Northwest
Micro Mineral
Study Group

MICRO PROBE

SPRING 1978

VOLUME V, Number 1

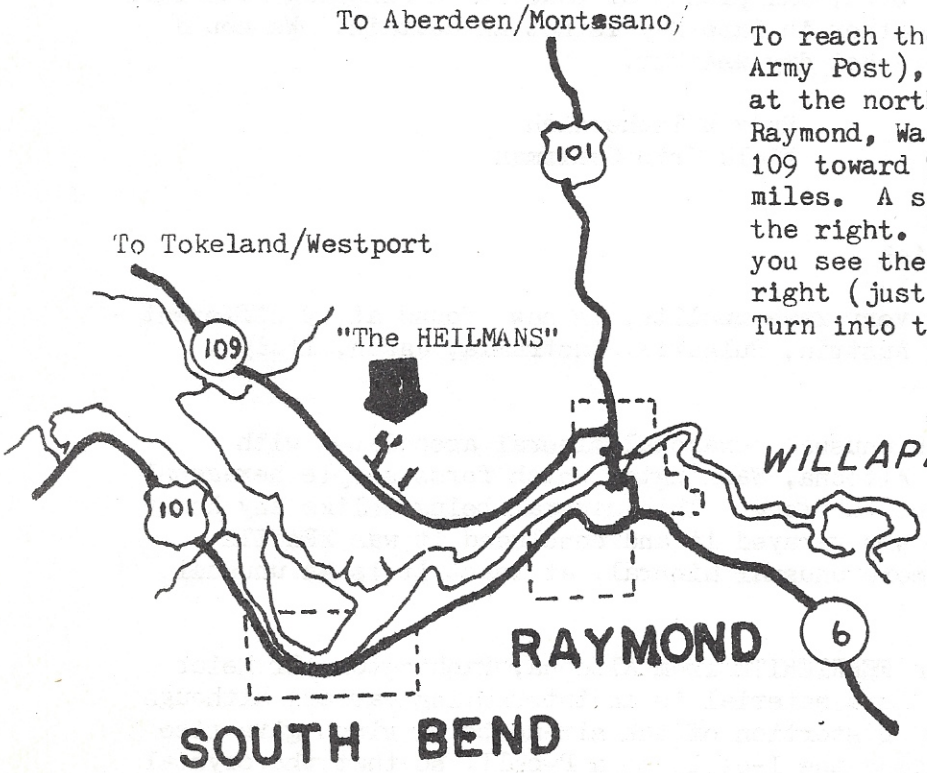
NOTICE OF SPRING MEETING

DATE: 13 May and 14 May 1978

PLACE: "The HEILMANS", Raymond, Washington

TIME: 10:00 A.M. +

PROGRAM: General discussion of members experiences at recent collecting or visiting trips.
Exhange of mineral specimens.
Field trip planning.
Pot luck dinner.



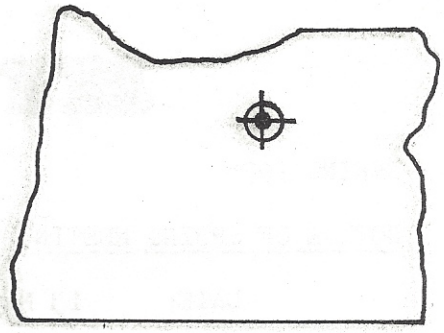
To reach the HEILMANS (former Bayles Army Post), turn west off highway US 101 at the north end of the bridge in Raymond, Washington. Follow highway 109 toward Tokeland/Westport about 2 miles. A side road angles off to the right. Follow this road until you see the red buildings on your right (just before you come to a hill). Turn into the driveway ....

Phone 942-5231

FIELD TRIP INFORMATION

DATE: 27 - 28 - 29 MAY 1978
(MEMORIAL WEEKEND)

PLACE: BURNT CABIN CREEK, SPRAY, OREGON



Members of the micro-study group will meet at the collecting location known as BURNT CABIN CREEK. This is the main collecting location well known to most of our members, but for those not familiar with it .... from the small Oregon town SPRAY go east on highway 19/207 for three miles, then turn north on highway 207 for seven miles (toward Hardman) where you enter the Umatilla National Forest. The collecting location is 1.4 miles north of the south boundry of the national forest and is on the north side of a hairpin turn.

