Northwest
Micro Mineral
Study Group

MICRO PROBE

FALL, 1986 VOLUME VI Number 3

FALL MEETING AT FOREST GROVE

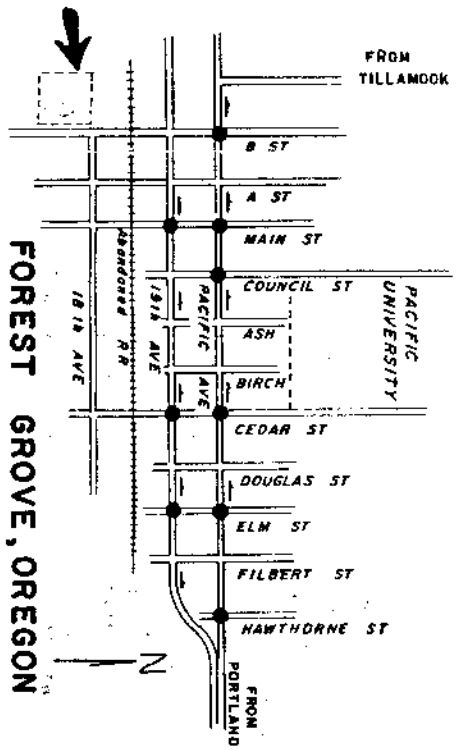
Saturday, November 1, 1986

9 am to ??

Forest Grove Light and Power
Auditorium
1818 B Street
Forest Grove, Oregon

There will be the usual pot-luck in the evening, plus coffee and goodies all day long.

Come prepared to have a good time.



After several years of separate north - south meetings, we are returning to a SINGLE fall meeting, so EVERYONE COME !

The program will include:

* Additions to the association table for Goble. Bring specimens for examinations and discussion.
* Update on the collecting areas of the Northwest.
* Discussion and current status of new Northwest minerals.
* Planning for Field Trips for 1987.
* Viewing each others "new finds".
* Trading of specimens, locations, tall tales (about the rock that got away), etc.

There will be a projector, so bring slides that you think would be of interest to the group.

FIELD TRIP (Weather permitting)

Sunday, November 2, 1986

Place: Goble, Oregon
Time: 10 am

We will be particularly interested in turning over enough ground to try to locate more of the "unknown mineral #2". The Goble location is not big, but it is always a good bet to provide some interesting specimens for everyone.

ZEOLITE RESEARCH & EXPLORATION
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ZEOLITE COLLECTING AT GOBLE, OREGON: REVISITED.

The history and minerals found at Goble, Oregon were published in the first issue of Micro Probe in 1973 shortly after the author discovered a new zeolite which was temporarily called Unknown # 1 in 1971 and later described and named Cowlesite by Bill Wise and myself in 1975.

This report updates information in the first report and describes the discovery of a second new zeolite by the author that was found in the original rock that cowlesite was first found in 1971 at the Goble location. This new zeolite which I will temporarily call New zeolite #2 until it is fully described and named by Russell Boggs at Eastern Washington University.

HISTORY:

Goble, in Columbia County, Oregon is one of the oldest and best known zeolite locations in the Pacific Northwest. Although neglected and overgrown with grass and trees, Goble still is producing specimens of rare and unusual minerals.

The first specimens were found between 1890 and 1906 when the railroad was put through the Goble area along the Columbia River and again in 1917 to 1918 when the main road was built. Most of the early collecting was concentrated at what is known as the "original" Goble location which was situated between the railroad and the highway, near the Goble store. Very fine chabazite, thomsonite, and levyne were found. Chabazite crystals were present up to 3/4 inch along with thomsonite balls over 3/4 inch. Exceptionally large levyne crystals up to 3/4 in diameter and 1/8 inch thick were found but were thought to be chabazite variety phacolite by collectors. Large 1 inch okenite balls were common but little was saved because collectors thought it was just altered thomsonite. Acicular zeolites like mesolite and mordenite were noticeably absent. With widening of the highway in 1958 to 1959 to its prsent size, the "original" Goble location was removed and buried.

