pulse of hydrothermal activity of the waning stages of the second phase of mineralization.

Magnificent specimens consisting of sprays and plates of colorless, transparent crystals up to 2.5 cm long were encountered when this area of the mine was active. Specimens of this type are available only from miners and older accumulations of specimens sometimes available in Oruro. A single vuggy mass of creedite weighing perhaps 100 pounds is on display in the mine office.

ACKNOWLEDGEMENTS

Sincere appreciation is expressed to the various officials of COMIBOL who extended every possible courtesy and without whose help the acquisition of creedite would have been impossible, particularly Ing. Aurelio Bustos, Ing. Julio Fuentes, the geologic personnel at Colquiri, and especially Colonel Carlos Zambrano. Creedite photographs are by John Creel of Auburn Educational Television.

Figure 4. **Vug in massive creedite with smaller crystals of habit illustrated in Figure 3 and larger crystals modified by (221), (010), and (021). Largest crystal is 1 cm in length.**

Figure 5. **Enlargement of largest crystal in Figure 4.**

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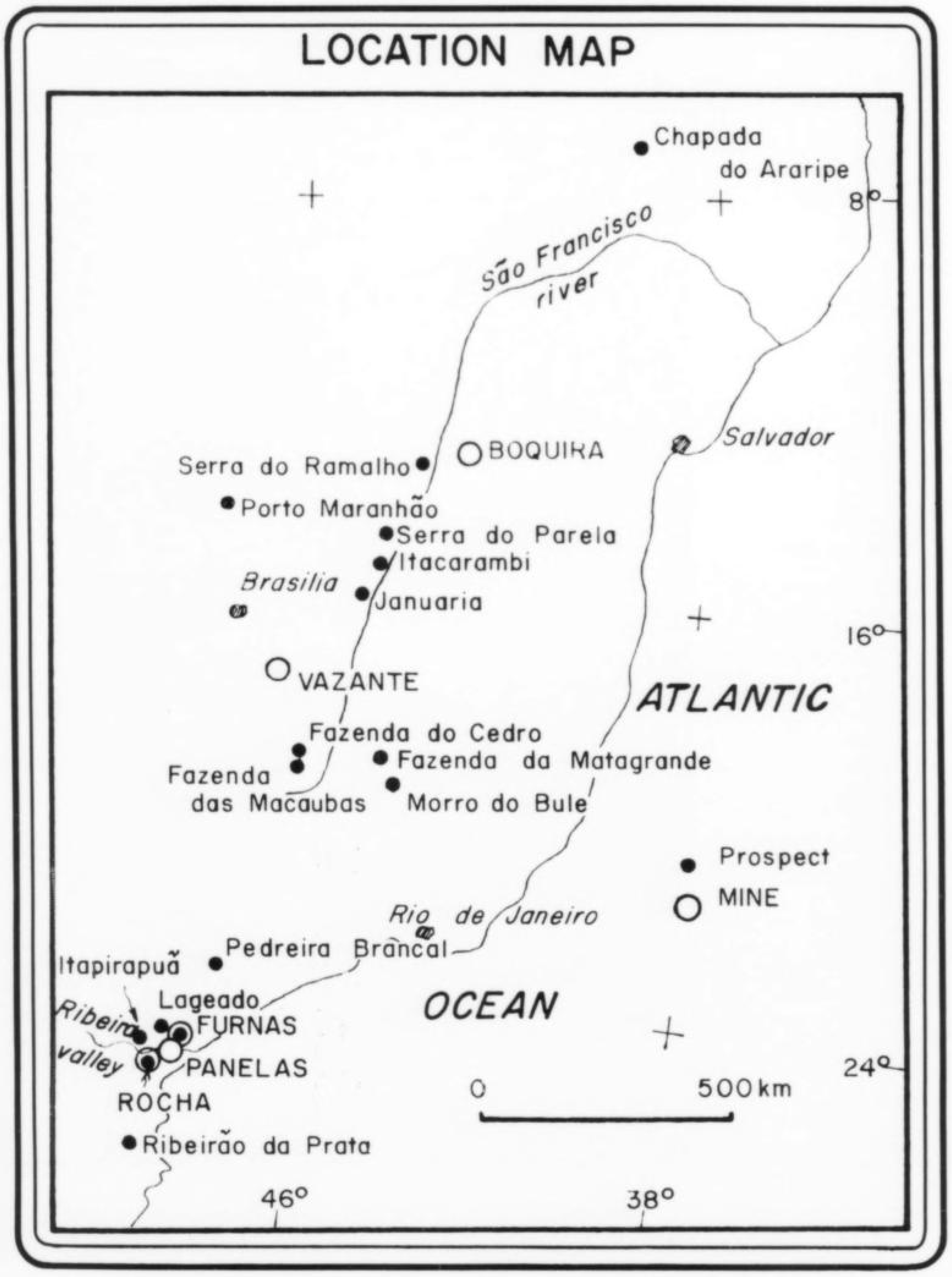
minerals of the lead-zinc localites of brazil

by Jacques P. & Jeannine O. Cassedane*



Brazil is a very small producer of lead-zinc and its prospects are mineralogically as poorly known as its mines.

In this paper we intend to give a brief review of the principal minerals which may be collected in lead-zinc occurrences today throughout Brazil, as collection-size specimens or as micromounts. Access to the main localities will be briefly described.

Description of the minerals will be in alphabetical sequence, capital letters are for good specimens. Please consult the location map.

ANGLESITE.

Occurs as a gray or black crust around galena and sometimes in fine transparent crystals up to 1 cm (Lourenco Velho - Ribeira Valley - São Paulo State**), or in needles ranging to several millimeters in length (Bassetti - Rocha mine - PR), always coating galena or supergene ore lead lead minerals.

Small fine groups of buff colored crystals occur in the oxidized zone of the Boquira mine (BA).

Aragonite.

Radiated pink clusters up to 10 cm in length filled one fracture in the Boquira mine (Sobrado vein). Transparent needles are today still recoverable in the dumps of the Furna mine (SP) and the Morro do Bu prospect (MG).

Argentite.

This sulfide occurs mainly around galena in the Mina do Joel (Serra do Parela - MG). Good rims may be observed in polished sections.

Arsenopyrite.

Elongated crystals reaching 2 cm in length were sporadically recovered in the main cross cut of the Panelas mine (PR).

Azurite.

Generally associated with malachite, but rarer. It is formed by the oxidation of the chalcopyrite present

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*) Federal University of Rio de Janeiro and National Research Council.

**) Brazilian abbreviations for States BA = Bahia, CE = Ceará, MG = Minas Gerais, PA = Para, PR = Parana, SP = São Paulo, SC = Santa Catarina.

in some ores. Good millimeter-sized crystals suitable for micromounts can be found in the Ribeirão da Prata (SC) and Bassetti (PR) prospects.

Barite.

No good samples are known in lead-zinc localities.

Bindheimite.

Coats dolomite or sphalerite, as an earthy crust of a golden yellow to orange color. The best specimens are from the Morro do Bule prospect (MG).

Brochantite.

Fine efflorescent crusts were found on chalcopyrite in a cross-cut of the Sobrado vein (Boquira mine - BA). The occurrence was mined.

Crusts are common at the Vazante mine (Coral vein - MG).

Calcite.

It does not occur with exceptional features. In the Serra do Parela (MG) milky rhombohedra may be found several decimeters in length. Little groups of scalenohedra occur in the caves and fissures of the calcareous formations of the Ribeira Valley, as well as some hexagonal crystals.

CERUSSITE.

It is very abundant and its best occurrence was in the upper levels of the Boquira mine (Pelado vein) where large masses over a hundred tons were mined. The flat crystals, always milky, reached 5 cm in length with abundant cyclic twinning. Unfortunately they grew on a very finely crystallized cerussite and limonite and groups were recovered with difficulty.

In the south, the Santana Nova prospect near Lageado (SP) gave tabular crystals, V-twinned up to 10 cm in length. This mine closed 10 years ago.

Chalcantite.

It is abundant in crusts at the Vazante mine (MG).

Covellite.

It is microscopically very abundant but was only found in crystals in the old workings of the Furanas mine (SP) according Th. Knecht (1935).

DESCLOIZITE.

It is practically limited to the occurrences of the Januaria-Itacarambi area, to the west of the São Francisco river. Descloizite occurs in brown pseudo-octahedra reaching up one cm in size and sometimes coated by quartz, grown on this mineral, or in the boxworks and cavities of pink dolomite. It also occurs as massive veins or crystallized platy aggregates.

All transitional minerals exist from descloizite to mottramite.

Dolomite.

Crystals are rare in the vugs of the ore (Morro do Bule - MG) or in the cavities of the dolomitic formations of the Ribeira Valley.

Fluorite.

In the Serra do Ramalho district (BA), fluorite is the main gangue. Transparent and blue cubes are not common and sporadically include large bubbles.

In the Bassetti prospect (PR), a fluorite breccia with yellowish dolomite and white calcite offers fine specimens for polishing.

Gahnite.

It is an exceptional mineral that was only found in the Cruzeiro open pit (Boquira Mine - BA), in diminutive octahedra (four to five mm in size) of a dark green color.

Galena.

Crystals are rare and are only found at Santo Antônio (Serra do Ramalho - BA) and in the Pedreira Brancal (SP). Cubes are one to five cm in width and frequently coated with limonite.

Gypsum.

Delicate fibers, suitable for micromounts, are common in the cavities of the gossan and the pyrite in the Ribeira Valley and in the Boquira mine.

Hematite.

It is very abundant and only in good platy crystal aggregates up to 10 cm in size in the vicinity of the Boquira mine (BA).

HEMIMORPHITE.

Although commonly found in many occurrences, only two mines need be noted for their very good samples: the Furnas and Vazante mines.

In Furnas (SP) hemimorphite occurs in transparent or light milky colored clusters in the vugs of a limonitic banded gossan. The crystals, up to one cm in length, are very similar to those of Mapimi.

***Figure 1.* Crystallized milky cerussite. Pelado vein. Boquira mine (BA). Scale is one cm in length.**

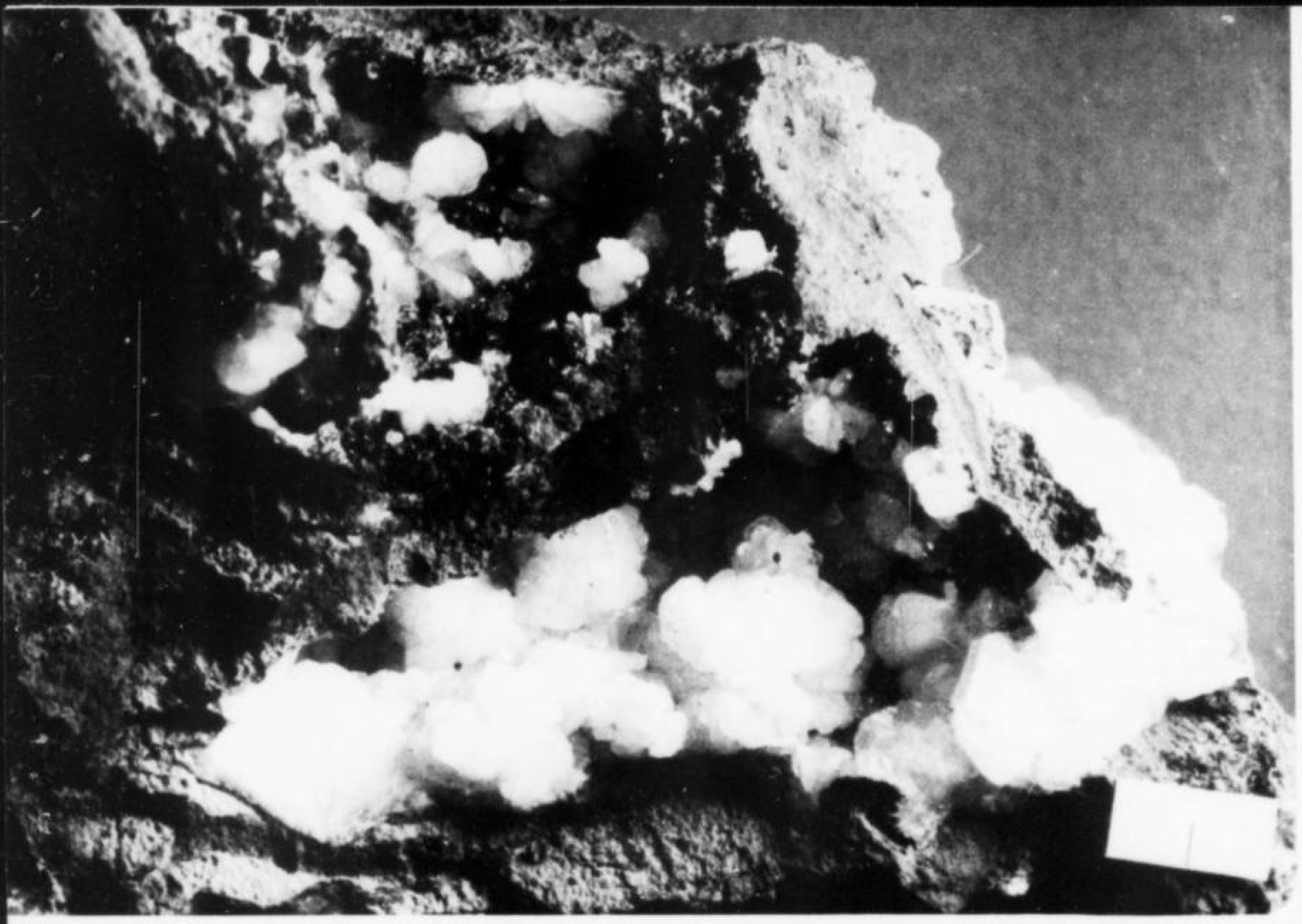


Figure 2. **Left, clusters of white hemimorphite in gossan cavities. Ceu aberto. Furnas mine (SP). Scale is one cm in length.** *Figure 3.* **Right, crystallized vanadinite in dolomite vugs. Mina Grande quarry. Itacarambi (MG). Scale is three cm in length.**

In the Vazante area (MG), chiefly Serra do Ouro Podre and Alto da Raposa, hemimorphite occurs in crystal aggregates up to two cm in length with a cockscomb feature. The color is white, light grey or bluish.

In the same mine (Morro do Velasco) hemimorphite veins are rarely disseminated in the oxidized ore. This particular variety of the mineral, of light blue color and slightly banded, is suitable for making cabochons.

HUNTITE.

This uncommon mineral is found in the Pelado vein of the Boquira mine as earthy cerebroid masses embedded in a brown to reddish argillaceous material, near a fracture zone. Specimens are frequently a few centimeters in width. Nodules larger than five cm across are uncommon.

In the same mine, massive chalky huntite occurs in the galena-sphalerite ore of the Sobrado vein. Although many tons were milled with the ore in the past decade, this variety is very rare today in the mine workings.

Hydrozincite.

It is very common as white crusts in the oxidized ore (Januaria - MG) and in the gossan to which it gives a peculiar aspect (Furnas mine - SP). It always fluoresces strongly with a bluish white color.

In the Vazante mine (MG), massive balls of various kilograms of hydrozincite are common (Morro do Velasco).

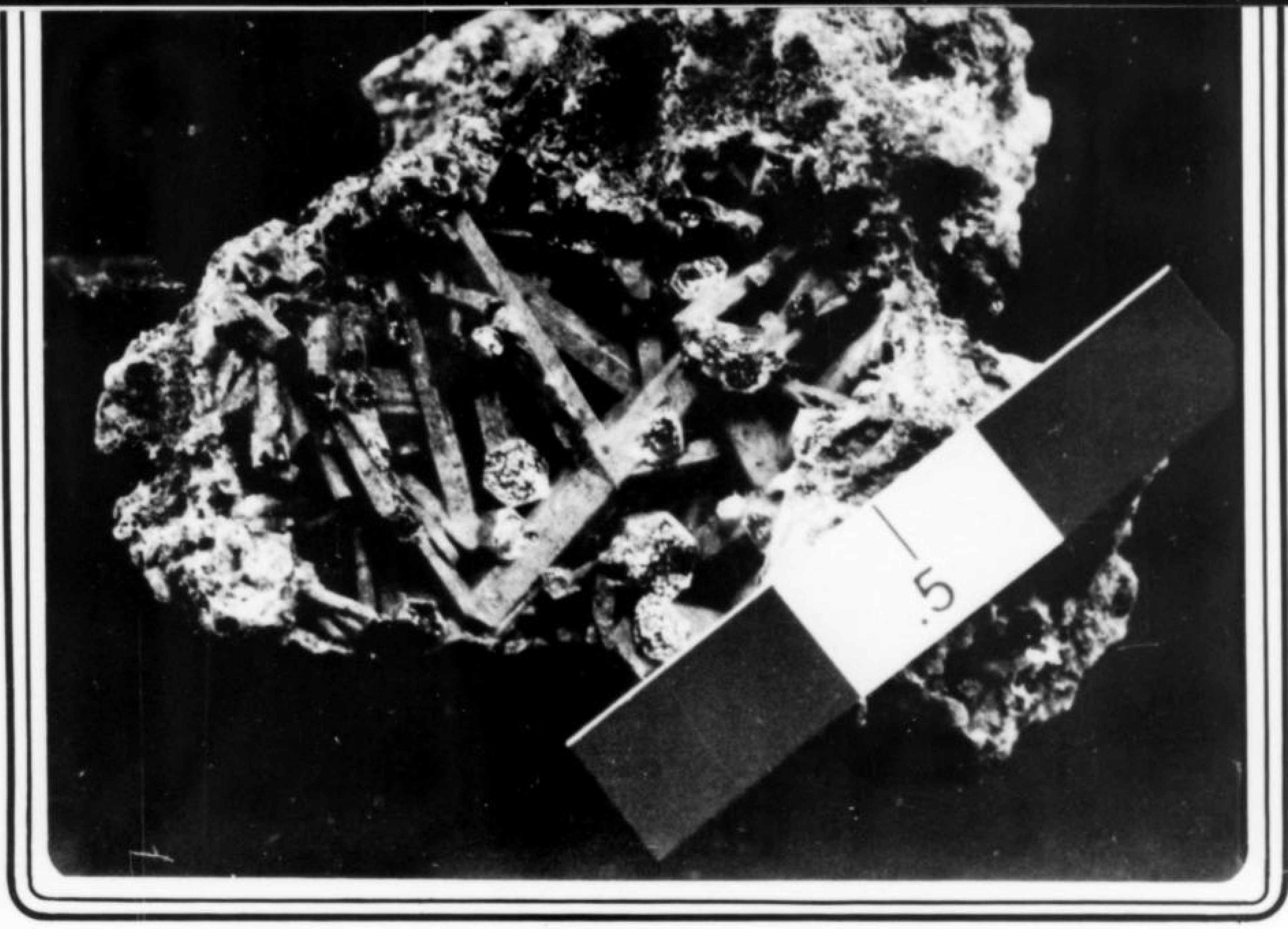
Iodargyrite.

Only one little massive specimen is known from the Morro da Pingueira prospect (Serra do Parela - MG).

Limonite.

It is very common in the gossan and upper levels of the mine workings but good samples are rare. Stalactitic

Figure 4. **Close up of light brown anglesite crystals. Sobrado vein. Boquira mine (BA). The larger crystal is five mm in width.**



forms and iridescent masses occur sporadically in the Ribeira Valley prospects.

Löllingite.

Little crystals of löllingite suitable for micromounts occur in the arsenopyrite druses from the Furnas mine (SP). The crystals are larger than those of arsenopyrite and are a little fractured in polished sections.