Parking is along the road or on a small dirt road that splits the hairpin turn. This road leads to an open field which can be used for camping. Other camping sites are available at campgrounds north of the collecting area. Thre is a motel (questionable quality) at Spray as well as gas, groceries, and a cafe.

We will meet at the collecting site on Saturday 27 May . Most of our time will be spent at this location, however a few side trips to other nearby locations will be conducted upon special arrangement. Bring heavy tools , 4 to 8 pound hammers, points, bars, and plenty of boxes with wrapping materials. Specimens are abundant, but weather in late May is not as certain. We could have anything from snow to very hot dry weather.

Rudy W Tschernich
Field Trip Chairman

ZEOLITE NOTES ... FERRIERITE
Contributed by Rudy W Tschernich

Ferrierite, once considered a very rare zeolite, is now found at 19 different locations worldwide including Austria, Bulgaria, Australia, Japan, Italy , Canada, and the United States.

Bob and Mary Hillsdon found an unusual hexagonal mineral associated with FERRIERITE and DACHIARDITE at Altoona, Washington which forms simple hexagonal blocky crystals with a dominant "C" face. This mineral being unlike any known zeolite was sent to Bill Wise who x-rayed it and concluded it was APATITE. Although we thought we had a more unusual mineral, at least it is an unusual zeolite associate.

While doing structural work on FERRIERITE from Altoona, Washington, Dr Meier of Zurich, Switzerland, found this material is an interesting variant although it is not a new zeolite type. Distortion of the six-membered rings give rise to different reflections reducing the I-cell to a P-cell, so that the crystal class symmetry is lower than "mmm" of normal ferrierite (probably $1\ \frac{2}{m}\ 1$).

ZEOLITES OF BURNT CABIN CREEK SPRAY, OREGON

by RUDY W TSCHERNICH

The well known zeolite location located 11.5 miles northeast of the small Oregon town of Spray in the Umatilla National Forest on Highway 207 became one of the best locations in the Pacific Northwest for both micro and cabinet sized zeolite specimens with the widening of the highway in 1976 because dumping of the rock over the bank of the road then allowed collectors easy access.

This location is widely known simply as the "Spray zeolite" location, but due to several other important zeolite locations near Spray, I suggest using the name BURNT CABIN CREEK for the main location on the hairpin turn within the Umatilla National Forest. The small creek that flows along the turn is so named on the Kimberly Quadrangle U.S.G.S. topographic map.

Minerals found at BURNT CABIN CREEK include:

(very common) MESOLITE, THOMSONITE, and CHABAZITE
SMECTITE (a clay mineral) lines most of the vugs

(common) COWLESITE, LEVYNE, OFFRETITE, CALCITE, and ANALCIME

(scarce) PHILLIPSITE and APOPHYLLITE

(very scarce) STILBITE, HEULANDITE, and GYROLITE

Mesolite, thomsonite, and chabazite are very abundant at Burnt Cabin Creek usually being found closely together in pockets ranging from 1 to 12 inches with some as large as 3 feet in diameter. These three zeolites have formed unusual stalctite-like growths with each other due to very rapid crystal growth. Smaller thomsonite and mesolite crystals along with complex forms and skeletal growths found on chabazite with dendritic growths also support the theory of very rapid crystal growth.

Mesolite forms thin white needles or hair rarely exceeding 0.25 (6 mm) length, nearly always found radiating from a thomsonite ball or lining. Attractive balls of mesolite needles on thomsonite base make fine micros as well as cabinet specimens. Dirty mesolite from this location is very difficult to clean since the thin needles tend to collapse when put into any liquid. Gentle blowing with compressed air may remove some of the larger rock fragments that become interlocked between the needles.

Thomsonite forms very small simple bladed crystals at this location. They are usually intergrown with chabazite and mesolite, or appear as small balls composed of small blades lining vugs. Large pockets of thomsonite are generally not attractive due to the small size of the crystals although some specimens of thomsonite covering 1 to 3 inch (25 to 75 mm) golden calcite crystals have formed specimens that resemble white fingers. Fine individual radiating balls make excellent micros.