Widening of the highway produced a cliff 1/4 mile north of the Goble store and cut off the old access road that led up Goble Creek. Construction of a new access road (now called the Neer road), where we now collect, started at the up hill end, furthest from the highway. During construction, collecting was very easy and specimens were very abundant, yet very few collectors were aware of the site until after it was completed. A zone near road level produced large pockets between basalt flows where pockets up to 3x3x1 feet were found lined with large balls of okenite, apophyllite, chabazite, mesolite, thomsonite, and stilbite.

John Cowles first collected the present day Goble location just after the Neer road has been completed in 1959 and was able to save a large amount of specimens before weathering had ruined them. In 1963

John Cowles discovered an unknown blue mineral at the Chapman quarry, a half mile further up the Neer road from where we collect. This mineral was found to be identical with material found at Owyhee Dam in eastern Oregon and was named Cavansite in 1967 by Lloyd Staples, Howard Evans, and James Lindsay in 1967.

In 1966 John Cowles found exceptional mordenite specimens in veins running through a large fine grained boulder beside the highway 1.5 miles south of Goble.

I first collected at Goble in 1969. At this time most of the collecting was concentrated on the northwest side of the road. In 1971 we started working on the south or canyon side of the road on the top of a point which is across the main cliff face. Fine large 4 to 12 inch pockets lined with large 3/4 to 1 inch chabazite were found as well as common heulandite, stilbite, and thomsonite. A small zone in the rock contained an abundance of unusual micro minerals in 1/2 to 1 inch vesicles which included analcime, garronite, levyne, and for the first time cowlesite and New Zeolite # 2. Repeated collecting at this same spot has failed to produce more of New Zeolite # 2.

MINERALS:

The collecting site along the Neer Road is composed of late Eocene vesicular brownish basalt which is dark black when fresh. The basalt flows are nearly horizontal with red oxidation zones at the surface of several flows.

Goble has 13 zeolite species and 8 associated minerals.

A typical Goble specimen consists of a drusy heulandite pocket lining on which are small pointed stilbite blades, thomsonite balls, sprinkled with micro chabazite.

HEULANDITE, STILBITE, THOMSONITE, CHABAZITE, MESOLITE, CALCITE are very common.

APOPHYLLITE, PHILLIPSITE, GARRONITE, LEVYNE, COWLESITE, NATIVE COPPER, OKENITE, PYROLUSITE, ANALCIME, CELADONITE, are scarse.

OFFRETITE, QUARTZ, MORDENITE, CAVANSITE, AND NEW ZEOLITE # 2 are very scarce.

HEULANDITE is the most common mineral at Goble, forming a drusy lining in most vesicles but rarely forms impressive specimens. A few coffin shaped heulandite crystals reach 1/2 inch but most are very small. Unusual forms of heulandite have been found on mordenite or covered by cowlesite where it is elongated greatly along one axis to form rectangular appearing laths which resemble the three pinacoids displayed by stilbite variety epidesmine. With very close observation, the elongated faces are seen to not be at 90° as with epidesmine but slightly inclined with each other.

STILIBITE is the second most common mineral at Goble, often forming fattened blades with pointed termination and small flat face on the tip. Stilbite often reaches 1/2 inch long and rarely 3/4 inch. Unusual radiating groups of epidesmine form of stilbite are rarely found forming balls up to 1/2 inch in diameter.

THOMSONITE occurs in a wide variety of habits and associations at Goble. The basic crystal form of thomsonite at Goble is a simple thin rectangular blade. When arranged in radiating aggregates of very tiny crystals, smooth surfaced colorless, gray, or blue colored balls result. When growing at random, loosely grouped balls of white blades are developed. Thomsonite often overgrows mesolite needles filling in spaces between the mesolite needles along with chabazite and calcite to form attractive stiff semicompact balls up to 1 1/2 inches in diameter. Very heavy overgrowth of thomsonite on mesolite with result in rough surfaced thomsonite balls up to 2 inches in diameter.