Magnetite.

Like martite it occurs only as millimeter size octahedra (Boquira mine for instance).

Malachite.

It is very common, however only little clusters of millimeter size crystals suitable for micromounting may be collected (Bassetti III in the Rocha mine - PR). In the B vein from the Panelas mine (PR) crystals reach up to five mm in size.

Molybdenite.

It is rare and occurs only in a vein with powellite in the Boquira mine.

Phosgenite.

It is very rare and was only reported from the Furnas mine (Th. Knecht - 1932).

We found apple green crystals up to seven mm in length in the vugs of the galena of the São Felix do Xingu prospect. The occurrence lies in the Amazon basin and only may be reached by plane.

Plumbojarosite.

It is earthy and abundant in various occurrences, mainly near the 740 cross cut of the Boquira mine (BA).

Pyrargyrite.

It is only visible by microscope in the secondary zinc minerals from the Januaria-Itacarambi area (MG).

Figure 5. **Center, platy aggregate of descloizite crystals. Riacho sêco. Itacarambi (MG). Scale is one cm in length.** ***Figure 6.*** **Right, drusy brownish anglesite. Sobrado vein. Boquira mine (BA). Scale is three cm in length.**

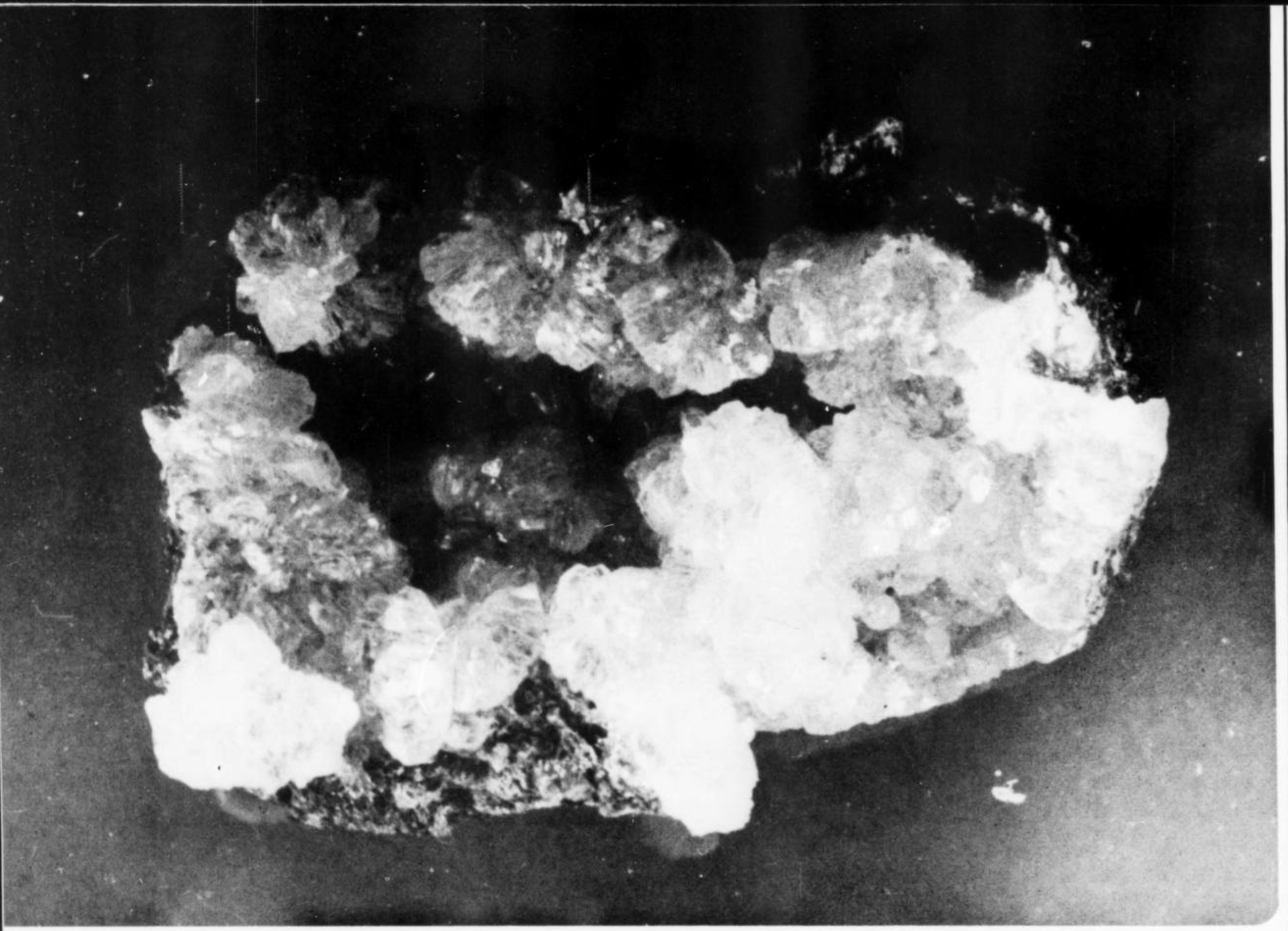


Figure 7. **Drusy transparent to translucent hemimorphite. Serra do Ouro Podre. Vazante mine (MG). Specimen is eight cm in length.**

Pyrite.

No good specimens exist although the mineral is very common in all types of occurrences.

At Pôrto Maranhão (Goias), centimeter size euhedral crystals are corroded with a particular spongy appearance.

Pyrolusite.

Fine needles and clusters were found in the Lageado district in the old workings. They were mistaken for stibnite by the former workers.

PYROMORPHITE.

It is common and it coats oxidized ore or occurs in little elongated yellow, green or brown crystals

Very fine specimens were collected, years ago, in the Sobrado vein from the Boquira mine (BA). Light apple green crystals occur as elongated barrel-shaped or prismatic forms up to one cm in length. The occurrence, on the 700 level, is today almost inaccessible as a consequence of the development of the workings in this zone.

QUARTZ.

Fine transparent crystals up to 15 centimeters in length, embedded in red argillaceous material, are common in the prospected veins of the Bambui Group (= Eocambrian shales and calcio-dolomitic formation outcropping mainly in the São Francisco basin). The best crystals were collected in the Fazenda da Matagrande near Belo Horizonte (MG), and in the Fazenda do Cedro (MG). Today these prospects are caved in.

Citrine was sporadically associated with transparent specimens.

Chalcedony.

Fine good arborescent groups were collected in the outcrops of the Boquira mine (BA).

Rectorite.

It is common in the Boquira mine as a decomposition product of the amphibolite in which the mineralization is found.

Scorodite.

Two to four mm size translucent crystals occur sporadically in the cavities of the gossan from the Ribeira Valley area.

Smithsonite.

It is common as botryoidal crusts of various colors. Crystals are rare: one to three mm size in the Mina Grande quarry (Itacarambi - MG).

At Serra do Ouro Podre (Vazante), fine specimens of pink massive smithsonite were mined prior to 1970.

Sphalerite.

Crystals are rare and always small thus only suitable for micromounting (Fazenda das Macaubas - MG) with a brownish to red brown color. In the Chapada do Araripe (CE), the sphalerite replaces ostracods giving interesting polished sections.

Silver.

Little dendrites are rare in the vugs of the gossan of the Ribeira Valley (L. Bastian - 1946).

Stibnite.

Only millimetric sized crystals suitable for micromounts are recoverable with difficulty from the dumps of the Morro do Bule prospect (MG).

VANADINITE.

It occurs mainly at the Mina Grande quarry near Itacarambi (MG), associated with descloizite and other lead-zinc-copper oxidized minerals.

Clusters and elongated crystals of a brownish to orange yellow color are scattered in the cavities and fissures of a pink siliceous dolomite.

Crystals up to five cm in length with one cm diameter are reported. The appearance of the mineral is very

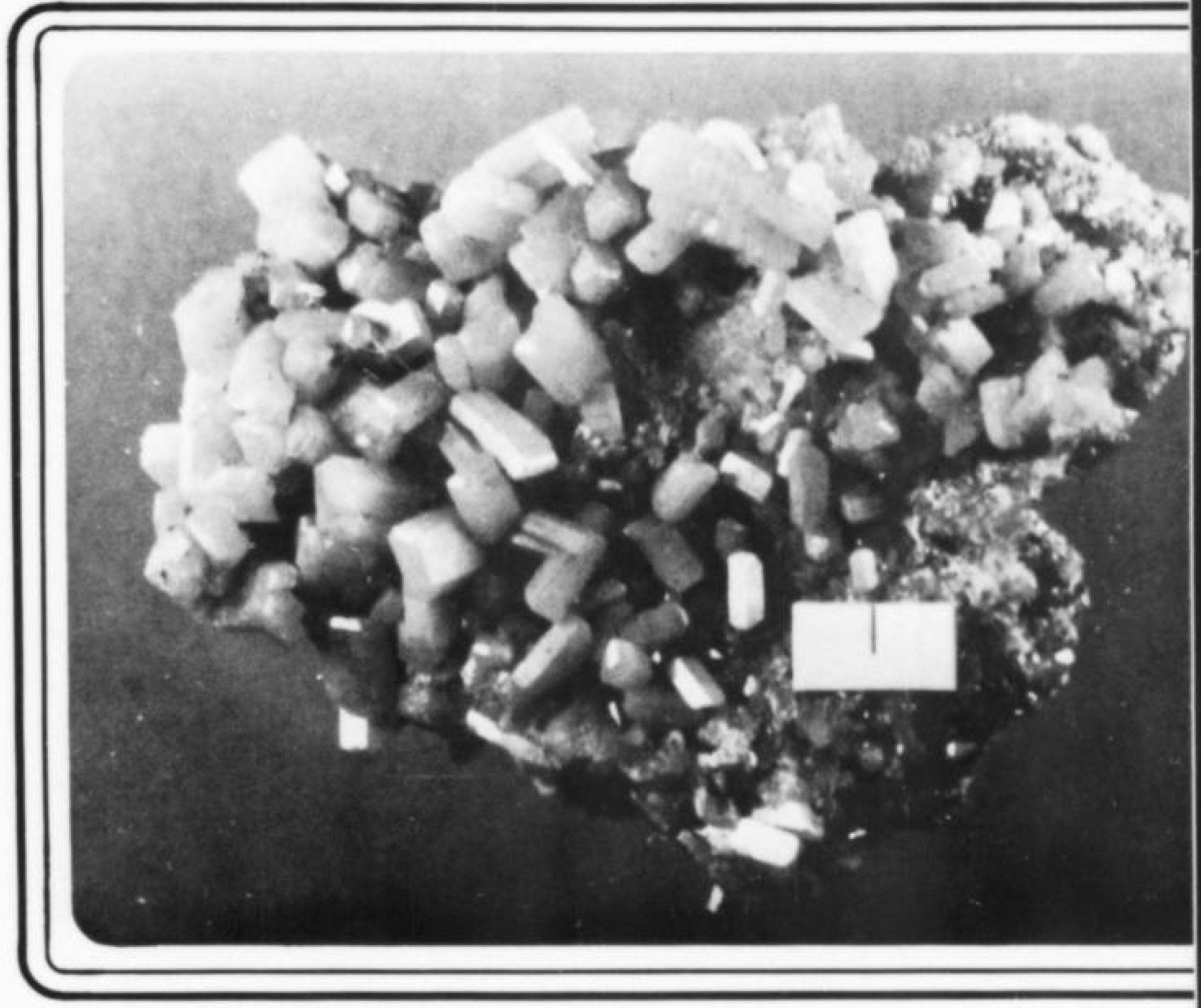
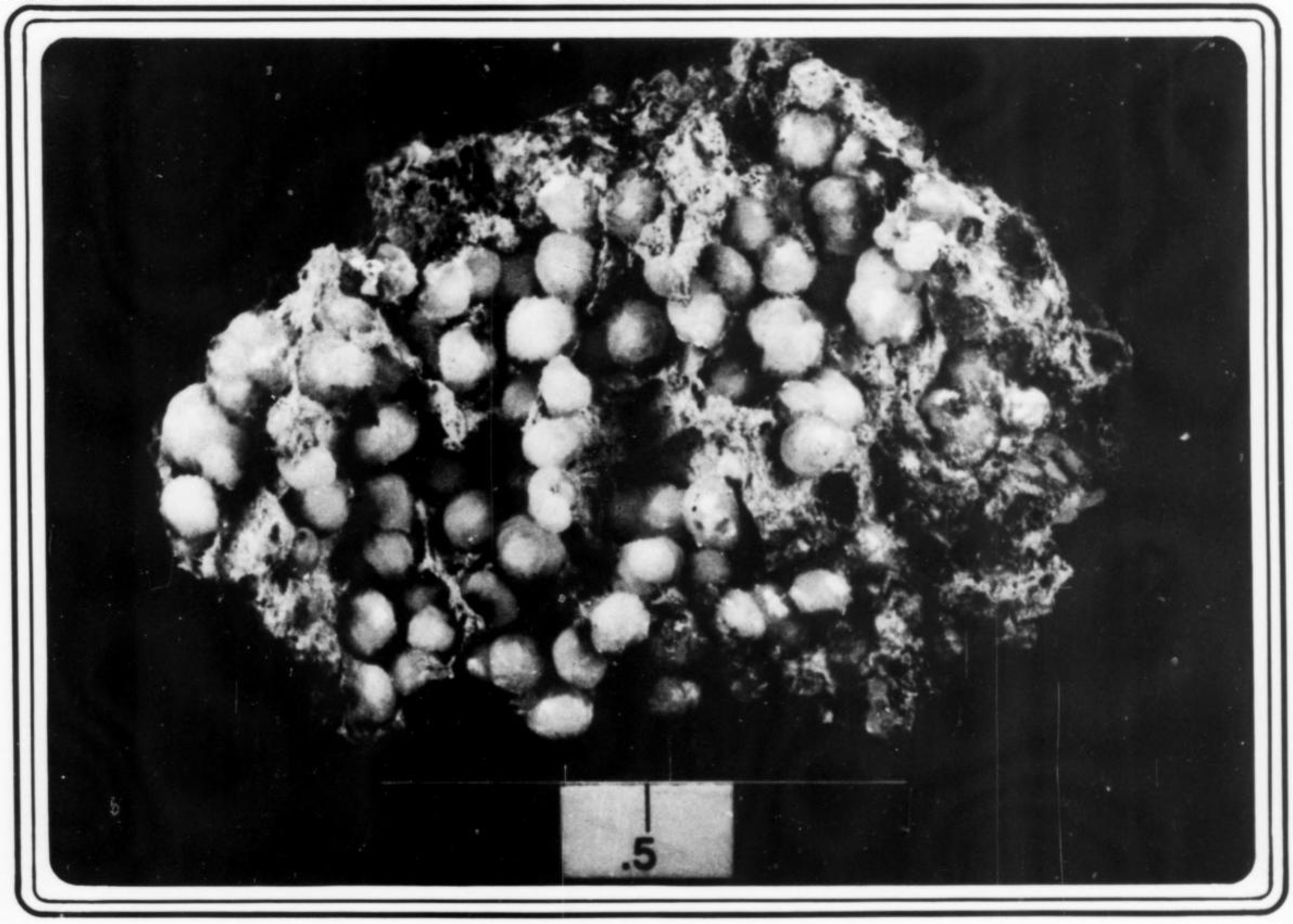


Figure 8. **Crystallized pyromorphite from the Sobrado vein. Boquira mine (BA). Scale is one cm in length.**

Figure 9. **Globular whitish hemimorphite. Pelado vein. Boquira mine (BA). Scale is three cm in length.**



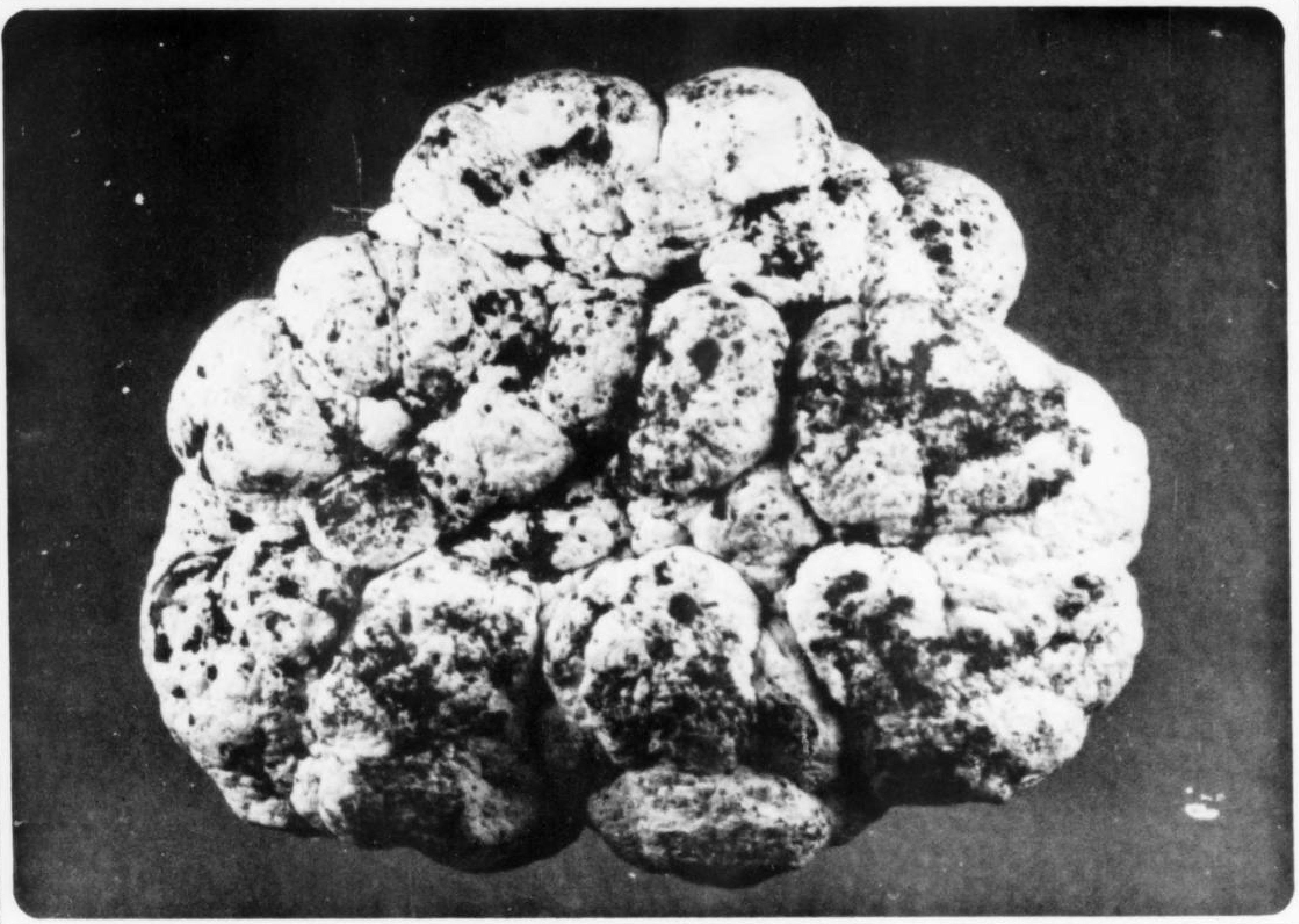


Figure 10. **Huntite concretion. Pelado vein. Boquira mine (BA). Specimen is six cm in width.**

similar to that of the Djebel Mahseur (Morocco). Today it is not easy to collect crystals up to 1.5 cm in length because workings stopped 10 years ago.

Willemite.