ZEOLITES OF BURNT CABIN CREEK (Contd)

Chabazite forms many different crystal forms at Burnt Cabin Creek. Simple rhombohedrons are common as small crystals with a few reaching 0.7 inch (19 mm) yet good specimens are difficult to obtain because brittleness causes most crystals to shatter during removal. Many types of twinned chabazite are present...penetration twins to the highly complex phacolite habit (twinning around the "c" axis to form a bean shaped crystal). The phacolite habit is very common at Burnt Cabin Creek with crystals ranging from micro to a few over 5/8 inch (16 mm) which are composed of many unusual crystal faces. This habit of chabazite is usually present with mesolite and thomsonite where chabazite is formed first, then thomsonite, and finally mesolite.

Cowlesite is common at Burnt Cabin Creek where it forms some of the worlds finest and largest specimens of this new mineral. Most cowlesite pockets are small, under 1/2 inch (13 mm), lined with only this mineral. Larger pockets up to 2 to 3 inches (50 to 76 mm) are rarely found while the largest pocket known for this mineral measured 6 inches (152 mm) at its widest part and was associated with levyne. Cowlesite is difficult to recognize for a person not familiar with it. It is normally gray, but can be white. It forms small balls a few millimetres in diameter which are composed of small pointed blades. Thomsonite at Burnt Cabin Creek is very similiar in color, size, and general appearance therefore a few simple tests must be used to distinquish the two minerals. Hardness is most useful. Cowlesite is very soft...it can be scratched easily with a needle whereas thomsonite will not scratch (NOTE: DO NOT RUN THE NEEDLE ACROSS THE SURFACE OF THE MINERAL, ALL YOU WILL BE DOING IS RUINING THE SPECIMEN BY BREAKING OFF TERMINATIONS). A second test is observation of the associated minerals. Cowlesite usually is the only mineral present in the vug, or rarely it is found with levyne. Thomsonite on the other hand is rarely found by itself...it is most often associated with chabazite and mesolite.

Levyne forms excellent specimens of well formed hexagonal plates scattered on a dark colored smectite clay, or as a vug lining. Levyne is rarely found in association with cowlesite, thomsonite, phillipsite, or analcime in 1/2 to 3 inch (13 to 76 mm) vugs. Much of the levyne at Burnt Cabin Creek is completly transparent and colorless while some possess a thin white overgrowth of offretite. Colorless specimens are heat sensitive and will shatter if left exposed to the sun or placed under a hot microscope lamp. PLACE ALL LEVYNE SPECIMENS IN THE SHADE IMMEDIATELY AFTER REMOVAL FROM THE HOST ROCK.

Offretite is present as a very thin white overgrowth on levyne which when thick protects the levyne from shattering.

Calcite forms many interesting and attractive specimens. Since it is the first mineral which forms after the formation of the clay lining, it is covered by all the other minerals at this location. Outstanding specimens of golden calcite with crystals up to 3 inches (76 mm) have been found covered with thomsonite and mesolite.

Analcime forms small colorless very transparent trapezohedrons with often appear green, gray, or black due to the color of the smectite clay lining the vugs. Analcime crystals are always small (less than 1/8 inch or 3 mm).

ZEOLITE OF BURNT CABIN CREEK (contd)

Phillipsite and apophyllite are both scarce at Burnt Cabin Creek. They both have similar crystal form with pointed terminations, but in general apophyllite is transparent colorless crystal found on top of other zeolites (especially thomsonite and chabazite), whereas phillipsite is milky white to opaque white and is covered by thomsonite and chabazite. Phillipsite also forms complex milky white aggregates and unusual individuals with curved faces. Crystals reach a maximum of 1/4 inch (6 mm)

Stilbite and heulandite are very scarce, they form micro crystals on only a few specimens. Gyrolite has been found only an a few cowlesite specimens as small white balls perched on cowlesite.

As collecting continues at any location as complex as this one more minerals will probably be found. If you have found a species that is not mentioned or suspect other minerals are present, please bring a specimen to the micro-study meeting for closer observation by the other members.