MESOLITE is not as common as the above minerals at Goble. It forms straight needles up to 1 1/2 inches long usually covered with thomsonite, calcite, and chabazite until compact stiff balls are formed. Large pockets up to 3x3x1 are found along the contact between flows near road level which produced many fine specimens of thomsonite covered mesolite on a stilbite lining.

CHABAZITE occurs at Goble as small micro crystals scattered on most of the other zeolites and commonly as rhombohedrons up to 1/2 inch. Exceptional crystals up to 1 inch are highly prized. The twinned variety of chabazite has never been found at Goble although it is common across the Columbia River at Kalama, Washington.

APOPHYLLITE is commonly found with the zeolites at Goble, forming blocky white prisms with pyramidal and large "c" face along with the characteristic basal cleavage. Unusual radiating apophyllite is found on okenite which forms smooth surfaced balls up to 2 inches in diameter. A few specimen with complex 2nd and 3rd order prism faces have been found.

MORDENITE is very scarce at the Neer road location. It is found as 1/4 inch white needles lining cavities up to 1 inch covered by unusual elongated heulandite. Excellent specimens of mordenite was found south of Goble by John Cowles which forms stalactitic growths the size of a little finger covered with delicate undamaged white needles. On broken specimens a hollow core can be seen in the center of each "finger". The mineral which formed the center may have been quartz or calcite. Micro crystals of stilbite and chabazite appear like frost on the white mordenite needles with a few stilbite reaching 1 inch long.

OKENITE is not common at Goble, rarely being found today. Excellent specimens up to 3 feet long were found in very large pockets during construction of the Neer Road. Okenite forms chalky white needles which often have been mistaken for altered thomsonite, mesolite, or mordenite. Okenite is often found covered by apopyllite and chabazite, or rarely analcime.

LEVYNE is scarce at Goble, forming colorless transparent hexagonal plates with large flat "c" face. Exceptionally large levyne crystals up to 3/4 inch in diameter were found at the "original Goble location" but usually is quite small along the Neer Road. Levyne is very heat sensitive and must be kept from direct sun light or hot microscope lights as they will crack or explode.

OFFRETITE is very scarce at Goble, being found as oriented silky white overgrowths on the "c" face of a few levyne crystals.

COWLESITE was first found at Goble by the author in 1971 and later described from a number of other locations in 1975. Cowlesite is common in small vesicles forming white to gray linings and less commonly scattered radiating groups of fine bladed crystals on apophyllite, heulandite, or clay. Cowlesite is also found covered by smooth blue-gray balls of thomsonite, levyne, and garronite-phillipsite. Cowlesite is often associated with analcime forming during the end of analcime crystallization. Cowlesite is found both on analcime crystals and covered by small analcime in the same pocket.

ANALCIME is scarce at Goble usually only forming micro sized crystals to a few reaching 3/8 inch in diameter. It typically forms a colorless trapezohedron but unusual aggregates balls display radiating structure terminated with numerous edges of the trapezohedron are found while others form a very unusual twin which has notches where the normal edges of the trapezohedron should be found. Analcime is often found associated with cowlesite and is found on NEW ZEOLITE # 2.

GARRONITE is common at Goble but is overlooked due to its massive nature and similarity with most other massive white zeolites. Garronite never forms terminated crystals. It usually forms white solid amygdules which possess a concentric conchoidal parting which is a very useful characteristic in its identification. When garronite is found in open pockets it is always covered with a thin colorless overgrowth of phillipsite. Most milky-white phillipsite covered balls at Goble can be considered to have a garronite core.

PHILLIPSITE is scarce at Goble. Nearly all of the phillipsite from Goble occurs as oriented overgrowths on garronite balls. Very little isolated invividual phillipsite is present. Both garronite and phillipsite are found on cowlesite, heulandite, closely intergrown with levyne.