It is the main alteration product of the sphalerite in the Januaria-Itacarambi area. It does not fluoresce and is generally massive. It only occurs in little milky crystals (one to three mm in size) in the cavities of the oxidized ore.

At the Vazante mine, it forms wide outcrops, always associated with hematite.

WULFENITE.

A very rare mineral and only occurring in the vugs of the surficial galena of the Itapirapuã prospect (SP).

Sharp platy crystals, translucent to transparent and of a yellowish to orange color, up to one cm in size, were collected about 1955.

Presently it is possible to find good specimens for micromounting of millimeter size. The prospect is far away in the tropical forest of the Ribeira Valley and only may be reached by horse from the Rocha mine (PR).

LOCATION AND ACCESS.

Access to the main prospects, occurrences and mines is briefly summarized below.

Figure 11. **Transparent citrine crystal from the Fazenda do Cedro vein (MG). Scale is three cm in length.**

Figure 12. **Blue-banded hemimorphite in supergene ore. Morro do Velasco. Vazante mine (MG).**

Boquira mine.

Today a new paved road east west, starting from Salvador goes to the São Francisco River. At 580 km from the capital of the State, near the little town of Oliveira do Brejinho, a provincial north south road passable all year round leads in 70 km to the mine where well-maintained tracks go to the veins (Pelado, Sobrado & Cruzeiro).

Januaria area.

A good paved road 430 km long joins Belo Horizonte, capital of the Minas Gerais State, to Montes Claros in the north west. From this town, a good road reaches Januaria, also in the north west, in 215 km, crossing the São Francisco River.

The main prospect, Mina Grande or do Cantinho, may be reached in 28 km on the Pandeiros Dam provincial road and 5 km in a jeep track, passable only in the dry season.

Others prospects are very minor.

Itacarambi area.

A 70 km north south road under construction joins Januaria to Itacarambi. From this settlement a jeep track passable only in the dry season, reachs the main prospect, Mina Grande, in 16 km. Other poor tracks and footpaths go to the different occurrences of this area.

Figure 13. **White hydrozincite in gossan. Ceu aberto. Furnas mine (SP). Photograph is from an outcrop 0.7 meter in width.**

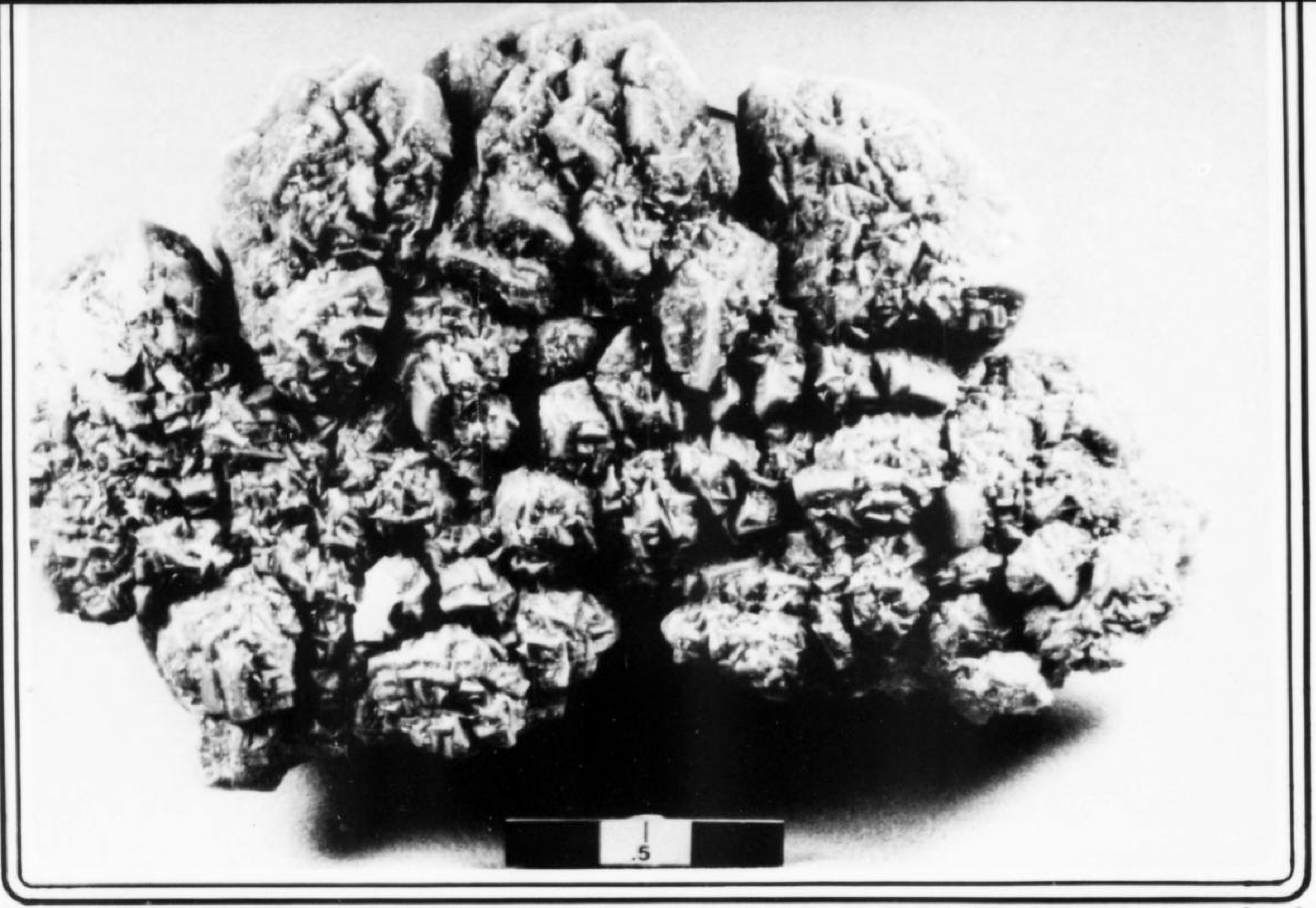


Figure 14. **White, hexagonal, crystallized calcite from the Esperança mine. Ribeira Valley (PR). Scale is three cm in length.**

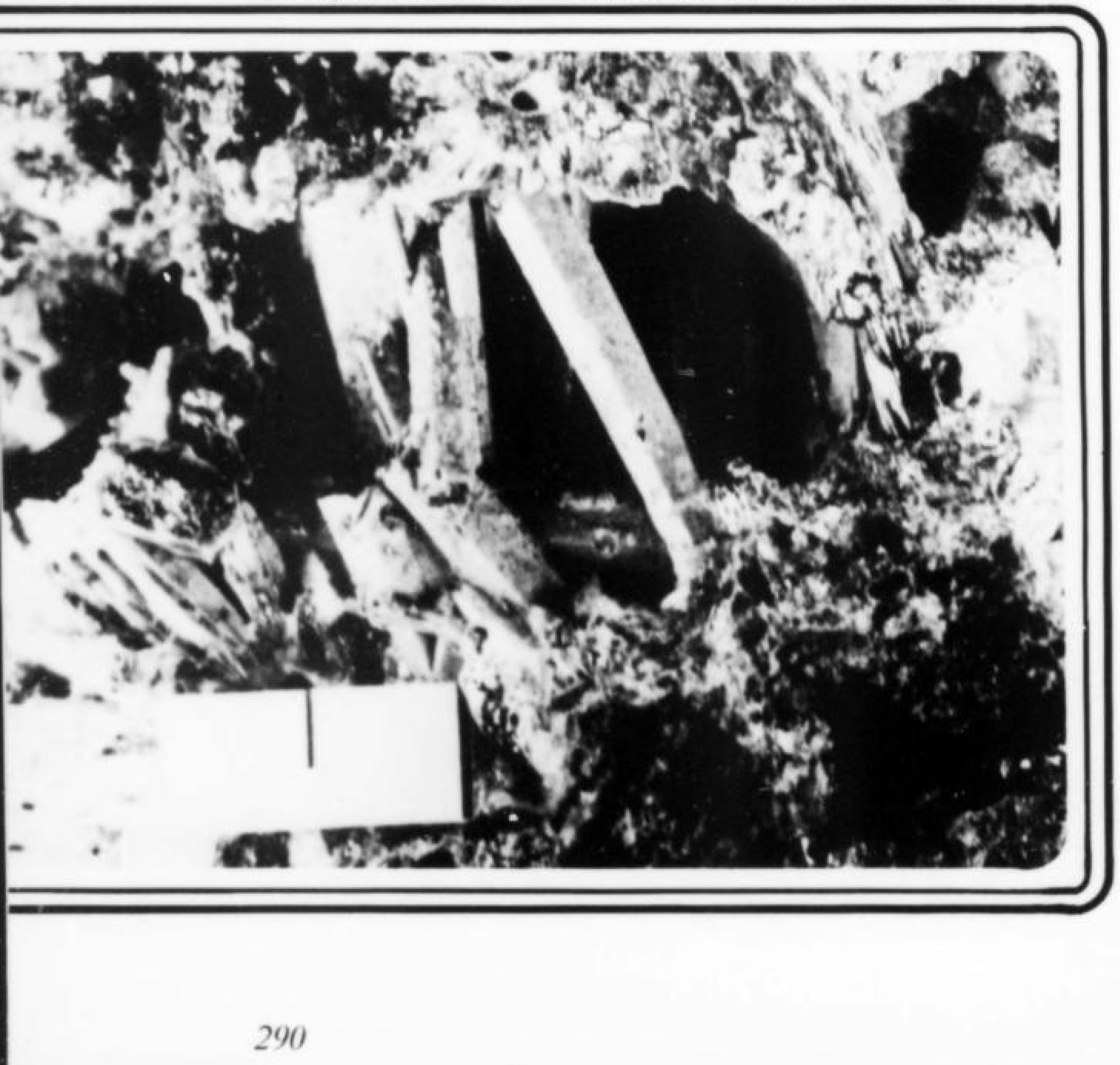
All these prospects, like those of Januaria, are abandoned.

Vazante mine.

The access is easy from Paracatu. This town lies 220 km from Brasilia on the paved road that joins the federal capital to Belo Horizonte.

There are 120 km of good provincial road from Paracatu to Vazante. The different occurrences and prospects are reached by well-maintained tracks (Serra do Velasco, Serra do Ouro Podre, Alto da Raposa...).

Figure 15. **Close up of vanadinite crystals. Mina Grande quarry. Itacarambi (MG). Scale is one cm in length.**



Morro do Bule prospect.

Situated to the ESE of Belo Horizonte, it is easily accessible by the paved road from Belo Horizonte to Ouro Preto. Eighty km from Belo Horizonte, at Cachoeira do Campo, a little provincial road, passable all year round goes in 15 km to the Capão da Lana, locality famous for crystallized rutile. From this point a footpath runs to the Morro do Bule occurrence reached in a half hour walk.

Ribeira Valley.

This river is the boundary between the states of São Paulo and Parana.

The region is crossed by the paved road from São Paulo to Curitiba from which fork various provincial roads passable all year round:

- one road goes to the Panelas mine, 14 km from Adrianópolis, on the Ribeira side (State of Parana),

- another branch, seven km to the south of the same little town, leads, in 21 km, to the Rocha mine, in the center of the prospects (Bassetti, Esperança, Matões etc...),

- a third road, from Apiai, in the State of São Paulo, passes to the Furnas mine (21 km) and one of its branches reaches the Lageado mineralized area (32.5 km) with the Santana Nova, Lourenço Velho, Mamangava....prospects).

All the mine workings are presently abandoned with the exception of the Rocha and Panelas mines.

Observation: For more complete information on geology, metallogeny and exact location, please consult:

CASSEDANNE J.P. (1972) - Les gîtes de plomb et de zinc du Brésil et leur répartition linéamentaire.
Thèse Doctorat d'Etat nọ 157 Série E 336 p. 82 fig. pl. & maps Clermont-Ferrand (FR).

with 2 appendices: Catalogue descriptif des gîtes de plomb et de zinc du Brésil.
Volume I 596 p. 53 pl. (1968)
Volume II 595 p. 64 pl. (1970).

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KNECHT TH. (1932) - Nota sôbre alguns minérais secundários de chumbo da mina de Furnas. *Secr. Agr. Com and Ind. São Paulo.* Reprint.

__________ (1935) - Os mineraes e minérios do Estado de São Paulo. *Secr. Agr. Com. and Ind. São Paulo. Bol. Agr.* Nº único, 91 p., São-Paulo.

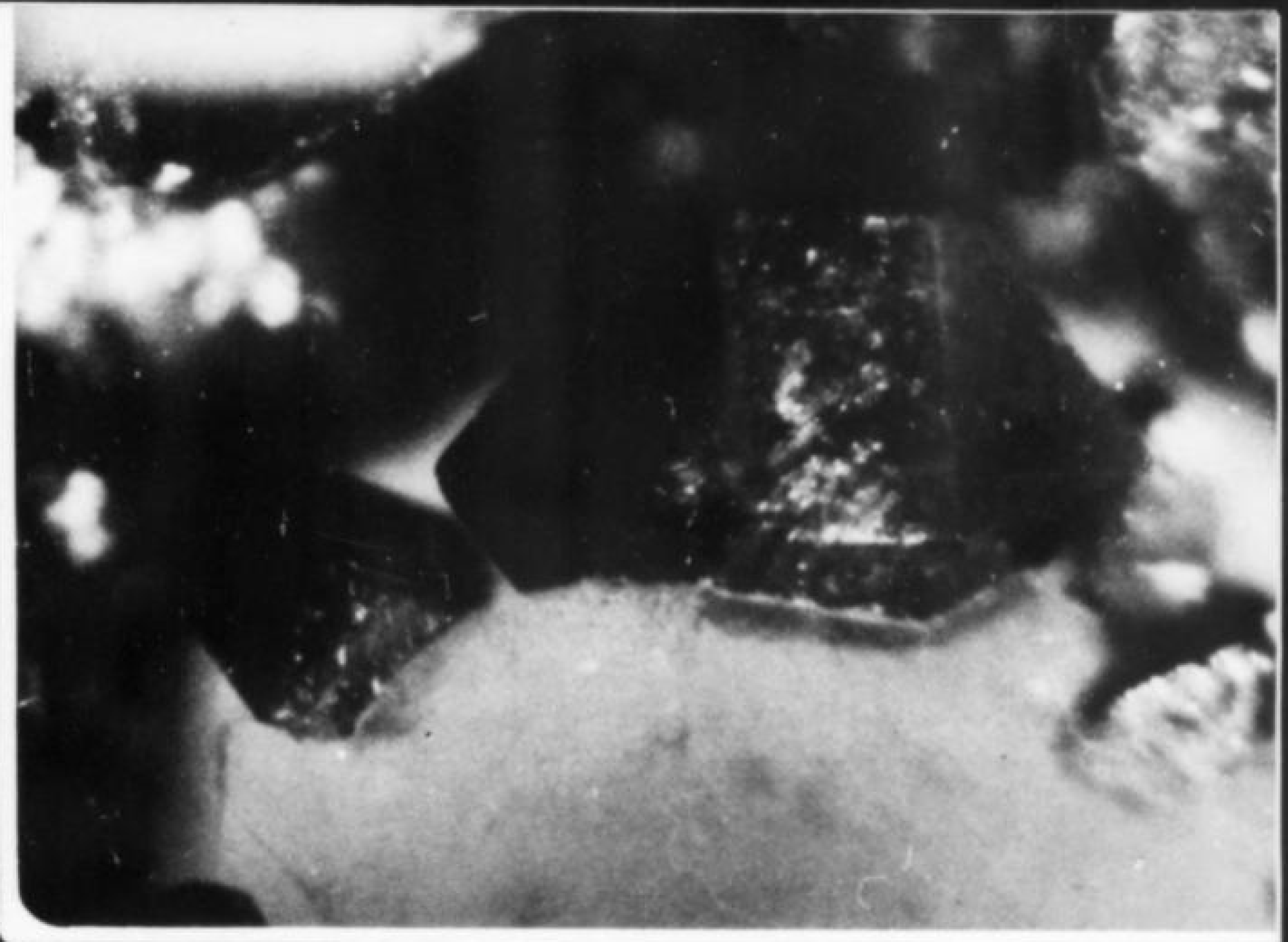

Figure 16. **Crystallized descloizite in a vug of pink dolomite. Mina Grande quarry. Itacarambi (MG). Crystal is three cm in size.**

All the specimens (with exception of no. 14) and photographs (with exception of no. 16 by Mrs. Violet Anderson - Toronto - Canada) by J. P. Cassedanne.

N.B.: Authors have no material to exchange or sell. Thanks for our colleagues J. D. Cadman and R. V. Gaines who kindly revised the manuscript.

THE THIRD ANNUAL MINERALOGICAL SYMPOSIUM

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Robert I. Gait - Royal Ontario Museum
Charles Key - Canton, Conn.
Neal Yedlin - New Haven, Conn.
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NOTE ON MINERAL STAMPS

"OUR MINERAL HERITAGE"

Pete J. Dunn

The block of four mineral stamps, newly issued on June 13, 1974, is fast becoming a collector's item. This set of mineral stamps was the most popular issue of 1974 and is now, a year later, becoming increasingly difficult to obtain. As the first mineral stamp printed in the U.S.A., this issue has been a hit with mineral collectors since its inception and soon will be sold out.

Mineral enthusiasts wishing to stock up on this issue may do so by ordering the stamps directly from the Philatelic Sales Unit, Washington, D.C. 20036. The mineral stamps are sold in sheets of 48 stamps for $4.80. There is a handling and postage fee of 50¢ per 500 stamps or less, which must accompany your order. Payment may be by personal check or postal money order. Supplies of the mineral stamp are limited and the sold-out date, although impossible to predict, might be very soon.

In addition, the U.S. Postal Service has included the popular stamp minerals in its "American Commemorative Panels" series. This panel, measuring 8-1/2 x 11-1/2 inches, consists of a set of four mineral stamps, three ink etchings of miners removing minerals from the earth, and a short five-paragraph statement on minerals and the mineral stamps. It is an attractive complement to a sheet of the stamps one might have put away intact for the future. The panel (#33) is also ordered from the above address and is sold for $2.00. The Postal Service considers the panel one item, and hence one may order 500 panels for the 50¢ postage and handling fee.

If you have procrastinated in getting a supply of mineral stamps, the time for action is now!

THANKS FOR HELP WITH THE NATIONAL SHOW

We would like to take this opportunity to thank John S. White, Jr., Barbara Muntyan, John Sinkankas, C. E. Withers, Walt & Pat Risch, Jacque Senter, Sam & Grace Neill, Cliff & Lillian Hicks and many others who made the Friends of Mineralogy Luncheon-Meeting at the Denver National Mineral Convention most successful. A total of 115 persons attended.

Many of the local members of FM are hoping that this type of meeting can be held at future National Mineral Conventions. This would give us an opportunity to meet new members, to know one another better, and for an exchange of information.

Don & Dee Belsher

by Pete J. Dunn
Dept. of Mineral Sciences
Smithsonian Institution
Washington, D.C.
and John H. Marshall, Jr.
Plumbago Mining Corporation
Rumford, Maine

INTRODUCTION

The mines known as the Loudville lead mines are a group of small mines which dot the landscape in the vicinity of the village of Loudville, Massachusetts. One of these, usually referred to as the Manhan River lead mine, is the largest, and has the most interesting mineralogy. The discussion which follows is based on a study of the minerals of this mine, but it should be noted that many of the workings in the area have very similar mineralogy, the main difference being the smaller amount of secondary minerals present. The Loudville mines should be of great interest to micromounters as they have produced very good specimens of secondary lead and copper minerals. Significant cabinet specimens have also been collected here in recent years and, since the dumps are extensive, many more will undoubtedly be found in years to come.