PHOTOGRAPHIC CREDITS

All photographs which accompany this issue were taken by Norman W Steele Jr from specimens in the Rudy W Tschernich collection.

MP-1 Mesolite needles extending from white Thomsonite balls. From Burnt Cabin Creek, Spray, Oregon.

MP-2 Cowlesite from Burnt Cabin Creek, Spray, Oregon.

MP-3 Levyne from Burnt Cabin Creek, Spray, Oregon.

MP-4 Thomsonite blades and phacolite var Chabazite on golden Calcite from Burnt Cabin Creek, Spray, Oregon.

MP-5 Laumontite from Drain, Oregon.

MP-6 Zoned Mesolite terminations on Natrolite needles. From North Fork of the John Day River, Oregon.

MP-7 Thomsonite balls with Stilbite from Goble, Oregon.

MP-8 Laumontite and Stilbite from the I-5 road construction near Kalama, Washington.

THOMSONITE VARIETY NAMES:

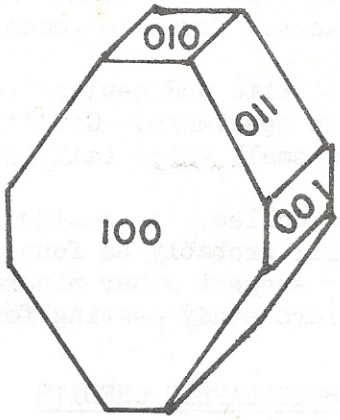
Two new varietal names for THOMSONITE are recognized "comptonite" is applied to the blocky form from Yellow Lake, British Columbia, "faroelite" is applied to the high silica, smooth surface balls from Beech Creek or Goble, Oregon.

1978 MICRO-MINERAL STUDY GROUP OFFICERS:

Russ Kenaga	President/ Federation Director
John White	Secretary/ Treasurer
Rudy Tschernich	Field Trip
Norman Steele	Micro-Probe Editor

CORRIGENDA: In the FALL 1977 issue of MICRO-PROBE the data page for the new mineral ZEKTZERITE had an incorrect spelling and pronunciation for the name and listed Space Group and Lattice Constants as not determined. Robert Boggs supplied the information and printed a replacment page which was distributed at the meeting, however some of the members who were not present may not have the correct information so it is being repeated here.

ZEKTZERITE (zĕk' tĕr īte')



FORMULA: $LiNaSi_6O_{15}$

CRYSTAL SYSTEM: Orthorhombic (pseudohexagonal)

CLASS 1/m 2/m 2/m

SPACE GROUP: Cmca or C2ca

LATTICE CONSTANTS: a = 14.306 A
b = 17.33 A
c = 10.14 A

HARDNESS: 6 Mohs

DENSITY: 2.78

CLEAVAGE: parallel to (100) and (010) perfect and easy

HABIT: euhedral crystals up to 37 x 35 x 15 mm, but usual size 4 to 15 mm. Dominant forms (100), (010), and (011). Most crystals are tabular on (100).

COLOR/LUSTER: Colorless to pink. Pearly luster on (100) and (011). Lightly striated parallel to the "a" axis. Sometimes coated with an iron oxide film. Streak is white.