CELADONITE forms small sprays of green needles which alter to various shades of green, yellow, and finally brown.

NATIVE COPPER is present as shiny isolated filaments, crystals, and in sheets often enclosed in calcite, okenite, or stilbite. Exposed copper alters to a black surface coating or produces the blue-green stains seen on many of the minerals.

CAVANSITE is very rare at Goble. The original specimens collected by John Cowles were found 1\2 mile further up the Neer road than where we now collect. It occurs as poorly formed partly altered blue radiating aggreagates, rarely if ever terminated, and usually under calcite, heulandite, or thomsonite. One authentic cavansite specimen has been found at the zeolite location where we now collect.

PYROLUSTIE forms black dendrites on many of the minerals at Goble.

QUARTZ crystals have not been found at Goble but chalcedony linings have been found. Zeolites are not found associated with the chalcedony.

CALCITE is abundant in many crystal forms making beautiful associations with all the other mineral. Calcite often encloses copper and makes attractive specimens when perched on mesolite needles.

NEW ZEOLITE # 2 is very rare at Goble. At present only about a dozen specimens have been found, all from the same rock. The author originally found NEW ZEOLITE #2 in the same rock that produced the first cowlesite specimens in 1971 on the point near the canyon side of the road. The rock came from the bottom of a trench dug down in the volcanic rock which was producing an abundance of cowlesite and analcime. Stilbite, heulandite, thomsonite, mesolite so common in surrounding rock was noticeably absent. The NEW ZEOLITE #2 was originally mistaken for an odd form of apophyllite because of a similarity in crystal morphology. The crystals are usually colorless to milky white with a few having a milky white phantom in the center. Form is a simple tetragonal appearing dipryamid with small "c" face and highly striated pyramidal faces. Traces of prism faces are seen only as part of the striations. Absence of cleavage in NEW ZEOLITE # 2 helps distinguish it from apophyllite. NEW MINERAL #2 is usually the only mineral present on a brown to black clay lining which often detaches from the vesicle wall and falls off. Double terminated dipyramids of NEW MINERAL # 2 are common and often found covered by analcime. Thomsonite is the only other zeolite found on NEW ZEOLITE #2 although cowlesite should be found on NEW ZEOLITE #2 when more specimens are found. Size of crystals generally are 2 to 3 mm with one exceptional crystal 10 mm long.

Russell Boggs is describing this new zeolite therefore if anyone finds more specimens please let him or myself know of the additional specimens.

GENERALIZED SEQUENCE OF CRYSTALLIZATION OBSERVED AT GOBLE, OREGON

Clay > mordenite > heulandite > stilbite > apophyllite-okenite-apophyllite > celadonite > ? New Zeolite # 2 > analcime-cowlesite-analcime > garronite > phillipsite-levyne > offretite > thomsonite-mesolite-thomsonite > chabazite > calcite.

Minerals occurring before New Zeolite # 2 are not yet known.

MINERAL ASSOCIATIONS AT GOBLE, OREGON

The last issue of the Microprobe introduced the use of tables of "associations" to keep track of cavities containing two or more minerals, according to which one is "on top" and which is "underneath". This month we add another such table for Goble, gleaned primarily from the examination of specimens by Rudy Tschernich abd Don Howard. This table is much more complicated, in part because there are almost twice as many minerals reported from Goble as there are from either Burnt Cabin Creek or Pete's Point.

Ideally, we would like to list the minerals in such an order that all the X's lie in the half of the diagram below the diagonal. The many blanks indicate that there are quite a few combinations that we have not yet seen. If you have in your collection specimens representing the "missing" combinations, do bring them to Forest Grove so that we can verify the order and include them in the table.

A few marks appear above the

diagonal. There are several reasons that this might be so:

1) Minerals may be forming simultaneously. This is clearly the case with Analcime and Cowlesite, Garronite/Phillipsite and Levyne, and Mesolite, Thomsonite, Chabazite.
2) Minerals may form at more than one time. The variety in the forms of Thomsonite, for instance, argue that it may have formed under several different conditions.
3) The mineral may have formed over a very long time, spanning the formation times of several other minerals. This is probably the case with Native Copper and may be also the case with Apophyllite.