The Loudville mines are located near the village of Loudville, which is situated at the juncture of Northampton, Easthampton, and Westhampton, Hampshire County, in western Massachusetts. The deposit is located at 42° 17' 18" N. 72° 45' 45" W and the area is easily located on U.S.G.S. topographic quadrangle *Easthampton, Massachusetts (1964).*

The Loudville lead mines were described briefly by Silliman (1810), Emerson (1917), and Foster (1948). The minerals at the mine were described briefly by Yedlin (1957) and a list of all minerals found at the mine was published by Lincks (1967).

THE LOUDVILLE LEAD MINES

HISTORICAL BACKGROUND

The old lead mine at Loudville, on the banks of the Manhan River, is undoubtedly one of the most interesting metal deposits in Massachusetts. As well as having produced a considerable amount of good lead-silver ore, a large number of secondary minerals occur there. It has been a good collecting locality for 150 years and remains so today. The abundance of specimen material is due to the fact that it is a very old mine, and in early days the miners probably hand-cobbed the ore for the galena content, throwing the lead carbonates, sulfates, molybdate, and phosphate on the dump as being worthless. Hence a deep hole dug in the dumps often yields 150 year-old tailings which contain excellent mineral specimens.

The first discovery of the vein was made by Robert Lyman in 1678, and some work was done from 1680 to about 1690. A group of men, including Vermont's Ethan Allen, did a great deal of work in the period 1765-1770, and produced a considerable amount of lead, some of which was probably used for George Washington's Continental Army in the Revolutionary War.

The mine then lay idle, but was re-opened in 1809. At this time, Professor Benjamin Silliman of Yale visited the property and described the vein as a "very magnificent one". He went on to say: "wherever there is a cavity in the vein, the quartz has shot into numerous crystals, usually very regular, sometimes large, and often so beautiful and brilliant that the cavities look as if studded over with gems. Many of them are sufficiently perfect and beautiful to deserve a place in the choicest cabinets; and hundreds of specimens may be selected, among the rubbish of this mine, more interesting than a majority of those which are preserved in costly collections". At the time of Dr. Silliman's visit, the shaft was 60 feet deep, with a thirty foot drift at that level. There was a severe water problem, and two large 40 gallon buckets were constantly in use to keep the shaft dry, and to raise the ore to the surface. A map of the workings is reproduced as Figure 1.

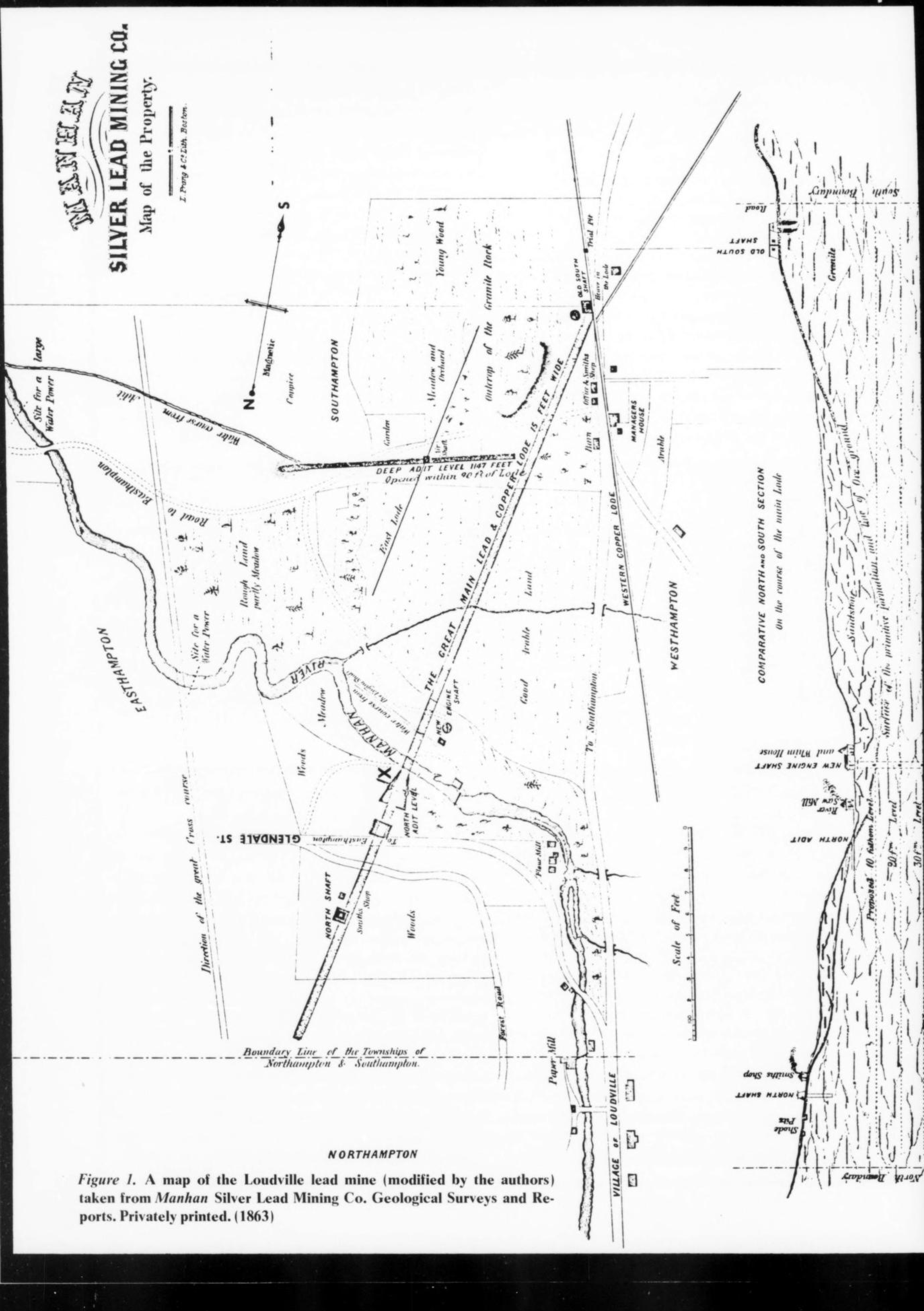


Figure 1. **A map of the Loudville lead mine (modified by the authors) taken from *Manhan* Silver Lead Mining Co. Geological Surveys and Reports. Privately printed. (1863)**

Work continued until about 1828, when the mine again became idle. The next recorded activity was in 1851. Previous work had increased the dimensions of the mine so that there were both north and south engine shafts, with an additional shaft on the south bank of the river (see Figure 1). Due to a continuing water problem, an adit tunnel at river level was driven toward the vein, for 1147 feet, and was still 100 feet short of the vein and workings.

At this point in its history, the property was handled in a manner that appears to have been of questionable ethics. It was sold to the Manhan Silver Lead Mining Company in 1863 for $500,000, which, if a true figure, would be an incredible price to pay for an idle mining property at the time. The Manhan Company proceeded to publish "Manhan Silver Lead Mining Company-Geological, Surveys and Reports, March 1863", a paper which seems to be a rather high pressure prospectus. This paper, consisting of three sections, opens with a short description, undoubtedly prepared by the Company, the last sentence of which states "The Manhan Silver Lead Company have, lying between the cities of Boston and New York, within one hundred miles of the seacoast, one of the richest and largest lead mines ever discovered in any country."

The second report in the paper is by Charles T. Jackson, Geologist and State Assayer, who describes the 1147 foot adit and states that only 90 feet remains to tunnel before reaching the rich vein. Jackson continues with a lengthly description of the workings, the 4000 foot lode, and forecasts that the mine is most worthy of operation. This report appears to be quite honestly written, and might be worthy of consideration today.

The last report is written by Mr. Charles R. Richardson, mining engineer. He states glowingly "I must congratulate you on possessing one of the most promising mines I have ever seen, either in England, Wales, or America", and "a more promising lode I never saw in my life", followed by "I consider the mine, if properly wrought, could not be exhausted in 100 years". He ends by writing "I beg to say, that I do not know, neither have I met with a miner or geologist yet in this country who has ever seen any lode at all approximating to this on your estate. I have very strong doubts if such a splendid lode is at the present day known in any part of the United States. I am positive that no such thing exists in the rich mining districts of England. I am intimately acquainted with all the chief mines of Cornwall, Devon, North Wales, and South Wales; but as a surface lode, I do not know of one equal in promise to the mine herewith described".

Although extensive machinery was purchased, there are strong doubts that any appreciable work was carried out by the Manhan Silver Lead Mining Company. The entrance to the 1147 foot adit was examined in 1971. The entrance was entirely caved in, but the tailings, even at the end of the dump, show no mineralization whatsoever, which indicates that the remaining 90 feet of tunnel was never completed. According to a report by Clifford Lyman in 1940, the Manhan Company entered bankruptcy in 1865, and shortly thereafter the equipment was purchased by the Chester Emery Company, then operating the emery mines at Chester, Massachusetts.

Whether a stock swindle or an honest venture, this was the last commercial activity at Loudville.

MINERALOGY

The primary minerals at the Loudville deposit were quartz, barite, calcite, galena, sphalerite, fluorite, and chalcopyrite in estimated order of decreasing abundance. The ore was deposited in granite which was subsequently eroded exposing the ore at the surface.

Subsequent supergene oxidation and alteration of these primary minerals produced a suite of secondary lead and copper minerals, some of which are found in hand specimens, and all in fine micromounts. These include silver, cerussite, anglesite, pyromorphite, leadhillite, wulfenite, malachite, smithsonite, hemimorphite, brochantite, linarite, langite, and wroewolfeite (Dunn, 1975). Of these, the lead minerals are most abundant and are found as fine microcrystals in dissolution cavities which are quartz molds after pre-existing galena, fluorite, and calcite. The majority of these dissolution cavities are cubic in form. Relict cleavage traces on the faces of the molds suggest a cubic cleavage indicating that the majority of these molds are after galena. Of special interest to micromounters is the perfection of forms, and the variety of forms present, on these secondary lead minerals. The order of deposition of secondary minerals appears to be anglesite, followed by cerussite, pyromorphite, and wulfenite. The specimens are very similar to those found at the Brookdale mine in Phoenixville, Pennsylvania.

The following is a brief description of some of the more desirable and beautiful minerals available as micromounts at Loudville. A list of mineral species found here is presented as Table 1. All have been validated by x-ray diffraction.

ANGLESITE

Anglesite is extremely common at Loudville and occurs as gray turbid crystals lining the previously mentioned dissolution cavities. It is also common as drusy microcrystalline coatings on residual anhedral galena crystals. Anglesite is infrequently found as clear, colorless euhedrons with a slightly pearly luster, and obvious orthorhombic symmetry.

CERUSSITE

Cerussite occurs at Loudville in a wide variety of habits. Most of the crystals are cream colored and only slightly transparent. The most common of the habits is the pseudohexagonal dipyramidal twin depicted in Figure 2, which is caused by cyclic twinning on {110}. Cerussite crystals up to 3/4 inch have been found in this habit, and when occurring in iron-stained quartz, are very beautiful specimens. Some of the other common habits of Loudville cerussite are shown in Figure 2.

TABLE 1
THE MINERALS OF THE LOUDVILLE LEAD MINES

Anglesite	$PbSO_4$	Hematite	Fe_2O_3
Aurichalcite	$(Zn,Cu)_5(CO_3)_2(OH)_6$	Hemimorphite	$Zn_4Si_2O_7(OH)_2 \bullet 2H_2O$
Barite	$BaSO_4$	Langite	$Cu_4(SO_4)(OH)_6 \bullet 2H_2O$
Brochantite	$Cu_4(SO_4)(OH)_6$	Leadhillite	$Pb_4(SO_4)(CO_3)_2(OH)_2$
Calcite	$CaCO_3$	Linarite	$PbCu(SO_4)(OH)_2$
Caledonite	$Pb_5Cu_2(CO_3)(SO_4)_3(OH)_6$	Malachite	$Cu_2(CO_3)(OH)_2$
Cerussite	$PbCO_3$	Pyrite	FeS_2
Chalcanthite	$Cu(SO_4) \bullet 5H_2O$	Pyrolusite	MnO_2
Chalcocite	Cu_2S	Pyromorphite	$Pb_5(PO_4)_3C1$
Chalcopyrite	$CuFeS_2$	Quartz	SiO_2
Cotunnite	$PbCl_2$	Silver	Ag
Covellite	CuS	Smithsonite	$ZnCO_3$
Cuprite	Cu_2O	Sphalerite	ZnS
Djurelite	$Cu_{1.96}S$	Wroewolfeite	$Cu_4(SO_4)(OH)_6 \bullet 2H_2O$
Fluorite	CaF_2	Wulfenite	$PbMoO_4$
Galena	PbS		
Goethite	$FeO(OH)$		

The wide variety of habits of cerussite at this mine has caused much confusion in the minds of micromounters visiting the deposit. Reported crystals of stolzite, and most reported occurrences of prismatic, lustrous anglesite have turned out to be cerussite in almost every case, when examined by X-ray diffraction. A simple acid test will easily differentiate between cerussite and anglesite. Cerussite also occurs here as blood red prismatic pseudomorphs after some unknown pre-existing mineral. These prismatic crystals are locked in the original quartz matrix. X-ray examination of this red cerussite yields no extraneous lines. Occassionally noted are light green sprays of radiating acicular untwinned crystals of cerussite.

COTUNNITE

Although Shepard (1866) reported cotunnite from the Loudville mine, none was found in the present study. Specimens of purported cotunnite owned by micromounters have been x-rayed and identified as barite. Shepard's determination was by chemical analysis and appears quite reliable. Inasmuch as cotunnite is water-soluble, and the present dump is partially flooded annually by the Manhan River, it is possible that cotunnite has occurred here but has since been dissolved away.

PYROMORPHITE

Pyromorphite is abundant at Loudville, and occurs in three distinctly different habits:

a) As brown reniform masses with noticeable zoning. These masses usually do not exceed 2 cm in diameter and are usually associated with the secondary copper minerals.

b) As beautiful green prismatic crystals comprised of the hexagonal prism $\{10\bar{1}0\}$ and pinacoid $\{0001\}$. These crystals are frequently very sharp, and resemble the crystals so common, in past years, at the Brookdale mine in Phoenixville, Pennsylvania. They are sometimes attractively zoned, parallel to $\{0001\}$.

c) As drusy green coatings, often with a velvety luster, which are comprised of tiny acicular crystals, quite uniform in length. This velvety pyromorphite is most commonly associated with wulfenite, which is implanted thereon.

WULFENITE

Wulfenite is the queen of Loudville minerals! It is found here in such an array of habits as to allow the serious micromounter the opportunity to collect a complete suite of possible wulfenite habits. Most Loudville wulfenite is tabular in habit, as shown in Figure 3. The steep pyramidal habit (Figure 3) is quite similar to micro-wulfenite from the Melissa mine, Yuma County, Arizona, and is usually associated with a bright green drusy pyromorphite. Another uncommon habit of wulfenite from Loudville is the elongated habit shown in Figure 3. This habit, in which the wulfenite is elongated on the c-axis, is quite uncommon. The length-to-width ratio is about 8:1 on observed specimens. These are but a very few of the habits of wulfenite at this locality. Wulfenite crystals up to 3/8 inch have been found in recent years.

Although previously reported from Loudville, all specimens of purported stolzite were proven to be wulfenite or cerussite in bizzare habits, by X-ray diffraction.

LEADHILLITE, HEMIMORPHITE, AND SMITHSONITE

Leadhillite occurs as discrete tabular pseudohexagonal crystals which are clear and colorless. Several have been noted which were equant, but the majority are quite thin.

Hemimorphite occurs as small radiating sprays of acicular crystals with the usual hemimorphite morphology. The sprays are usually some shade of gray or brown.

Smithsonite is an uncommon mineral at the mine, due to the relative scarcity of sphalerite in the primary ore. It is found as discrete rhombohedra associated with hemimorphite and chalcocite.

LINARITE, BROCHANTITE, AND MALACHITE

Linarite is the most common blue mineral found at Loudville and is usually associated with galena and brochantite. Brochantite is relatively rare at the locality and is often confused with the more abundant malachite. Here again, a simple HCl acid test will suffice for identification.

LANGITE AND WROEWOLFEITE

Of particular interest to collectors of rare species is the occurrence of these two minerals at this mine. Langite and wroewolfeite are both found as greenish-blue microcrystals implanted on a sooty chalcocite coating underlain by a microgranular covellite replacing galena. Langite is usually twinned and produces a re-entrant angle of 120° or 60°. Wroewolfeite, $Cu_4(SO_4)(OH)_6 \cdot 2H_2O$ (Dunn, 1975), is more greenish-blue than langite, and occurs as blocky, equant crystals, sometimes also associated with leadhillite. These two species are frequently intimately associated and both are rare at this locality. Loudville is the "type" locality for wroewolfeite.