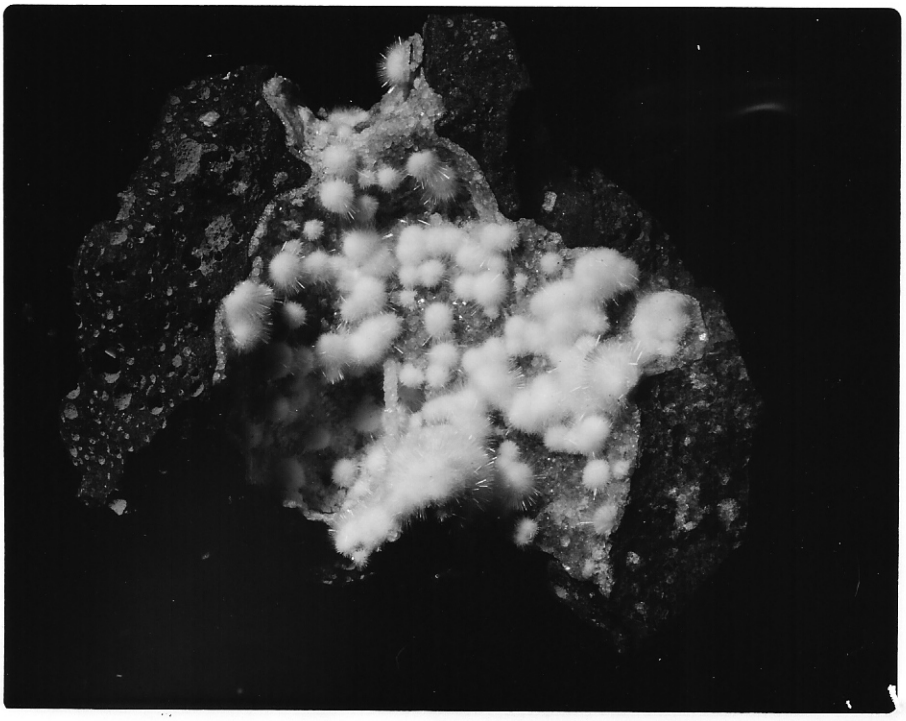
MODE OF OCCURRENCE: Within miarolitic cavities in the riebeckite granite of the Golden Horn batholith, Okanogan County, Washington (near Washington Pass) at elevations 4600 to 7400 feet.

Associated minerals include; Riebeckite, Astrophyllite, Perthite, Quartz (smoky), Monazite, Zircon, Bastnaeite, Aegirine, Limonite

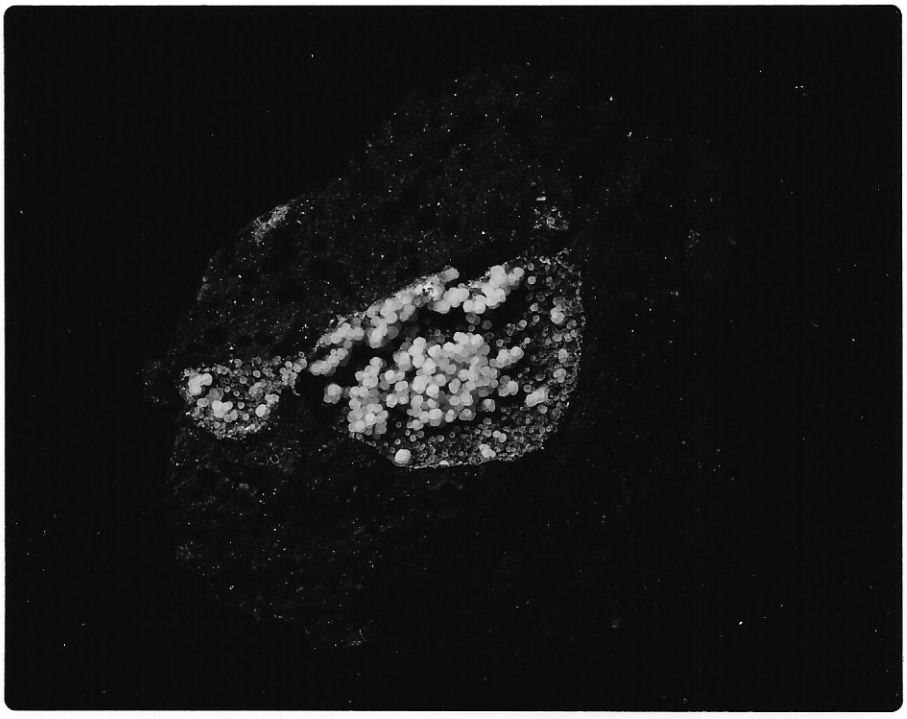
REMARKS: Only one other mineral, TUHALITE, is known to have the same crystal structure as ZEKTZERITE however a whole series of compounds is theoretically possible. Recently tiny crystals of $NaLiFeSi_6O_{15}$ with the same structure were obtained in a crystal growth experiment at Bell Laboratories.