Keeping these complications in mind, the order of minerals listed roughly indicates the order in which they formed. Some minerals, such as Stilbite, are difficult to place on the list because many of the possible combinations have not been observed. Specimens with Stilbite associations would be particularly useful to complete the table and firm up the order of formation.

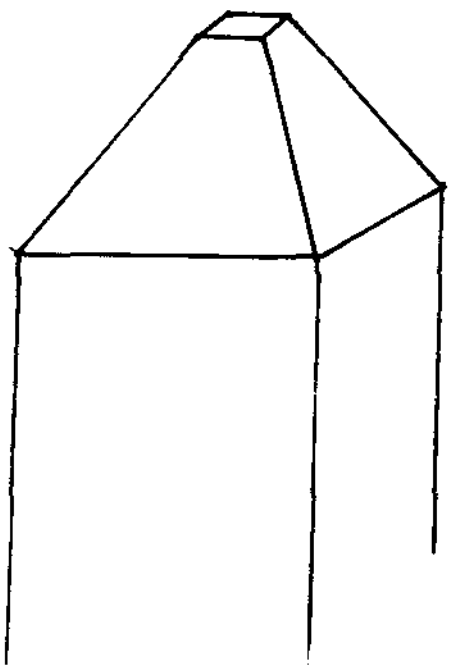
Goble, Columbia Co., Oregon

Secondary Mineral \ Base Mineral	Smectite	Native Copper	Mordenite	Heulandite	Unknown #2	Apophyllite	Okenite	Stilbite	Celadonite	Analcime	Cowlesite	Garronite	Phillipsite	Levyne	Offretite	Mesolite	Thomsonite	Chabazite
Native Copper		0		X														
Mordenite			0															
Heulandite	X	X	X	0														
Unknown #2	X				0													
Apophyllite	X			X		0	X							X				
Okenite		X				X	0											
Stilbite	X			X		X		0										
Celadonite	X			X					0	X								
Analcime	X		X	X	X		X		X	0	X						X	
Cowlesite	X			X		X				X	0							
Garronite	X			X		X				X	X	0		X				
Phillipsite	X			X		X				X	X	X	0	X				
Levyne	X			X				X		X	X	X	X	0				
Offretite	X													X	0			
Mesolite	X			X				X								0	X	
Thomsonite	X	X		X	X	X		X	X	X	X	X	X	X		X	0	X
Chabazite	X	X		X		X	X	X	X		X	X	X	X		X	X	0
Calcite	X	X		X		X		X	X		X	X	X			X	X	X
Cavansite																		

STRANGE ASSOCIATIONS — YELLOW LAKE, BRITISH COLUMBIA

Not all the minerals that inhabit basalt cavities are zeolites. Quartz and Calcite are clear or white and seem right at home with the other white minerals. But on occasion a bit of color appears: needles coated orange (Goethite, such as at Cape Lookout) or black (such as at Springfield Quarry). Small clusters of black or green or brown clay balls often decorate our zeolites. And there is a quarry in Littleton, New Zealand where Todorokite nestles among the Chabazite crystals.

However, one of the oddest assortments of minerals are those found in the cavities and seams at Yellow Lake, B.C. The early, cavity-filling minerals appear to be Heulandite, Analcime, and Thomsonite. The Heulandite and particularly the Thomsonite take on some very unusual crystal forms.



Typical form of the new unknown mineral, Yellow Lake.

The later seam-filling minerals are Brewsterite and Laumontite. And calcite in several different colors and forms fills the remainder of most of the seams and cavities.

But after the Brewsterite and before the final calcite filling, some very odd associated minerals have been found. Fluorite, not often a companion of zeolites, forms very tiny, glassy clear octahedra. And a number of specimens of a black mineral (actually dark red in thin section) now have also been located.