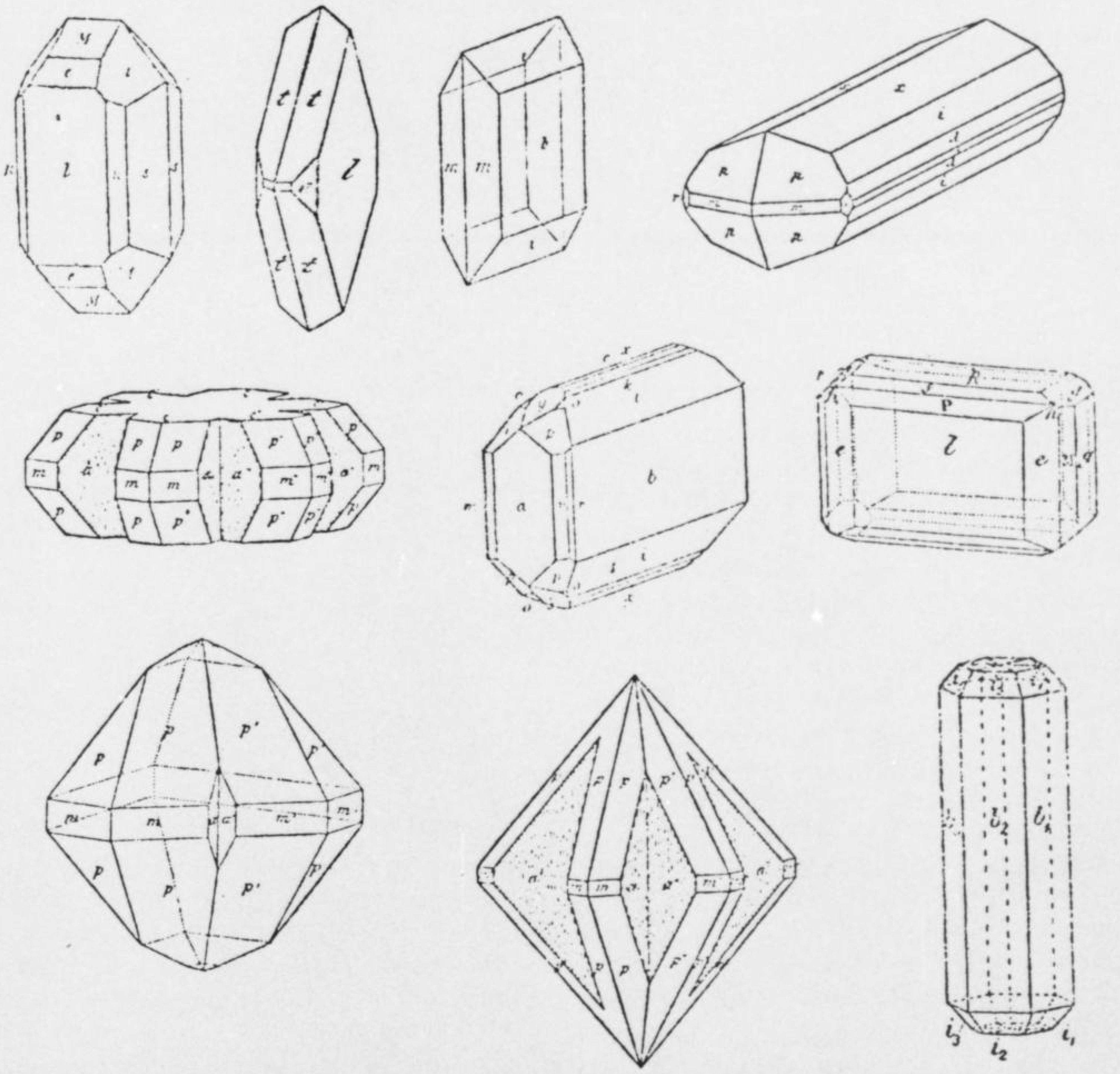
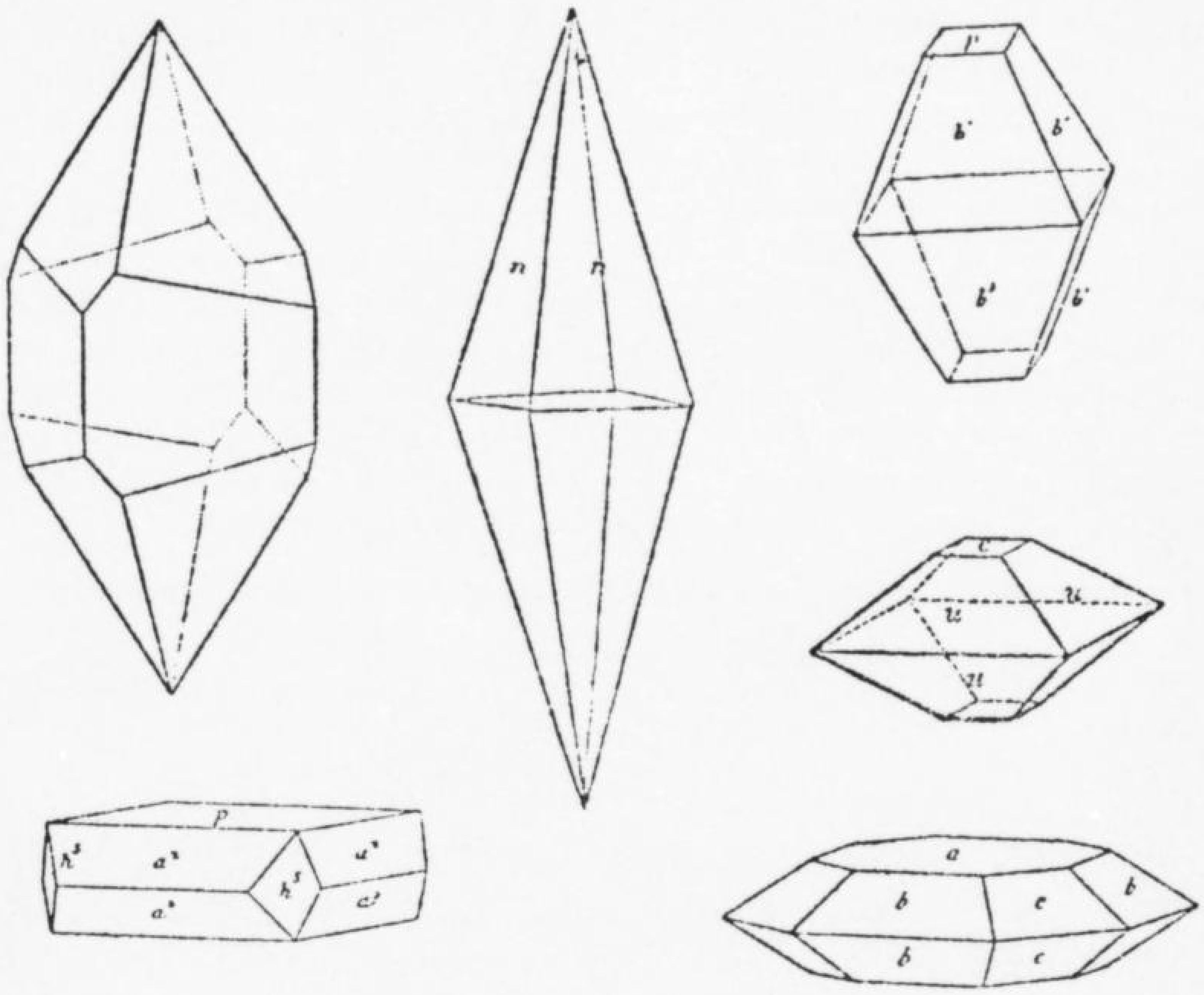


Figure 2. **Morphological habits of Loudville cerussite. (line drawings of non-Loudville crystals taken from Goldschmidt's *Atlas Der Krystallformen*)**

Figure 3. **Morphological habits of Loudville wulfenite (line drawings of non-Loudville crystals taken from Goldschmidt's *Atlas Der Krystallformen*)**



BARITE

Although present as one of the primary gangue minerals at the mine, barite also occurs as a late secondary phase and is found as opaque white euhedra usually implanted on iron-stained quartz.

PRESENT MINERAL COLLECTING

Mineral collecting today at Loudville is still excellent. Cabinet specimens have been found in recent years with wulfenite crystals up to 1/4 inch. Micromount collecting is almost always quite fruitful. The best collecting area is designated on Figure 1 with a large "X" and one can both collect and picnic aside the Manhan River in the shadow of Mount Pomeroy. Annual floods in springtime have left a residuum of messy clay on the specimens but this is easily washed off in the adjacent river. The area has some old mine shafts which, due to the heavy forest cover, are covered by leaves, and present a safety hazard. Many of the minor dumps are on the private property of nearby residents who do not welcome mineral collectors, so it is best to concentrate one's collecting efforts on the extensive dumps near the river, which are quite productive.

DIRECTIONS TO THE LOUDVILLE MINES

From Route 10, just south of Easthampton center, take Glendale Street for 3.2 miles. Take a dirt road to the left and park. Follow downhill trails to the river where collecting areas are obvious. If you cross the river on Glendale Street, you have overshot the dirt road.

ACKNOWLEDGMENTS

The authors are indebted to Steve and Janet Cares of Sudbury, Mass., whose constant attention to the nuances of micromounting was responsible for the inclusion of some previously unreported species from this mine. Thanks are due G. Fred Lincks who allowed his extensive Loudville collection to be examined, and to John S. White Jr. for a critical reading of the manuscript. Carl Francis made many suggestions for improvement.

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"a new mineral-almost-II"

Lanthanite. Modified after Lang, Phil. Mag. 25, 43, 1863.

by Arthur Roe
85 Calle Primarosa
Tucson, Arizona 85716

On May 11, 1974, the Baltimore Mineral Society took one of its eleven field trips of the year, this time to the Campbell Medford quarry, about thirty miles west of Baltimore. The trip was arranged and conducted by Herbert Corbett. (The Baltimore Mineral Society is composed entirely of those interested in micromounting; last September it sponsored its twentieth Micromount Symposium.) The Medford quarry is in marble with some slate; its products are used for road building and other construction purposes. On this particular day only one mineral of note was found, and that by W. P. Patch. It occurred in the slate, along with limonite, and consisted of small pink orthorhombic crystals which were thin radiating lath-like spears, greatly resembling strengite. About five specimens were found suitable for micromounting; Patch and Corbett gave two of these, marked strengite (?), to the author for identification.

An X-ray powder diffraction film revealed that the mineral was not strengite. Indeed, the pattern did not match that of any known material included in the Joint Committee on Powder Diffraction Standards file. The pattern slightly resembled that of an orthorhombic amphibole. I guessed that a new mineral was possibly at hand, and it was obvious that more material was needed for testing and analysis. Subsequently the Baltimore Mineral Society made two more trips to the Medford quarry, but none was found because the quarrying operation had gone beyond the exact locality of the May 11 discovery.

Pete Dunn, of the Smithsonian Institution, obtained a preliminary partial analysis of the mineral on the microprobe. This analysis, surprisingly, showed major lanthanum and cerium, with minor samarium and neodymium. A very small fragment was treated with CHl, in which it effervesced with considerable enthusiasm. It was thus established that the mineral was predominately a lanthanum cerium carbonate. Powder patterns of several rare-earth carbonates in the Smithsonian collection were made, including sahamalite, burbankite and lanthanite. The powder pattern of lanthanite from Saucon Valley, Pennsylvania, was identical to that of the Medford unknown.

This presented a problem as this pattern did not match the pattern of lanthanite published by the JCPDS; a pattern reported by Sabina and Traill (Geol. Surv. Canada, Paper 60-4, 57, 1960) on lanthanite from Bastnaes, Sweden. The authors noted that the pattern showed preferred orientation; that of the Medford material does not. A powder pattern of the Bastnaes material, on hand in the Smithsonian, proved identical to that of the Pennsylvania and Medford specimens. Thus there is evidently an error in the published data; further work is being done by Pete Dunn at the Smithsonian to clarify the data.

So, the high hopes of the Baltimore Mineral Society for a new mineral have vanished, but the club did have the satisfaction of finding a new locality for a rather rare mineral and five splendid micro specimens. They will keep looking!

Rosenhahnite, *A* Second Occurrence *W*ith The Zeolites Of The Durham Quarry

Durham, *W*ake County, North Carolina

by Pete J. Dunn
Department of Mineral Sciences
Smithsonian Institution
Washington, D.C. 20560

Rosenhahnite, a hydrous calcium silicate, was first described by Pabst, Gross, and Alfors (1967) as colorless to buff veinlets, with some euhedral crystals in open veinlets, in a calcium silicate rock. The original occurrence was in boulders in the bed of the Russian River, 5 miles north of Cloverdale, Mendocino County, California.

This second occurrence is in the Durham quarry, Durham, Wake County, North Carolina. The rosenhahnite occurs as irregular segregations, up to 3x6 cm, in massive intergrowths with prehnite, gyrolite, apophyllite, and okenite. Prehnite has formed adjacent to the wall rock, followed by the formation of a fine-grained pearly white gyrolite and rosenhahnite. A final deposition of euhedral

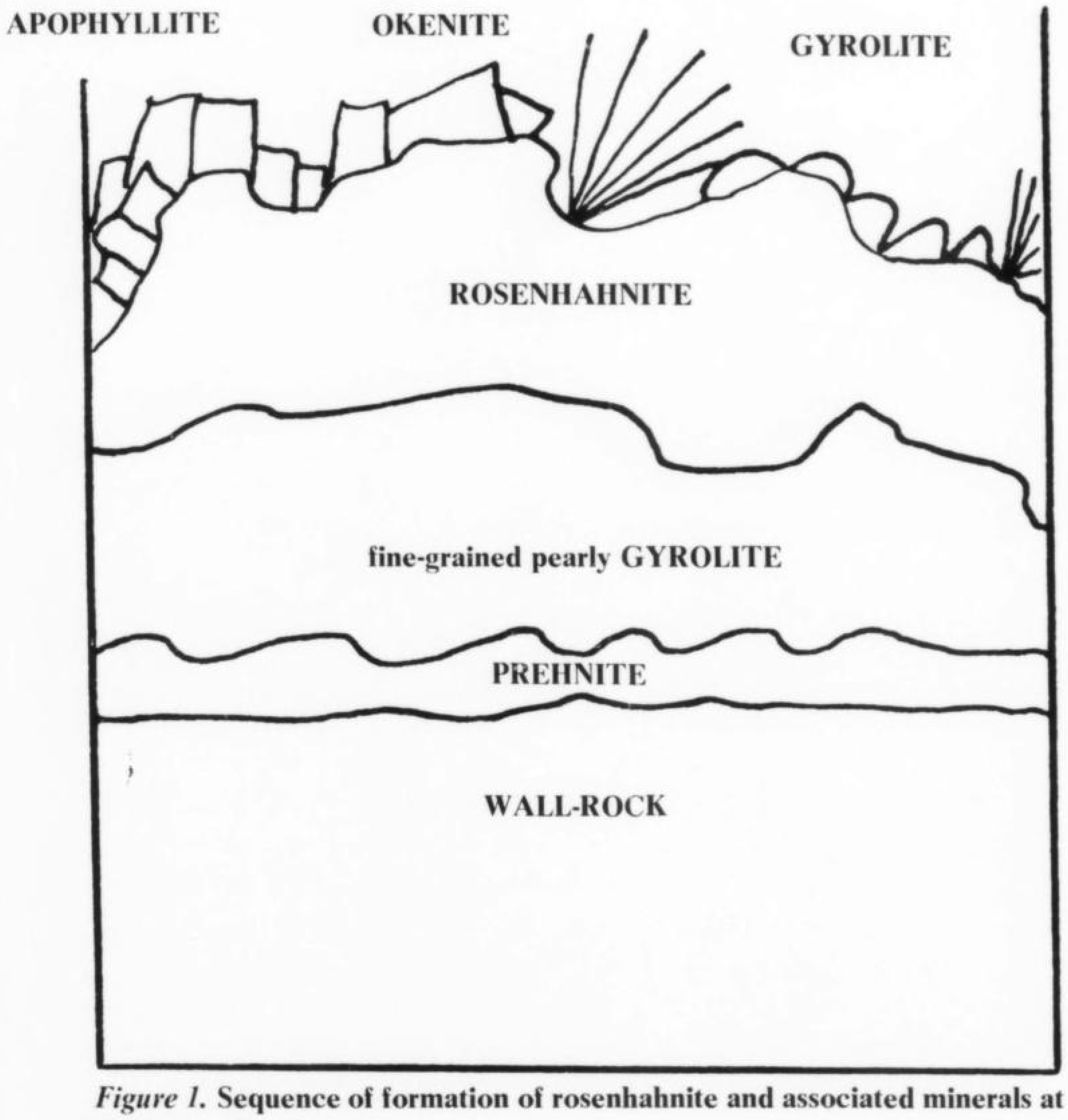

Figure 1. **Sequence of formation of rosenhahnite and associated minerals at Durham, N. C.**

TABLE I

ANALYSES OF ROSENHAHNITE

	Durham, N.C.*** (NMNH #133016)	Mendocino Co., Calif.*	Theoretical** $2[Ca_3Si_3O_9 \bullet H_2O]$
SiO_2	47.60	48.61	49.18
Al_2O_3	0.08	0.06	
TiO_2	n.d.	nil	
FeO	0.09	0.18	
MnO	0.40	0.006	
MgO	0.05	0.1	
CaO	44.74	44.83	45.90
Na_2O	0.00	0.21	
K_2O	0.02	nil	
BaO	0.03	0.77	
SrO	0.00	0.03	
B_2O_3	n.d.	0.001	
H_2O	4.80	5.2	4.92
CO_2	0.00		
Total	97.81	100.00	100.00

*From Pabst et al (1967). Spectrographic analysis recalculated to 100%. Ignition loss of 5.2% is after subtraction of 1.3% CO_2 (due to calcite impurity) from original ignition loss of 6.5%.

**From Pabst et al (1967).

***Silicon and calcium content accurate to ±2% of the amount present.

apophyllite, radiating sprays of acicular okenite, and spherules of bluish-gray gyrolite covers the rosenhahnite (Figure 1).

The rosenhahnite, which is massive, with no crystals noted yet, has a light yellow color, and resembles massive datolite upon casual observation. It is easily distinguished from datolite by the three cleavages {100}, {001}, and {010}, as datolite has no cleavage. The specific gravity is 2.89 (±0.02), measured by Berman balance with temperature correction.

Refractive indices, determined in sodium light, are: $\alpha = 1.624$, $\beta = 1.641$, $\gamma = 1.647$ (±0.003), in excellent agreement with the original values of Pabst, et. al. The birefringence is 0.023. The rosenhahnite gives a positive response to long wave ultraviolet radiation and fluoresces a light orangish-pink. There was no response to short wave ultraviolet.

The x-ray powder pattern is identical to that of the type rosenhahnite. The mineral was analysed with an electron microprobe using an operating voltage of 15KV and a sample current of 0.30 Ma. The sample was analyzed for carbon in view of the calcite impurity in the original rosenhahnite. The chemical analysis for carbon and total H_2O was performed using the Leco carbon analyzer for carbon, and the standard Penfield method for total H_2O. The analysis is presented in Table 1.

The original formula given by Pabst *et al* is $(CaSiO_3)_3.H_2O$. A recent preliminary structure report on rosenhahnite (Jeffery & Lindley 1973) indicates that the formula should be written as $Ca_3(Si_3O_8)\ (OH)_2$. Considering that the original occurrence of rosenhahnite was in rocks with minerals indicative of high pressure (Pabst, pers. comm.), and that the experimental work of Pistorius (1963) indicated that his synthetic phase (later proven to be rosenhahnite by Pabst) was also a high pressure phase, this occurrence of rosenhahnite in a low-pressure zeolite assemblage is of special interest.

The author is indebted to Ms. Julie Norberg for a chemical analysis for carbon and total H_2O, and to John S. White, Jr. for helpful suggestions, and a critical reading. Special thanks are due Dr. A. Pabst for helpful suggestions for improvement.

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Photographing Swiss Micromounts

by Wendell E. Wilson
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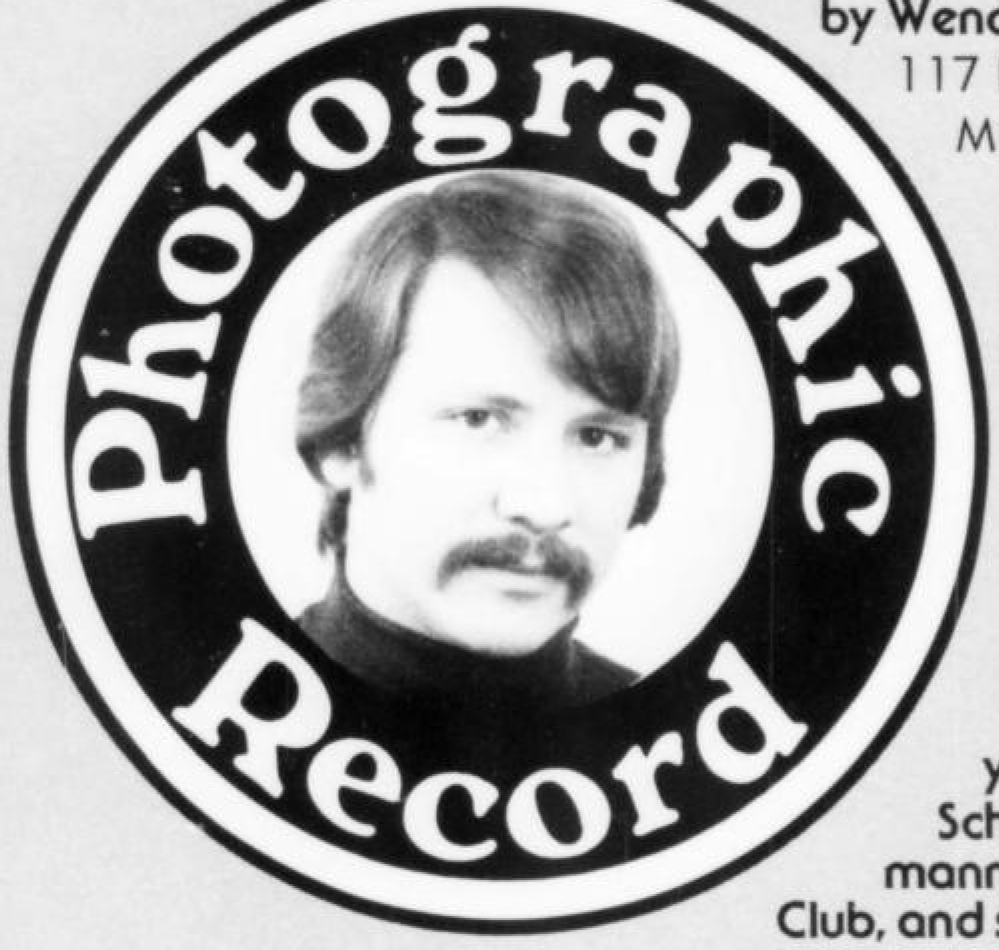

One of the nice aspects of writing a column is the people you meet through the mails that you never would have met otherwise. For some time now I have been corresponding with Dr. Eric Offermann in Switzerland; I was so impressed with his photographic skill and style that I asked him to send some samples of his work for reproduction here. Dr. Offermann (a doctor of law) is building a considerable reputation among Swiss and German universities, institutes, museums and collectors by the publication of his photos. He has been perfecting his photographic technique with minerals for about 16 years, and is a regular contributor of articles and photos to Schweizer Strahler. A mineral collector for 20 years, Dr. Offermann is currently an officer in the Basle Mineralogical Collector's Club, and specializes in Swiss minerals. This fine group of photos should interest not only mineral photographers but Swiss mineral fans, micromounters, and mineral lovers in general. Dr. Offermann's comments regarding each photo are given in the figure captions.