REFERENCE: Dunn et al, American Mineralogist , Vol 62 (1977) pp 416-420

Cannon, B; Zektzer, J; Boggs, R; Ghose, S; Friends of Mineralogy Symposium "Mineralization in the Oxidation Zone", Portland, Oregon, October (1977)

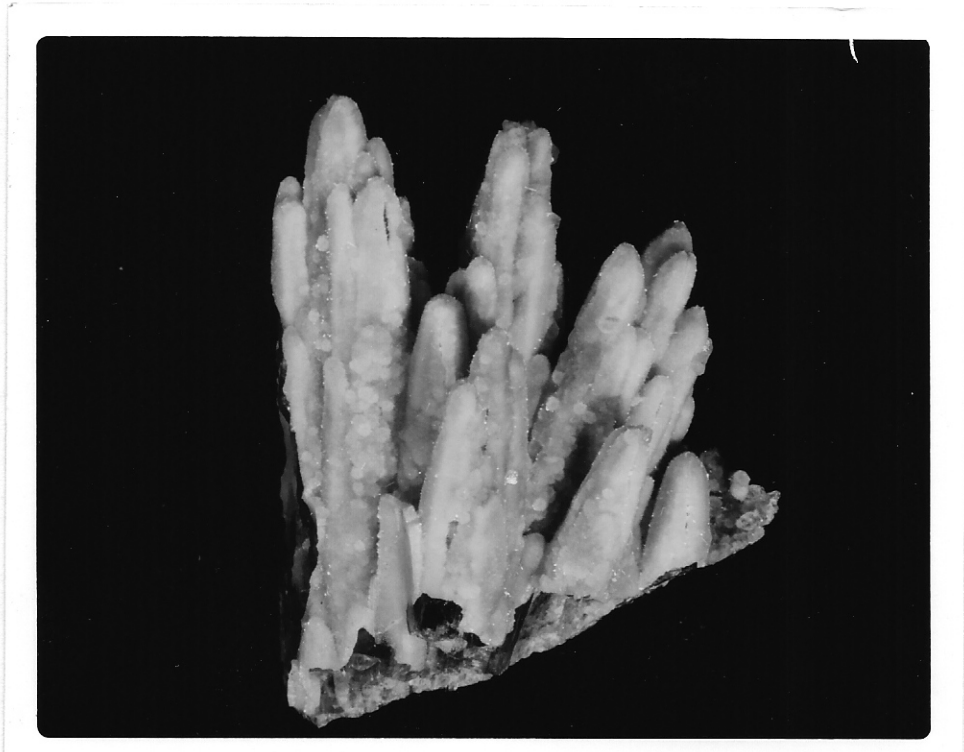


MP-1 Mesolite needles from white Thompsonite Balls
Burnt Cabin Creek, Spray, OR.