Visual measurements on some of these tiny dark crystals indicate that they are probably tetragonal, with an axial ratio c/a 0.62 . The crystals are generally very simple: a first-order prism and base, occassionally with a termination of a first-order pyramid (as in the photo accompanying this issue).

And what is most surprising: the composition appears to be a calcium vanadate with traces of lanthanum, iron, and silicon. Certainly not a zeolite, but surely an interesting new association, and very possibly another new mineral for the Northwest.

The MICROPROBE

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MORE ON COWLESITE ASSOCIATIONS

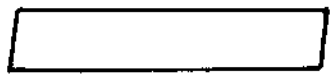
The pictures that were featured in the last issue of the Microprobe illustrated several associations of Cowlesite with other zeolites. Another association has come to light during the last few months: Cowlesite and Heulandite. Since the form of the Heulandite is considerably different with Cowlesite present to make identification difficult, we present in this issue three pictures and a description to aid collectors.

In the presence of Cowlesite, Heulandite takes on a form of simple prisms with flat bases that look very much like Stilbite variety Epidesmine, though the shape is somewhat distorted due to the fact that Heulandite is monoclinic rather than orthorhombic.

At Goble and Yacolt, Heulandite clearly forms first, generally in the form of groups of crystals at slight angles to each other to form a spray. At Goble, the Cowlesite appears to have begun to form at the end of Heulandite formation, forming scatters of tiny balls on the clear blades of Heulandite.

At Ritter, the Cowlesite formed before the Heulandite, which is in the form of clear, six-sided prisms that show a tendency for multiple growths of slightly misaligned crystals. These crystals are six-sided because they seem to have a pair of faces more than those of Goble and Yacolt. The relationship may be:

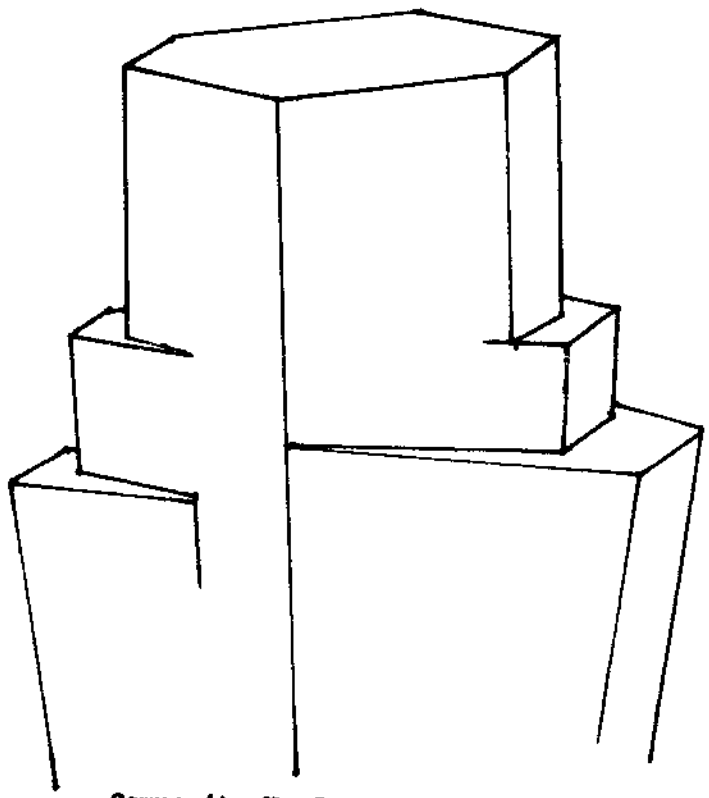
Top View



Goble; Yacolt

Ritter

Thus, the Ritter crystals look rather like:



Composite Heulandite crystal
Ritter, Oregon

PHOTO CREDITS

21. Cowlesite on Heulandite on Diabantite x 14
Yacolt, Washington

22. Cowlesite on Heulandite with Levyne x 16
Goble, Oregon

23. Heulandite on Cowlesite x 12
New Ritter Quarry, Oregon

24. Unknown on Brewsterite x 12
Yellow Lake, British Columbia

Specimens and pictures:
D. G. Howard

FIBROUS ZEOLITES OF THE NORTHWEST

(Natrolite, mesolite, scolecite, erionite, offretite, and mordenite.)

by Rudy W. Tschernich, 526 Ave. A, Snohomish, Wash. 98290

Sept. 4, 1986

NATROLITE:

Burns Lake, British Columbia	natrolite
Coffin Butte, Camp Adair, Benton Co., Oregon	natrolite
Criss Creek, Deadmans River,Savona, B.C.	natrolite
Eckman Quarry, Waldport, Lincoln Co., Oregon	natrolite
Hoods Canal Bridge, Kitsap Co., Wash.	natrolite tips on mesolite
Ice River, Golden, British Columbia	natrolite
Lackamas Lake, Clark Co., Wash.	natrolite
Lambert Quarry, Kings Valley, Benton Co., Oregon	natrolite
Lincoln Creek Quarry, Doty, Lewis Co., Wash.	natrolite
Matts Matts Bay Quarry, Port Ludlow, Wash.	natrolite
Monument, Grant Co., Oregon	natrolite
Mt. Roosevelt, Snoqualmie Pass, King Co., Wash.	natrolite
Mt. Solo, Longview, Wash.	natrolite
North Fork of John Day River, Grant Co., Oregon	natrolite covered by mesolite
Nestucca River, Tillamook Co.,Oregon	natrolite
New Era, Clackamas Co., Oregon	natrolite tips on mesolite on scolecite
Pe Ell, Lewis Co., Wash.	natrolite
Ritter, Grant Co.,Oregon	natrolite covered by mesolite
Robertson Quarry, Shelton, Wash.	natrolite
Springfield Butte, Springfield, Oregon	natrolite
Strawberry Hill, Lane Co., Oregon	natrolite
War Eagle Mine, Rossland, B.C.	natrolite
Wren (south quarry), Benton Co., Oregon	natrolite-mesolite
Yellow Lake, Olalla, British Columbia	natrolite on mesolite on scolecite

SCOLECITE:

Chopaka Mtn., Nighthawk, Okanogan Co., Wash.	scolecite
Elk Mtn (Rd 1440), Cowlitz Co., Wash.	scolecite-mesolite
Green Peter Dam, Foster, Linn Co., Oregon	scolecite
Kosmos, Lewis Co., Wash.	scolecite
Livingston Quarry, Orchards, Clark Co., Wash.	scolecite
Mt. Pisgah, Springfield, Lane Co., Oregon	scolecite on mesolite
New Era, Clackamas Co., Oregon	scolecite covered by mesolite & natrolite
Pioneer Quarry, Bremerton, Kitsap Co., Wash.	scolecite
Signal Peak, Silver Lake, Cowlitz Co., Wash.	scolecite covered by mesolite
South fork of Toutle River, Cowlitz Co., Wash.	scolecite

MESOLITE:

Beech Creek, Grant Co., Oregon	mesolite
Burnt Cabin Creek, Spray, Wheeler Co., Oregon	mesolite
Calapooya River, Dollar, Linn Co., Oregon	mesolite
Douglas Lake Road, Westwold, British Columbia	mesolite
East Spray, Wheeler Co., Oregon	mesolite
Elk Mtn (Rd 1440), Cowlitz Co., Wash.	mesolite-scolecite
Goble, Columbia Co., Oregon	mesolite
Hoods Canal Bridge, Kitsap Co., Wash.	mesolite with natrolite tips
Ilwaco, Pacific Co., Wash.	mesolite
Kalama, Cowlitz Co., Wash.	mesolite
Kennedy Creek, Thurston Co., Wash.	mesolite
Monte Hills, Monte Lake, British Columbia	mesolite
Mossyrock Dam, Lewis Co., Wash.	mesolite
New Era, Clackamas Co., Oregon	mesolite on scolecite and tips of natrolite
Mt. Pisgah, Springfield, Lane Co., Oregon	mesolite with tips of scolecite
North fork of the John Day River, Grant Co.,	Oregon mesolite on natrolite
Quartzville, Linn Co., Oregon	mesolite
Riggins, Idaho Co., Idaho	mesolite
Ritter, Grant Co., Oregon	mesolite on natrolite
Shotgun Creek, Linn-Lane County line, Oregon	mesolite
Signal Peak, Silver Lake, Cowlitz Co., Wash.	mesolite on scolecite
Skookumchuck Dam, Tenino, Wash.	mesolite
Whipple Quarry, Drain, Douglas Co., Oregon	mesolite
Wren (south quarry), Benton Co., Oregon	mesolite-natrolite
Yacolt, Clark Co., Wash.	mesolite
Youngs River, Clatsop Co., Astoria, Oregon	mesolite
Yellow Lake, Olalla, British Columbia	mesolite on scolecite covered with natrolite

ERIONITE-OFFRETITE: (excluding overgrowths on levyne)

Cape Lookout, Tillamook Co., Oregon	erionite
Chase Creek, Falkland, British Columbia	erionite
Dollar Lake, Wallowa Co., Oregon	erionite
Milwaukie, Clackamas Co., Oregon	erionite-offretite
Owyhee Dam, Malheur Co., Oregon	offretite
Pass Valley, Deadmans River, Savona, B.C.	erionite
Rock Island Dam, Douglas Co., Wash.	erionite-offretite
Swayze Creek, Durkee, Baker Co., Oregon	erionite
Twig Creek, Monte Hills, Monte Lake, B.C.	erionite-offretite
Yaquina Head, Agate Beach, Oregon	erionite

MORDENITE:

Altoona, Wahkiakum Co., Wash.	mordenite
Calapoona River, Dollar, Linn Co., Oregon	mordenite
Cape Lookout, Tillamook Co., Oregon	mordenite
Challis, Custer Co., Idaho	mordenite
Cherry Cr., Duvall, King Co., Wash.	mordenite
Cox Butte, Junction City, Lane Co., Oregon	mordenite
Goble, Columbia Co., Oregon	mordenite
Hood Canal Quarry, Kitsap Co., Wash.	mordenite
Kalama, Cowlitz Co., Wash.	mordenite
Kosmos, Lewis Co., Wash.	mordenite
Lewis River/Poison Creek, Skamania Co., Wash.	mordenite
Lost Creek Dam, Douglas Co., Oregon	mordenite
Mossyrock Dam, Lewis Co., Wash.	mordenite
Prescott, Columbia Co., Oregon	mordenite
Prineville, Crook Co., Oregon	mordenite
Raging River Quarry, Preston, King Co., Wash.	mordenite
Richardson's Ranch, Madras, Jefferson Co., Oregon	mordenite
Rickreall Creek, Dallas, Polk Co., Oregon	mordenite
Rock Candy Mtn., Thurston Co., Wash.	mordenite
Rock Creek, Stevenson, Skamania Co., Wash.	mordenite
Signal Peak, Silver Lake, Cowlitz Co., Wash.	mordenite
Skookumchuck Dam, Tenino, Wash.	mordenite
South fork of the Toutle River, Cowlitz Co., Wash.	mordenite
Succor Creek, Malheur Co., Oregon	mordenite
Yaquina Head, Agate Beach, Oregon	mordenite

This list is provided since fibrous zeolites can not be distinguished from each other in hand specimen or by using a normal microscope.

Natrolite, mesolite, and scolecite often are interzoned within the same needle. Offretite and erionite are also often interzoned within the same hexagonal appearing needle. A petrographic microscope using polarized light is required to see the zoning in these needles. You can not distinguish them with a normal microscope.

Mordenite is often found on erionite but never directly with natrolite, mesolite, or scolecite.