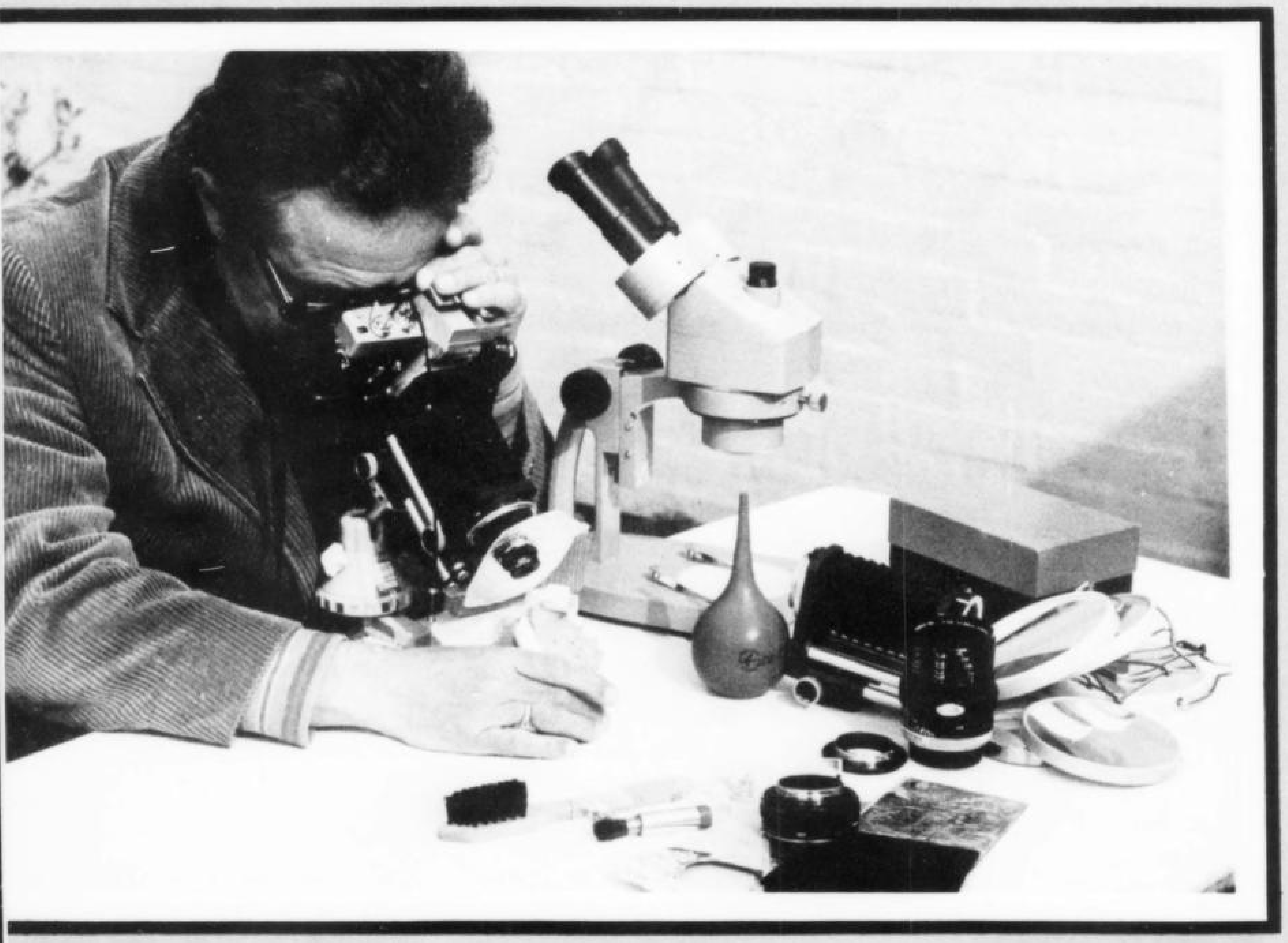

Figure 1. Above, I do most of my photography outdoors with my Minolta camera firmly attached to the white (no color reflections!) table by a table clamp of the kind obtainable at most photography shops. I use one bellows, as shown here, or sometimes two connected together for longer extension and greater magnification. I also use a Zeiss Luminar 25 mm lens especially designed for macrophotography. When the viewfinder image becomes dim it is necessary to shield the eye as shown here, leaving the other eye open; for high magnifications it is sometimes even necessary to cover one's head with a black cloth...you can imagine what an ordeal this can become under the blazing July sun! Other equipment includes two small, soft brushes, one of them antistatic, and a rubber bulb blower to clean dust from specimens. One should never blow dust away with the mouth since micromounts can be easily and irreversibly soiled. With high magnifications dust can be an annoying problem because it may not be visible through the viewfinder when focussing at maximum aperture, but will show up on the slide after stopping down for the shot.

In this case I am working facing a hazy sun in order to maximize brilliance of the finished slides. To fill in deep shadows a wrinkled aluminum foil collar is placed around the lens as shown. The collar is particularly effective with lustrous metallic minerals such as pyrite, hematite, and fresh galena, since only indirect light will yield good results. Background papers are rarely used with micromounts because the matrix will usually form the background; I think of this as mineral photography in its purest sense, as opposed to specimen photography in which background devices are used. Also visible on the table are several shaving mirrors which are sometimes used to reinforce the light intensity on darker days.

The binocular microscope is used to check for dust.

Daylight photography eliminates many problems related to light sources, but creates its own problems, not the least of which is weather. The "color temperature" of the sky can vary from day to day, and inclement weather of course can put a temporary hold on all your work. It takes experience and flair to produce dramatic photos from daylight, but purely documentary shots are quite simple.

Figure 2. Right, shown here, surrounded by lights for indoor photography, is a handy specimen stand known in Switzerland as a "Kugeltisch" (Anyone know the American name for this gadget? — WEW). A specimen is clayed to a plastic lid, which is in turn clayed to the top of the hemispherical table. The hemisphere, which can be made with plaster and a rubber ball cut in half, sits in a cylinder on which it can be moved around in many ways to adjust the height and orientation of the specimen. When the right view for the shot has been selected, a wooden wedge is fitted under the end of the bellows to eliminate vibration.

Figure 3. Left, one of my German friends uses these swans-neck fiber-optic lights. This is a very effective device; I use similar (but less expensive and less effective) "light pipes" which attach onto the lens of my slide projector. The advantages are that the light is maneuverable, focusable, and cold.

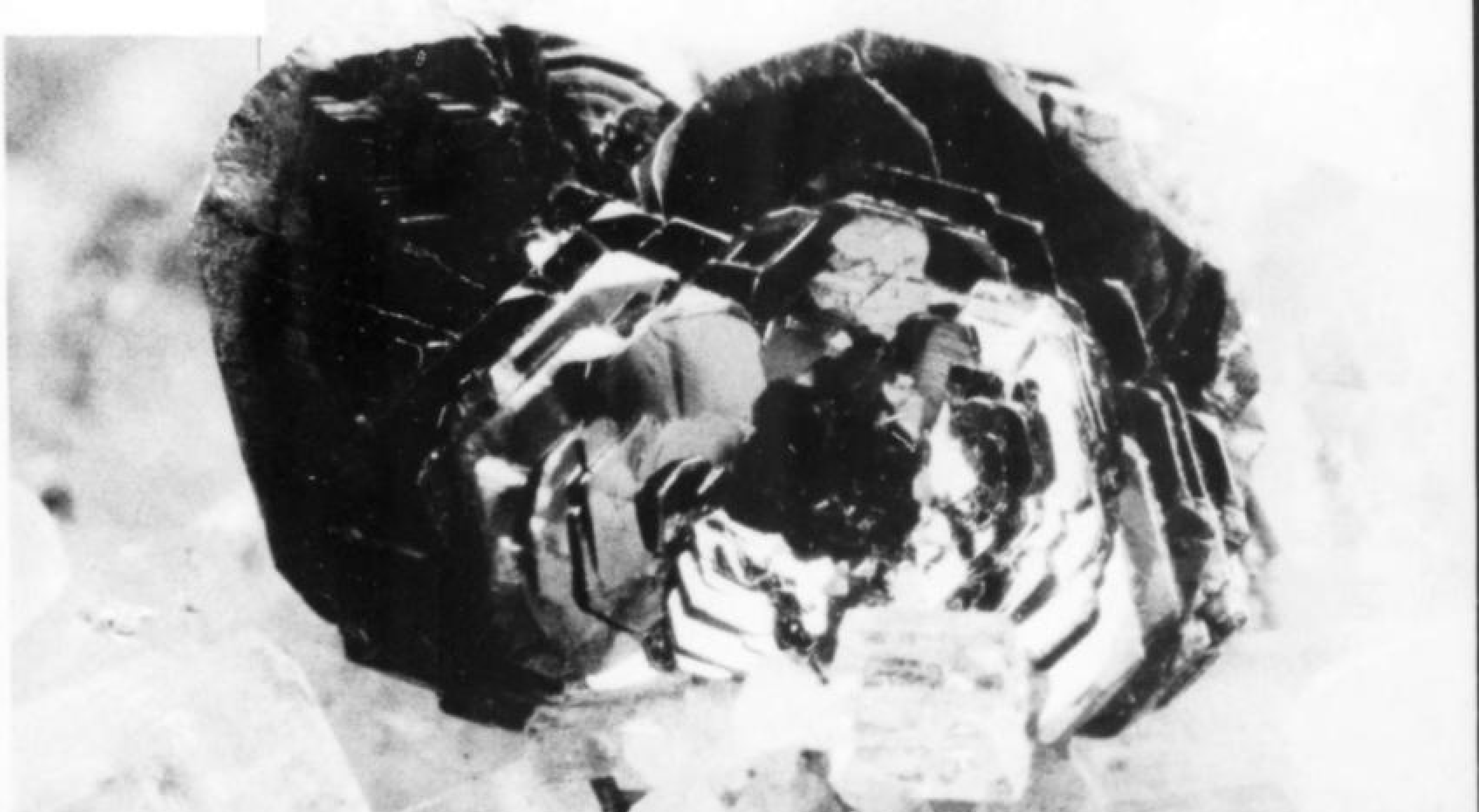

Figure 4. Right, hematite "Eisenrosen" with adularia on matrix, from Fibbia, St. Gotthard, Switzerland. Undamaged eisenrosen of several cm are next to unobtainable these days. This tiny group (3 mm across) was on a larger, rather poor specimen which I obtained at the last Zurich show for only about $3. The mineral photographer is obliged to accept the challenge of such tiny miracles and disclose their beauty to the public! An aluminum foil collar reflector was used for the photograph.

Figure 5. Above, xenotime crystals with stilbite on matrix from Alter Bach, Valais, Switzerland (collection of L. Volken, Fiesch). Xenotime is one of the rarest of Swiss minerals, and this is the most beautiful specimen of it I have ever seen. The group is only 3 mm across, so it was sheer luck that the minute honey-brown crystals were detected. This shot was taken in daylight on a cloudy day.

Figure 6. Right, apatite crystal on adularia from La Bianca, Grisons, Switzerland (collection of E. Offermann). The crystal measures about 2 mm and is not an uncommon specimen, although many are overlooked because they are so small or are covered by chlorite. This photo is an example of purposely reduced depth of field. It was necessary to put the faces and debris on the back side of the crystal out of focus so that the faces on the front side would be well defined. Stopping down just a little more, so that the rear face edges show up hazily, might have been even better.

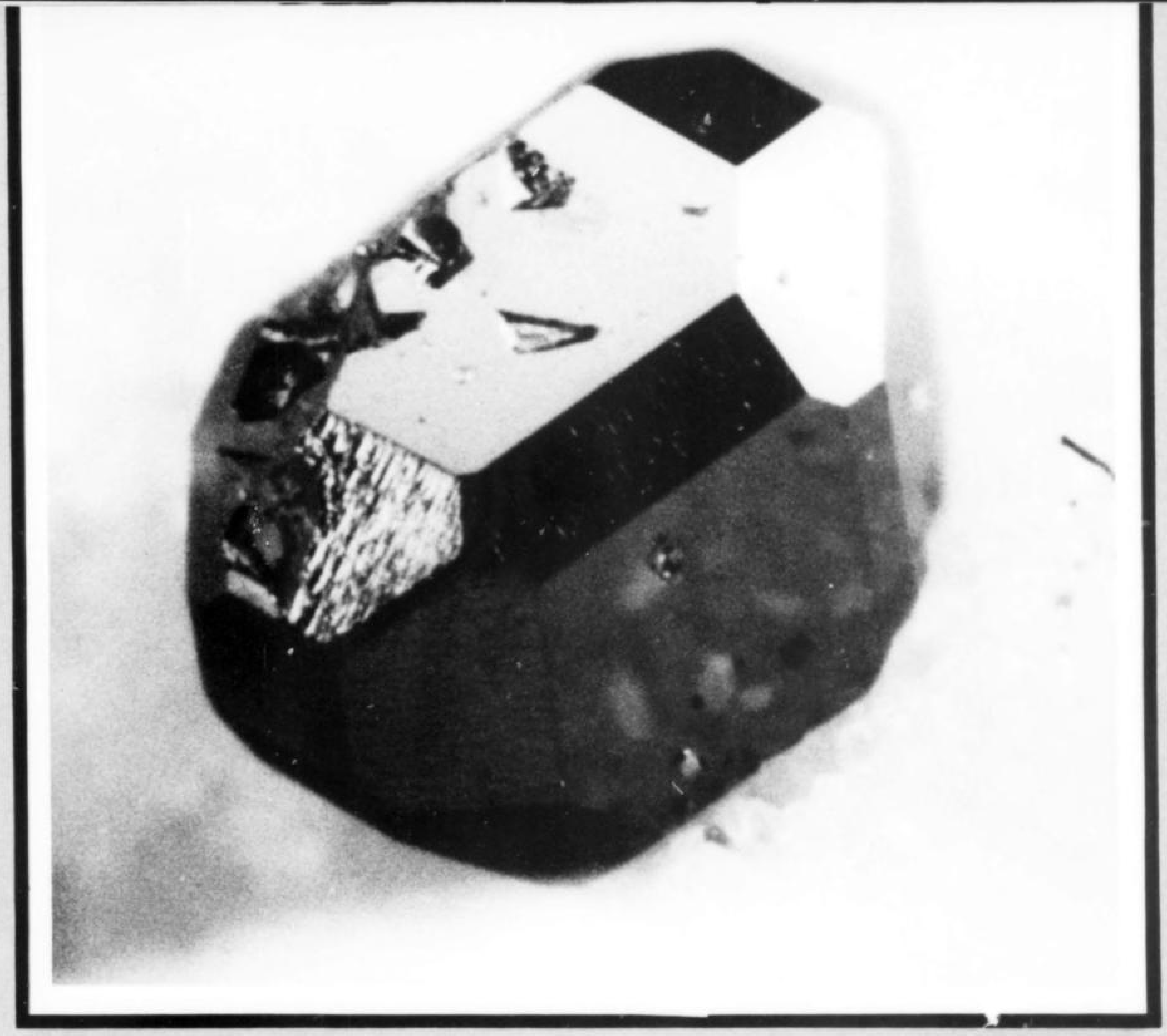

Figure 7. Above, tennantite, var. binnite, from the world-famous Lengenbach mine, Binn Valley, Valais, Switzerland. The mineral, a sulfosalt, is opaque and brilliantly metallic, a first-order challenge to the photographer...especially since the crystal measures only one millimeter in diameter! The matrix is white dolomite (collection of A. Gerber, Aarburg). Artificial light with foil reflectors. **Figure 8.** Below, brookite crystals, found last year at an undisclosed locality in the mountains of the Canton Glarus, Switzerland (collection of E. Offermann). Compare with the North Carolina specimen on the cover of the Record, Vol. 5, No. 4. These crystals measure about 2 mm.

Figure 9. Above, calcite crystals, Jura Mountains, Arisdorf, near Basle, Switzerland, (Collection of E. Offermann). Until the Swiss micromounters took hold of them a few years ago, the Jura mountains were mineralogically in the shadow of the more famous alps, and were known only for their many varieties of calcite. This textbook scalenohedron measures about 1 cm, and was lighted artificially to bring out the surface textures. **Figure 10.** Right, celestine, Jura mountains, "Schoren", Bernese Jura, Switzerland (collection of E. Offermann). Although virtually unknown from the alps, celestine is the star mineral of the Jura mountains. These crystals are about 5 mm in height, and were photographed in artificial light. The foreground is calcite.

Figure 11. Left, strontianite aggregates on lustrous pyrite, from Trimbach, Canton of Solothurn, Switzerland, (collection of E. Offermann). Strontianite is very rare in Switzerland; this group, which measures only 1.5 mm, was found in a cavity in an ammonite!

Figure 12. Right, goethite crystals with celestine from the abandoned Herznach iron mine, Argovian Jura, Switzerland, (collection of R. Eichin, Basle). The matrix is calcite; the group measures about 1 cm across.

Figure 13. Right, titanite penetration twin on matrix from Schwykehle, Uri, Switzerland (collection of E. Offermann). Such specimens as this 7 mm crystal are fairly common. **Figure 14.** Below, azurite crystals (small) and malachite wires on a quartz crystal, from Obersaxen, Grisons, Switzerland (collection of R. Eichin, Basle). This bizarre specimen was discovered only last year and is something quite exotic for Switzerland; the occurrence has yet to be described.