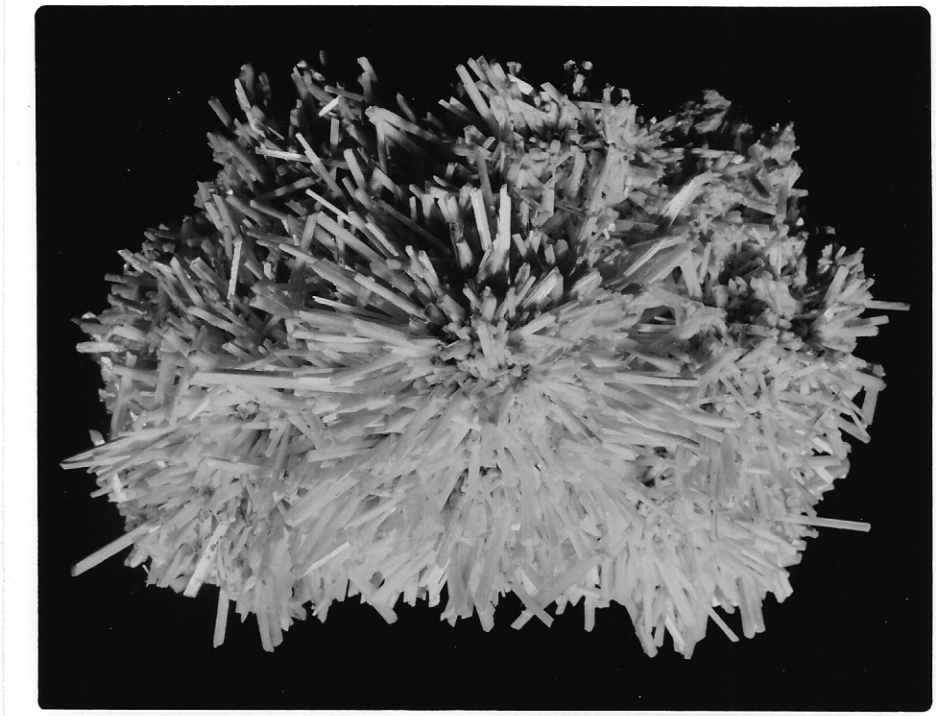


MP-2 Cowlsite - Burnt Cabin Creek, Spray, Oregon

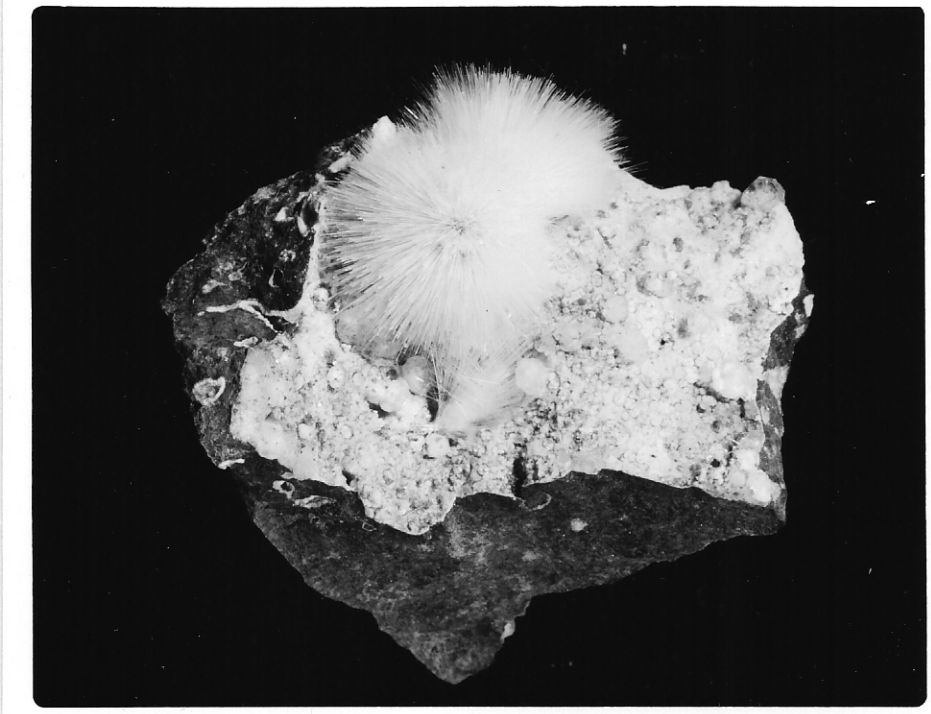
MP-3 Lovyne - Burnt Cabin Creek, Spray, Oregon



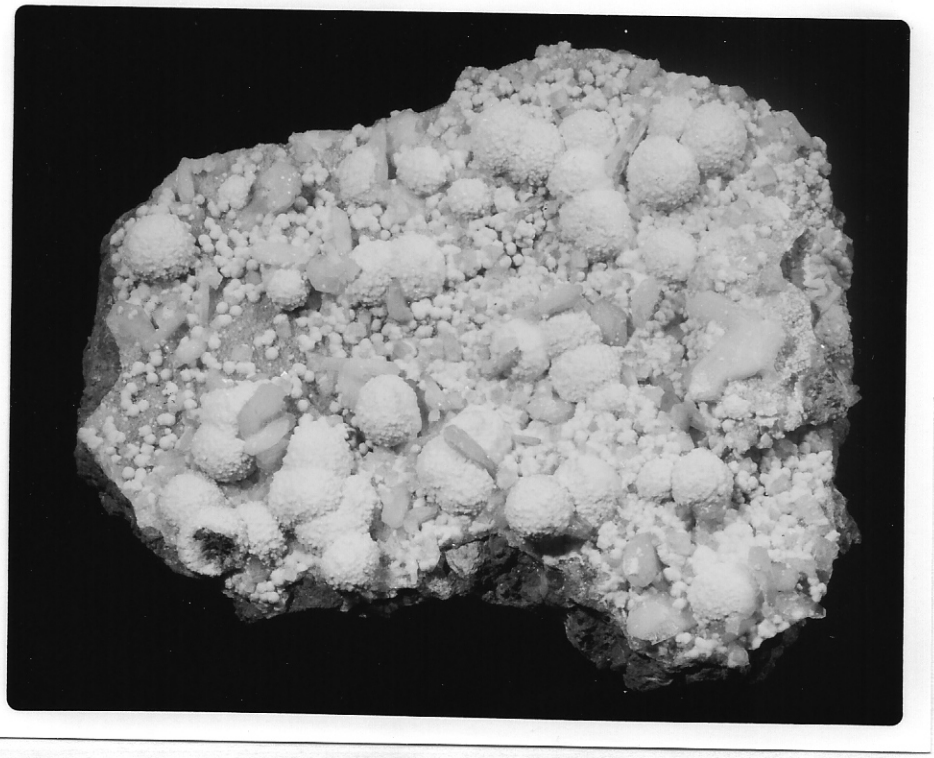
MP4 Thomsonite & phacolite var chabazite on Golden Calcite - Burnt Cabin Creek, Spray, Oregon



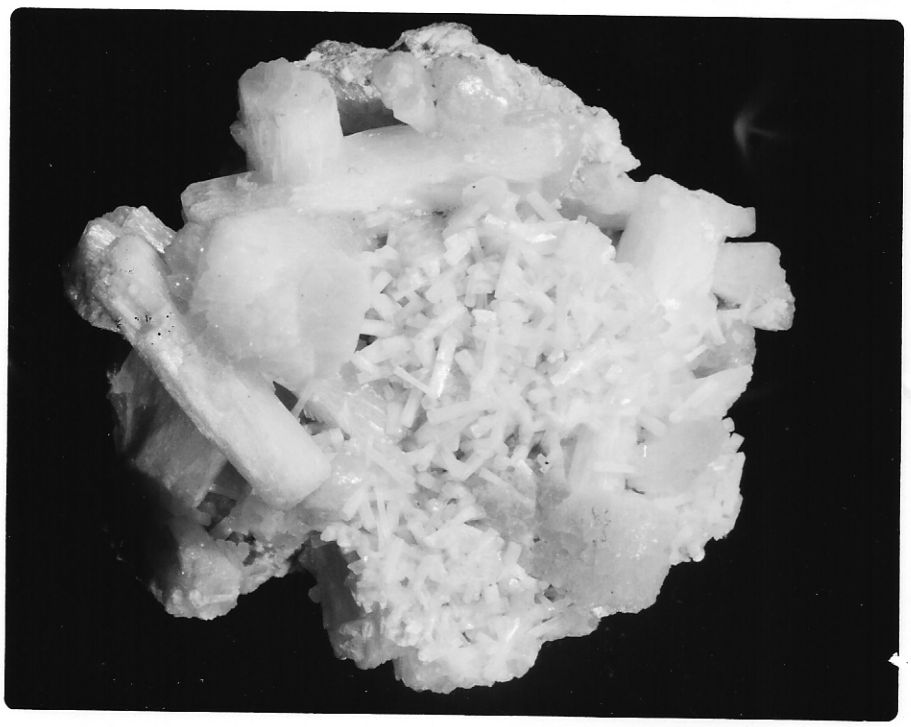
MP-5 Laumontite - Drain, ORegon



MP-6 Zoned Mesolite terminations on Natrolite needles
N. Fork John Day River, Oregon



MP-7 Thomsonite Balls & Stilbite
Goble, Oregon



MP-8 Laumontite + Stilbite from I-5 construction
near Kalama, Washington