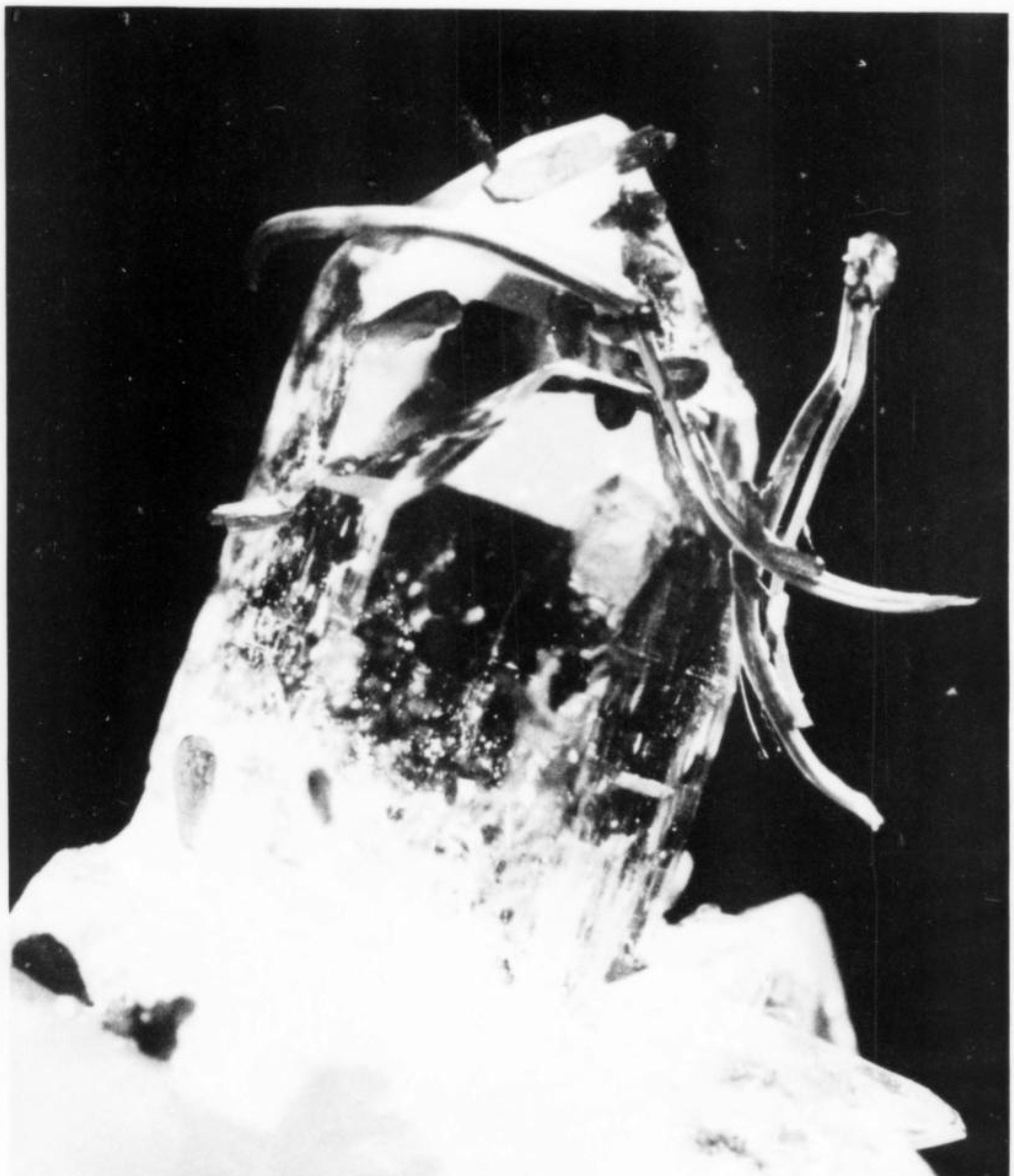

Figure 15. Below center, gadolinite crystal on matrix from Piz Rondadura, Grisons, Switzerland (collection of E. Offermann). This mineral is among the extremely rare in Switzerland, and the 1.5 mm greenish crystal is exceptionally well-formed. **Figure 16.** Right above, brookite crystals from La Bianca, Grisons, Switzerland (collection of E. Offermann). These crystals have unusual shapes for Swiss brookite, and measure less than 1 mm each. They were identified by the Basle Mineralogical Institute.

NOTE: Dr. Offermann is fluent in English, so readers may feel free to write to him at the address given below. — WEW

Dr. Eric Offermann, Lettenweg 16,
CH 4144 Arlesheim, SWITZERLAND

Figure 17. Right, wulfenite with tiny brookites, cerussite and quartz on galena, from Lungen Valley, Maderane, Switzerland (collection of G. Günther, Bärschwil). Wulfenite is very rare in Switzerland, and this association is particularly uncommon. The field of view is about 8 mm wide.

yedlin on micromounting

Since the last column was written some months ago, we've attended a number of shows and meetings, in California, in Maryland, in New Jersey, in Toronto and elsewhere, and every event was a surprise, a new experience. The first weekend in February ushered in the Southern California Micromount Society's meeting. The organizers of the event, Marion Godshaw, Juanita Curtis, et. al., were handed an impossible task. A few days before the affair they were notified that the convention hotel in Santa Monica was closing its doors. Nothing daunted, they managed to arrange a new meeting place in Torrence, with superb facilities, and at a reasonable cost. Then the work began. Telephone calls were made to all registered and potential attenders throughout the United States and Canada. NO ONE wound up at the wrong meeting place, even though some were met at the airport and personally escorted to the meeting place. Fabulous work, for which members of the organization are hereby elevated to micro sainthood.

The meeting was great. The theme of the session was the lead minerals. John Sinkankas began the session Friday night with an overall introduction to the subject. Bill Wise followed with a discussion of the origin of the lead deposits, followed by Paul Desautels on lead mineral families and associations and then Neal Yedlin on some of the lead minerals and associates from Laurium, Greece. Sunday came Richard Jahns, who queried, "If gold is where you find it, where's the lead?" As a change of pace, Sunday afternoon's program was a fine discussion by Vince Morgan on the borates of Boron and Death Valley.

As usual, the after-hours program was in the capable hands of Lou Perloff, who showed slides of his lead minerals and of a series of world-wide phosphates.

Prior to the meeting a number of us visited the mineral establishment of Wayne and Donna Leicht (Kristalle) at 332 Forest Avenue, Laguna Beach, California 92651. It was an eye opener. In addition to superb historic and cabinet type specimens, there were available hundreds of specimens of micromount material, available by catalog or personal selection. And mining tools, lamps, and loads of other memorabilia.

A week later to Tucson, driving with Dave and Kay Jensen through Yuma, stopping at Millers' for copper, adamite, hawleyite (isometric CdS, dimorphous with greenockite) and others, and arriving next day at the promised land. Tucson was, as always, only more so, with the hotels set up as mineral bourses, and some of the dealers and buyers arriving a week ahead of the scheduled convention to "get in on the early action" and to catch "sleepers", things underpriced or "one-of-a-kind" items. Mineral of the year was the new lazulite, from the Fish and Blow Rivers, in Yukon Territory, Canada. Large transparent crystals, deep blue, with many new minerals associated, from a sedimentary deposit, not a pegmatite, and available by air only. Superb micromounts can be made from this material. The cost is high, but one specimen can provide many collectors with good micromounts. There were people from areas throughout the world - Canada, Brazil, Argentina, South and Southwest Africa, Germany, Switzerland, England, Belgium, Spain, France, Czechoslovakia, Australia and others. Local Tucson people were extremely hospitable. George Bideaux again waved us on to an upper right hand cabinet drawer for micromount material he'd been saving; Susie Davis had the twisted coppers from Ray, Arizona, described in the *Mineralogical Record* of November-December, 1974, as well as a supply of kinoite ($Ca_2Cu_2Si_3O_{10}\cdot 2H_2O$), purchased in its entirety by Wards, from whom it is presently available. Almost all of this mineral occurs in needle crystals embedded in clear apophyllite, making superb micromounts. We bought at the show a fine small piece of Red Cloud wulfenite for fifty cents, from which we made 2 good mounts. We saw, at a hotel dealer, a Tsumeb azurite, big, good, but a bit grundgy on one side, priced at $17,000.00. Which proves that there were specimens to meet everyone's pocketbook.

There were meetings everywhere. Friends of Mineralogy held 3 - a dinner, a board of directors, and a general membership conclave. It was arranged that at the 1976 affair there would be a joint meeting of Friends of Mineralogy and the Mineralogical Society of America - papers, field trips, discussions, and plans for the future. The Mineral Museums Advisory Council met at the Desert Museum, and were luncheon guests of the museum management. Thirty-four members attended. Speakers at the convention were diverse in their subjects. Paul Moore, Richard Hauck, Paul Desautels and others discussed the minerals of Franklin, New Jersey, recognition of phosphate minerals, nomenclature, and a variety of subjects. A great meeting.

Inflation has hit home. We've been using Duco cement since we began doing micromounts - since about 1946, and have watched the rise of the cost of a 1 3/4 ounce tube from 19 cents, through 25 cents, 29, 35, 49, 59 to a recent 69 cents. And here's the kicker, it was so marked for a mere 3/4 ounce tube! It was all "gussied" up in a plastic container, and was being sold at a national chain. That's roughly 614 percent, and that's what we call inflation. You'd think the stuff was sugar. If you can find any at the old price lay in a supply. Or use Testors, or Johnsons. We prefer Duco, but others work fine, too, and quickly.

And speaking of sugar, we drove to Nogales, Mexico, some 65 miles south of Tucson, as was our wont, to see what we could see. Plenty of tourists, but this year they weren't buying silver, or blankets, or perfume, or the million things usually bought at Nogales. They were buying sugar, at about 12 cents per pound! Connie Hurlbut, an old friend, with whom we drove to Mexico, scoffed at our own purchase. We found a shop that had old iron - branders, spurs, bits, rowels, and we spotted an old miner's lamp, grimy, dented, rusted, but we just had to have it. Got it home and cleaned and polished it. Could finally make out the inscription. It said "Lamp Dewar Mfg Co., Brooklyn, N.Y. Patented 1918". How about that?

Let's get some micromount notes included. Kipfer in Switzerland, uses, on occasion, sipping straws as pedestals. Easily cut with a scissors and re-rounded, they can make fine tools. A drop of cement at the base, and any surplus goes up the hollow straw by surface tension. Use a black plastic box cover as a holder for testing minute acid reactions. A small drop of the liquid, a small fragment of the mineral placed in the container, and under the 'scope you can push the fragment into the acid, watching for results. Calcite and aragonite bubble angrily; malachite and azurite somewhat less so, with dolomite and smithsonite showing few, but definite reactions. Use the lowest powered objective available, so that there is a good 3 or 4 inch working distance between the jumping acid and the lens of the microscope. Reo Pickens sends minute crystal clusters by punching holes in corregated cardboard, stuff that's at least an eighth inch thick. Six or seven or as many holes as you want to send specimens. A small bit of paper, larger than the holes, held in place by scotch tape, seals the openings. The whole is cut to envelope size, and sent through the mails.

Laurium, Greece, isn't the only place where a series of minerals developed from mining slags. Bill Henderson uncovered an old dump of a brass foundry near Stamford, Connecticut, some years ago. The brass shavings (essentially copper and zinc) had disintegrated, and there were minute crystals of malachite, azurite, brochantite and sphalerite among the debris. Recently Roger Harker, of Leicester, England, sent some ancient Roman slags, lead slags, 13th century, that he'd found at East Roman Gravels mine, Shelve, Shropshire, England, in1974. Gas vugs in the material show copper and lead carbonates, some sulphates, and things not yet determined. Whether or not you want to collect such is not for us to determine. They provide a whole field of research, and could include mineral condensation from underground fires; the boleite that Dick Thomssen found in the outflow of a silver-copper mill at Philipsburg, Montana; melanterite from the dumps of a pyrite operation; chalcanthite formed in mine pools after evaporation of mine waters; and a host of others, including what happens to some of your specimens in airtight boxes, which alter nevertheless. Roger visited the Eastern Federation convention at Portland, Maine, saw the minerals at Harvard, the American Museum in New York, and was on his way to the Smithsonian as this was written. A day at our domain, some swapping of specimens, books and old labels, and he was on his way to see the country. He and the Russell Society in England requested our presence at a meeting in England. We expect to make it.

Two micromount collections were given to the Smithsonian recently. Jo Zimmerman Darnell, a specialist in zeolite minerals, presented her collection to the Institution, some 3400 or so mounts; and Cecil and Julia E. Graves, of Colorado Springs, who'd been collecting micromounts for 40 years, gave about 8500 specimens to the museum. We weren't aware that there were more than a couple or so of such vast numbered assemblages. But we saw them, and can describe them as being very fine, for the most part. About half are in oblong cardboard boxes, first used by the original micromount collectors in the Philadelphia area. The latter half of the assemblage is mounted in plastic boxes, standard 7/8 inch size. All are in cardboard trays, holding twenty mounts, and are slid into wooden boxes, 9 layers in each. About 600 species are represented, with specimens from many, many localities; truly a fine reference collection. A catalog is included, and this proves an important part of the assemblage, for the data contained therein are of great value. The listings are in alphabetical order, (as are the actual specimens) and contain the name, formula, locality, and source of the material - i.e.: W. R. Willis, O. A. Reese, P. R. Cosminsky, J. E. Byron, A. G. Pohndorf, Arthur Roe, William Oke, Lazard Cahn and the like; we've jotted down some 48 such names from the random handful of specimens we'd observed. These collections, added to the Smithsonian's original micromounts (contributed by Paul Desautels when he joined the Smithsonian staff, and of Peter Leavens when he did postdoctoral work there) now make this the most formidable array of minutiae.

Arthur Roe, who catalogued the Bosch collection purchased not too long ago by the Smithsonian, has settled in Tucson, Arizona. During the course of his work there we had a number of general conversations, and we elicited some interesting facts from him. Such as the fact that a box with E. S. on it was a mount prepared by Ernest Schernikow, a student of Lazard Cahn. Schernikow was at one time secretary of the New York Mineralogical Club, and was a close friend of George F. Kunz. Roe told us recently that as a young man he studied chemistry under W. R. Willis, and geology with Cecil Graves at Colorado.

He was an executive with the National Science Foundation, and all his life was interested in the promulgation of this facet of man's existence. We, and his many, many friends wish him and his charming wife nothing but the best. His presence there makes an additional reason for visiting Tucson in February.

A letter from Bill Ulrich, 404 McNulty Drive, New Hyde Park, New York 11040, deserves publicity and some sort of action. It goes: "Dear Neal. In these inflationary days of limited motoring the micro mineral collector is finding it difficult to visit distant localities. The Micro-Mineral group of the Nassau Mineral Club has found a partial solution. Several times during the year a simulated field trip to a classic mineral locality is part of our monthly program. The workshop is preceded by a slide presentation of the mine and its minerals. Small boxes of specimens, previously reduced to "bite size" on the trimmer, are given to each participant for viewing under his 'scope. Written information of the mine and its minerals is made available, and mounted standards are provided for comparison and confirmation of species identification. These programs have been highly successful. An extension of this idea, 'packaged' field trips could be exchanged by clubs that have wide geographical separation. In this way a New Yorker could visit glamorous California locations and the Californian could visit St. Hilaire, Quebec, with a minimum of expense and effort." Now there's the soundest idea we've encountered in many years of mineralogical work. We suggest you set up some such field trip. Try it out on your own membership, and then communicate with Bill Ulrich. Better yet, let us know that you have such a set-up ready, and we'll publish it in this column. Then you can do direct communicating. Try it. It just has to work.

The Canadian Micromount Association held its annual meeting in Toronto on April 26 and 27th last, and an unusual event took place. The subject was St. Hilaire minerals, and a competitive arrangement was featured. A book on the minerals from this area is being written by Drs. Joe Mandarino of the Royal Ontario Museum and Guy Perrault of the Ecole Polytechnique of Montreal. They plan to incorporate many colored photographs of specimens, with Violet Anderson of Toronto doing the camera work. To draw on the best specimens from collections of these minerals a prize set-up was arranged. There were thirteen winners; first was $100; second $75; third $50; and ten honorable mentions at $10 each. All specimens were to be of micromount size, but mounting techniques, labeling and other carpentry were not considered, nor did the specimen have to be mounted in any type box. The judges were Drs. Mandarino and Perrault, and We, Us, Neal Yedlin.

Well, specimens came in from all over, some by mail, some hand carried and some by a combination of both. The specimens were numbered, the owners' names covered and bias eliminated, except, perhaps, of subjective likes and dislikes, which is why more than one judge is selected. The details of selection and narrowing the list of some 300 entries are not needed here. Every specimen was looked at at least three times under the microscope. The winners at least twice as often. The results were remarkable. First: William H. Henderson, Jr. for a superb narsarsukite; second: Marcelle Weber for labuntsovite; third: Marcelle Weber for twinned muscovite. Among the honorable mentions were Henry Budgen, William Henderson, Milt Stitt, James Taparowsky, Peter Tarassoff and Quintin Wight. It should be a great book.

Buy and use a good mineral book, and get the new edition of the *Glossary*.

Neal Yedlin
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New Haven, Connecticut 06515

The Record Bookshelf

***The Collector's Guide to Rocks and Minerals*, by James R. Tindal and Roger Thornhill. Van Nostrand Reinhold Co., New York. 1975, 256 pages ($17.95)**

It is hard to find anything favorable to say about this book, and harder yet to understand why a publisher such as Van Nostrand Reinhold, who have numerous good books to their credit, would have permitted such a book to appear under their imprimatur. In its treatment of mineralogy it is full of gross errors, so much so that it could only serve to confuse and misinform the collector and student. The book also has extensive sections on general geology; these appear for the most part to be competently done, and are illustrated by numerous photographs in color, many of them attractive. The scenes shown are mainly in England, whence the authors come.

Perhaps one of the worst features of the book is its treatment of crystallography. On page 74, among definitions of crystal habits, "cubic" is defined as having six equal rectangular (!) faces, a morphological impossibility; "dodecahedral" with twelve unequal rectangular (!) faces; "octahedral" with eight square (!)(!) faces. In fact, apart from obvious mistakes such as these, nearly all of these definitions suffer from poor choice of terms which serve to make the meanings cloudy.

The diagrams on pages 78 and 79 are equally bad. They are poorly, carelessly done with no attention to correct principles or the rules of projection. The torbernite is not the usual habit for this mineral. Calomel is a very rare mineral, and even rarer in good crystals. The quartz shows accessory faces indicating twinning on the Brazil Law, something which is hardly ever seen in morphological expression. The strontianite is misdrawn and is a twin, which is not indicated. The "lepidocrosite" (misspelled) is misdrawn and shows re-entrant angles which don't exist. Both the forsterite and humite drawings are upside-down.

One example given for the monoclinic system is corundum, which is hexagonal! The orthoclase is misdrawn, so much so that it appears to be orthorhombic. Further, the definition of monoclinic, as given, is incorrect and could just as well refer to a special case of triclinic symmetry; monoclinic symmetry would, in turn, be a special case under this definition. In general the species chosen to illustrate this section include some of the more obscure species rarely seen in good crystals.

The photographs of minerals leave much to be desired, even where the captions are correct, which all too often they are not. On page 76, the illustration of fluorite looks like a tetrahedron (actually it is a corner of a cube); there is no way this can be construed as a "dodecahedral" crystal, which in any event would be a rare habit for fluorite. The pyrite, page 87, is the wrong color. Andalusite, page 92, is a useless photograph, as is the lower almandine on page 91. These are typical of very many of the photographs of both minerals and rocks which, lacking detail, composition, contrast, or accurate color rendition, are thus rendered mere formless blobs of no use or significance.

On pages 80 and 87 the photographs of cassiterite are repeated; why? Surely a second specimen could have been found showing other features of this mineral. On page 206, the upper photo shows artificial, not natural, bismuth crystals.

The selection of terms used to describe many minerals or their properties also shows both ignorance of mineralogy and lack of knowledge of common mineralogical terminology; even, at times, lack of common sense. On page 81 apatite should be terminated, not "topped", by hexagonal pyramids. Calcite, one of the commonest minerals (and for which English localities are justly famous) rarely forms needle-like prismatic crystals; they are more common stout rhombohedral. On page 80 it is stated that colorless fluorite is very rare; actually this is the commonest form of fluorite even though collections tend to emphasize the colorful varieties. On page 82 gypsum forms "tabular prismatic" crystals, an unlikely combination of terms, and the luster is pearly, not the "apearance". Microcline forms equant or blocky crystals, not usually "tabular" ones. On page 88 the photo of blende shows the botryoidal habit, which is uncommon and certainly not the type of sphalerite (crystallized) seen in most collections. On page 91 "pyralspite" and "ugrandite" are not species but acronyms of limited usage which were coined to designate two principal garnet groups.

The list of errors, malapropisms, and general misinformation is far too long to try to include in this review, nor should this trivial book be honored by such a long treatment. Suffice it to say that serious errors can be found throughout, even in the sections on collecting and lapidary. This book was written as an aid to mineral collecting - no way! The authors can be forgiven as being merely incompetent, but for the publishers to print this book without submitting it first for critique to any of the many competent mineralogists in Britain or the U.S. is unforgiveable. There is a forward written by Lord Energlyn, Head of the Department of Geology of the University of Nottingham. Unfortunately this forward was obviously written without having seen the book referred to, a circumstance which Lord Energlyn must by now sincerely regret.

Altogether, a non-book recommended for non-purchase.

Richard V. Gaines.

to the Editor

A SIMILAR EXPERIENCE

Dear Sir:

I enjoyed reading the article in the *Mineralogical Record*, "A new mineral-almost", especially so because I had a similar experience.

In the early 1940's, before the uranium boom, a sample from Utah was submitted to the U.S. Geological Survey that consisted of a fine powdery yellow incrustation on red sandstone. The first thought was carnotite, but the sample showed no radioactivity. It was so fine-grained that optical study gave only a rough mean *n*.

Half the sample was sacrificed for spectrographic study, which showed *no* cations! It was water soluble, so more was sacrificed for qualitative tests - all negative. At that point I consulted Dr. W. T. Schaller, who smiled, and told me to heat a few grains cautiously in a closed tube. I did - it exploded, leaving me still mystified.

He then told me that the U.S. government had, after World War I, sold its excess stock of picric acid to prospectors, who used it as an explosive. Any unexploded residue was dissolved by rain and reprecipitated down slope to form "a new mineral".

Michael Fleischer
Research Chemist
U.S. Geological Survey

EXCHANGE

Dear Sir:

I have been trying in vain for several years now to establish contact with American mineral collectors with whom I can swap quality English specimens. I was given your address by a friend who told me that if my letter was published by your excellent magazine, I would have more people to trade with than I can handle. I look forward to seeing this situation arise!

I have quality fluorites, campylite from Drygill mine, sphalerite and galena, and many other English classics, e.g. haematite from West Cumberland. In exchange I would be glad to accept almost any good American specimens, e.g. gold, copper, wulfenite, Mexican specimens and so on.

Peter Ward
92, Compton Road West
Wolverhampton,
Staffs. WV3 9DZ, ENGLAND

ON MALL SHOWS

Dear Sir:

The dust has settled a bit, and a hindsight view of the recent Mall Show in which we took part is more favorable than was possible at the time. This was our first experience with any other than the Federation Shows of 1958 and 1960.

We began under the handicap of short notice, which may or may not account for the meager supply of minerals we had for sale. Grab bags were the backbone of our net sales. Our display case of North Carolina kyanite was well received by all who saw it.

In all fairness Mall Shows do provide an atmosphere in which Clubs such as ours can sell minerals providing the little monies needed where a profit must not be realized. In our instance we completed the replacement of the cost of a badly needed addressograph.

"A time and a place for all things" may include Mall Shows.

Marguerite Neubert, Secretary
Southern Appalachian Mineral
Society, Inc.
Asheville, North Carolina

UNFAIR TO SWAPPERS

Dear Sir:

In the past two years I've been to several major shows at which swappers have been somewhat slighted. In some cases swappers were put in poorly lit, hard to get at areas with inadequate room or tables. If people drive several hundred miles to trade they shouldn't have to kill themselves carrying boxes of rocks down steps or long distances.

Also "swappers dollars", now widely used in some areas, were not used at he last two national shows, though hey were advertised for the seventy-our show. For those who don't know, 'swappers dollars" are used by people who don't have anything to trade. They are purchased from the host club and given to the swapper in exchange for the material. The swapper then must spend them at the dealers' stands. This eliminates the exchange of cash in the swap area, brings business to the dealers, and helps swappers and non-swappers build their collections. "Swappers dollars" have helped me make several additions to my own collection that otherwise would not have been possible. They would help many more collectors if more widely used, especially in the western states where, it seems, they are hardly used. Maybe if we speak up and let show chairmen know how we feel we will be given more consideration in the future.

Stanley Esbenshade
Ashland, Ohio

COMPETITIVE EXHIBITING

Dear Sir:

The editor is to be congratuated for his willingness to reveal his doubts relating to current standards governing the judging of mineral specimens. It requires courage to soul-search in public. When a well-informed, experienced and unquestionably sincere mineralogist who is also a mineral judge gives editorial space to the dilemmas in which he finds himself in attempting to apply judging standards, there is reason to think that those standards may require reexamination and, conceivably, revision; certainly they may need clarification.

If you would consider publishing in the pages of *MR* the current official regulations and standards by which judging is to be performed, the subject would receive exposure to the intellects of thousands of readers in an already mineral-oriented group. Daylight and fresh air possess therapeutic qualities. Airing the Federation's uniform rules in *MR* would result at the least in a broad dissemination of the letter as well as of the spirit of those rules.

Until or unless today's mineral judging standards are revised, however, it is the responsibility of every accredited judge who accepts an invitation to serve in judging a mineral show to apply to his best ability the published standards of the accrediting organization. He is not empowered to revise those standards unilaterally. Rather, he must, if he is ethical, enforce them as they are written. Otherwise, there is chaos.

Thus, it would appear that if, as you state, "so few points are alloted to rarity" by those judging standards which are now in use, it is the judge's job surely to apportion credit from only those few points, as merited by the specimen, and not to assign any higher score for rarity. In other words, it is the duty of the judge to observe the point-scoring standards of the organization which he represents when he acts as judge. If he disagrees with those standards, he may work to change them or he may refuse to judge under them. Until they are changed, however, if he judges, it is his responsibility to observe the judging criteria as they are written.

Dr. Peter Bancroft's book, *The World's Finest Minerals and Crystals* recently elicited a powerfully praising review in the pages of *MR*. On page 8 of the book in an observation on the factors which influenced the judges in their selections, the following statement appears: "Certain qualities...such as brilliance, sharp colors, damage-free crystals, and pleasing arrangement, seemed to appeal". A little further along, under "Criteria for Selection", this listing appears: 1. Crystal perfection 2. Matrix specimen 3. Aesthetics 4. Association 5. Color 6. Luster 7. Size. Dr. Bancroft states that the characteristics listed above were those to which the judges paid heed in the determination of specimen quality at the highest order, and that aesthetic appeal is included among them. As the panel of judges includes many of the most eminent mineralogists of the day, their "Criteria for Selection" commands notice.

That visual appeal and quality of presentation are today accorded key roles in the display of science-related materials is well illustrated in the display of minerals at the Sorbonne and within the Smithsonian reflecting the advantage of combining visual attractiveness with other criteria of quality. Surely there are many other such criteria, and among minerals rarity is a most considerable attribute; it merits a most considerable reward.

It would appear desirable that the uniform rules provide clear guidelines which delineate a balance, equitably rewarding the presence of excellence in each of its recognized components. A well-composed set of judging standards permits (though it does not insure) the striking of such a balance.

I endorse a strong effort toward a reexamination of current rules and guidelines. If they are found to meet today's needs, they should not be changed. If, however, they fall short of that goal, they require and invite revision. The time is now.

Jack Halpern
San Francisco, California

Dear Sir:

We read with great interest and appreciation your thoughtful article concerning the judging of a bayldonite specimen in our exhibit in Detroit last year. You have outlined very clearly a dilemma which confronts us every time we exhibit minerals, the proper balance to be maintained between the esthetic and the rare minerals in an exhibit.

Probably most collectors start by enjoying and buying brightly colored specimens. As they progress they demand more perfection, greater structural interest and greater rarity. An actual change in outlook takes place, whereby a mineral which at first might have looked like a "blob", suddenly stands out as being impressive by reason of the unusual size and/or perfection of its crystals or geometric structure, or possibly even color. In the case of our bayldonite which triggered your article, we felt that the large brilliant crystals, although dark, were set off attractively by the bright green band of cuproadamite in the matrix, thereby creating an unusual effect for this particular mineral, and also providing some color in a dark spot where it was needed in the exhibit.

Obviously we could have used a brighter, prettier mineral to provide this color. The most obvious one which comes to mind, would be a fine green apophyllite, or possibly even a malachite. However, we were cognizant of a need for "rarity", and tried to satisfy all requirements with one mineral - an obvious impossibility - but one tries to come as close as one can.

We have often been criticized for showing "common" minerals which we feel have sufficient esthetic appeal to warrant their inclusion. I refer especially to two superb specimens: A large sculptural copper and a geometrically impressive galena which we own. We feel that their beauty of form and perfection warrant their inclusion, and have argued for hours on this subject, finally ending with the unanswerable argument, "We like them". A rejoinder is invariably, "Maybe so, but you'll get knocked off on points", and we reply, "So be it".

At present there seems to be quite a conflict in the minds of both exhibitors and judges over the standards to apply. Not only is the aforementioned balance between esthetic appeal, rarity and intrinsic value, as evidenced by cost, a precarious one, but there is the added factor of showmanship and the question of accuracy in labelling. It is meaningful to deduct points because a printer's error put a capital letter in place of a small one, or because a period was left out after an obvious abbreviation? Similarly, should an otherwise great exhibit be downgraded because the labels were handwritten, or because, by bending over and looking up at the top a judge could discover bare wood, invisible to the ordinary viewer? This approach subjects mineral exhibits to the same judging philosophy as flower show entries, and perhaps that is as it should be. However, one should bear in mind that the value of flowers is minimal as compared to the value of minerals, and therefore the entire emphasis has to be on the skill and creativity of the flower arranger. The mineral collector must certainly know how to display effectively, but he probably expects to be judged primarily on the excellence of his collection. (Even the Flower Show Committees have gradually discarded many of their restrictive rules under which judges actually measured the proportionate dimensions of arrangements and containers, and where certain combinations of materials were taboo.)

We believe it would be in everyone's interest to see firm guidelines established, and made known to exhibitors and judges alike. Possibly a final criterion should be added, saying only "overall excellence", for the use of a judge who felt that the quality of an

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exhibit was high enough to outweigh some technical errors. This, of course, would make it incumbent upon the show chairmen to select only judges qualified to make such a decision.

If you have space in your magazine for this kind of discussion, we would be most interested in seeing other comments which might shed further light on the matter.

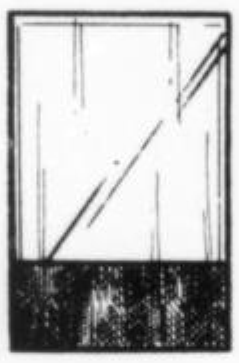
EXHIBITORS OF
THE BAYLDONITE

ON CLOSED QUARRIES

Dear Sir:

I had no reason to write to you until now. I read Marie Huizing's guest editorial entitled "Where Have All The Quarries Gone?", and it did not have any profound effect upon me as a gloomy foreshadowing of things to come, until now, when it just recently "hit home".

The western New York region is not high in mineral content. What minerals do occur here are fairly good sedimentary environ minerals, and these are found in quarries located in the Lockport dolostone formation. These quarries are the "lifeblood" of mineral collectors in this area. In the past few weeks, our "lifeblood" has dried up through a number of quarry closings. The following is a status report on the quarries in our region. The quarry near Penfield, New York, has been closed to collecting because, supposedly, a vandal started



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up and sent a bulldozer down onto the quarry floor from up above on the quarry's edge. The Frontier Crushed Stone Products quarry near Lockport is now closed to collecting. A fellow collector was in with a group of other collectors, and he was digging underneath one of the quarry's walls. After being asked repeatedly by the management to move, this collector impolitely told management where they could go. So that quarry, because of the incident, is now closed. The Niagara Stone Quarry near Niagara Falls has been closed for years because the owner does not like collectors. The Canada Crushed Stone Quarry near Dundas, Ontario, where previously, on any Sunday, one could go in, ask permission, and usually be allowed to collect, is now open only to clubs, which have to make arrangements ahead of time. The reason - either some collector or vandal damaged quarry machinery. The other quarries in the area have been closed to individual collecting for quite a while. Three of the closings previously mentioned have occurred within the past two months. Now, the nearest "open" mineral collecting areas, providing minerals in any abundance, are approximately 200 miles away and farther. I am only going to make one suggestion regarding how to help keep quarries open. This suggestion is to follow safety rules, but specifically the ones telling us to stay away from quarry equipment, and even more

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important, quarry walls. Breaking of these two rules seems to be the reason for closing most quarries. There is really not much point in digging near or underneath the walls, as any minerals found there are usually too inaccessible. Other collectors and myself find that the best specimens are found in the blocks of stone already placed on the quarry floor. If specimens are found in walls, they are either too high up in the wall, or they are too deeply imbedded in the wall, with no safe way of removing them. Any vibrations created from the attempted removal of the specimen could easily send some loose rock down onto the collector, injuring or possibly even killing him.

It really is too bad that there is an obvious ignoring of these rules by certain collectors, thus resulting in the closing of quarries. If these closings continue, a few years from now, people won't be wondering about where have all the quarries gone, but will be amazed in the fact that at one time collecting in quarries was even allowed.

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BARITE, Cheshire, Conn. Very fine mass of xls. No matrix. 4 x 3 x 2-1/2	150.00
AXINITE, Dauphine, France. Xld. almost covering matrix. 4-1/2 x 2 x 1-1/4	125.00
ILVAITE, South Mountain, Idaho. Well xld. with xld. Quartz. 3 x 3 x 1-1/2.	75.00
FLUORITE, Cornwall, England. Group of colorless xls. up to 1-1/4" across. 3 x 2-1/4 x 1-1/2	45.00
BARITE, Frizington, Cumberland, England. Good blue xl. 3 x 1-1/2 x 1/2.	45.00
AMETHYST, Deer Hill, Stowe, Maine. Fine gemmy purple xl. 3-3/4 x 2-1/4 x 2	75.00
PREHNITE, Honolulu, Hawaii. 5/8" globular mass on Basalt. 2-3/4 x 2-1/4 x 1-1/4	35.00
APOPHYLLITE, Sampson Mine, Harz Mts., Germany. Small xls. covering matrix. 4 x 2-1/2 x 3/4.	35.00
QUARTZ, Prince of Wales I., Alaska. Good Jap. twin, 7/16", on matrix. 3 x 2 x 3/4.	25.00
FOSHAGITE, Commercial Quarry, Crestmore, Calif. Rich in Vesuvianite. Collected in 1942. 2 x 1-3/4 x 1-1/4	30.00
DEVILLINE (HERRENGRUNDITE), Herrengrund, Hungary. Minutely xld. on rock. Old label. 3 x 3 x 1	40.00
FRANKLINITE, Franklin, N.J. Large, somewhat rough octahedron. Good. 3 x 2-1/4 x 2.	25.00
COLUMBITE, Minas Geraes, Brazil. Rare loose twin xl. 1-1/4 x 1 x 1	50.00
DIASPORE, Chester, Mass. Well xld. with Margarite. Rare. Old Schortmann label. 4 x 3 x 1-1/4	75.00
LINARITE, Roughten Gill, Cumberland, England. Richly minutely xld. on matrix. 2 x 2 x 1-1/4	50.00
MOLYBDENITE, Altenberg, Saxony, Germany. Richly bladed in Quartz. 4 x 2-1/4 x 2	30.00
TALC, Monzoni, Fassa, Italy. Group of xls. pseudo. after Spinel. 1-1/2 x 3/4 x 3/4	15.00
SMOKY QUARTZ, St. Gothard, Switzerland. Fine group of "twisted" xls. 3 x 2 x 1-3/4	45.00
SKLODOWSKITE & URANINITE, Pandanus Creek, N.T., Australia. Ext. fine mass with some matrix. 3 x 2-1/2 x 2	75.00
HEMATITE var. Kidney Ore, Cleator Moor, Cumberland, England. Very fine small mass. 2 x 1-1/2 x 1-1/4	25.00
BOURNONITE & SIDERITE, Neudorf, Germany. Well xld. on matrix. 3-1/4 x 1-1/2 x 1-1/4	30.00
TITANITE, Renfrew, Ontario. Huge compound xl. 4-1/4 x 3 x 2	300.00
BERTRANDITE, Ermo Mine, Carnauba dos Dantes, Brazil. 3/8" xl. on matrix. Rare. 2-1/2 x 2 x 2	350.00
WILLEMITE, Vielle Montagne, Belgium. Minutely xld. almost covering matrix. 4 x 3 x 1-1/2.	100.00
AZURITE, Broken Hill, NSW, Australia. Brilliantly & minutely xld. with Malachite. Choice. 3-1/4 x 2 x 1-1/2	100.00
PYRITE, Halle an dem Weser, Germany. Xld. on matrix. Old label of H. Stockbridge. 2 x 1-1/4 x 1	20.00
TOPAZ, Baldface Mt., New Hampshire. Very fine loose term. xl. 1-1/2 x 1-1/2 x 1-1/4	90.00
BORNITE, St. Francis Mine, Cornwall, England. Richly minutely xld. on matrix. 3-1/4 x 1-3/4 x 1	150.00
NEPTUNITE, San Benito Co., Calif. Rare doubly term. xl., 1-1/8 x 1/4 x 1/4 on matrix. 3 x 2 x 1	90.00
AMETHYST, Upper Providence Twnshp., Penna. Unusual group of flattened term. xls. Good color. 3 x 3 x 1	35.00
BRAZILIANITE, Smith Mine, Newport, N.H. Unusual xld. mass. 1 x 5/8 x 1/2	25.00
PHENAKITE, Mt. Antero, Colo. Well xld. on matrix. Old Arthur Montgomery label. 2-1/2 x 2 x 1-1/4	70.00
FLUORITE & GALENA, Alston Moor, Cumberland, England. Compound purple xl. with attached Galena, etc. From Peter Zodac Coll. 2 x 2 x 2	18.50
SPHALERITE, Foxdale Mine, Isle of Man. Very well xld. with well xld. Chalcopyrite. 5 x 3-1/2 x 2	75.00
RUTILATED QUARTZ, Minas Geraes, Brazil. Very fine doubly term. xl. rich in Rutile. 5-1/2 x 2 x 1-1/2	150.00
EPIDOTE, Untersulzbachtal, Austria. Compound "bent" term. xl. 2 x 5/8 x 1/2	45.00
SERPENTINE pseudo. after **ENSTATITE**, Beinlin, Norway. Very fine term. xl. 1-1/4 x 1/2 x 1/2 in matrix. C.U. Shepard Coll. with labels. 2-1/2 x 2 x 1-1/2	45.00
ERYTHRITE, Schneeberg, Saxony, Germany. Fine spray, 1 x 3/4, on Quartz. From the Raphael Pumpelly collection. and very rare thus. 2-1/2 x 1-1/2 x 1-1/2	150.00

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