Northwest
Micro Mineral
Study Group

MICRO PROBE

FALL, 1997 VOLUME VIII, Number 6

FALL MEETING . .. . .VANCOUVER, WASHINGTON

November 8, 1997 9:30 am to 6:30 p.m.

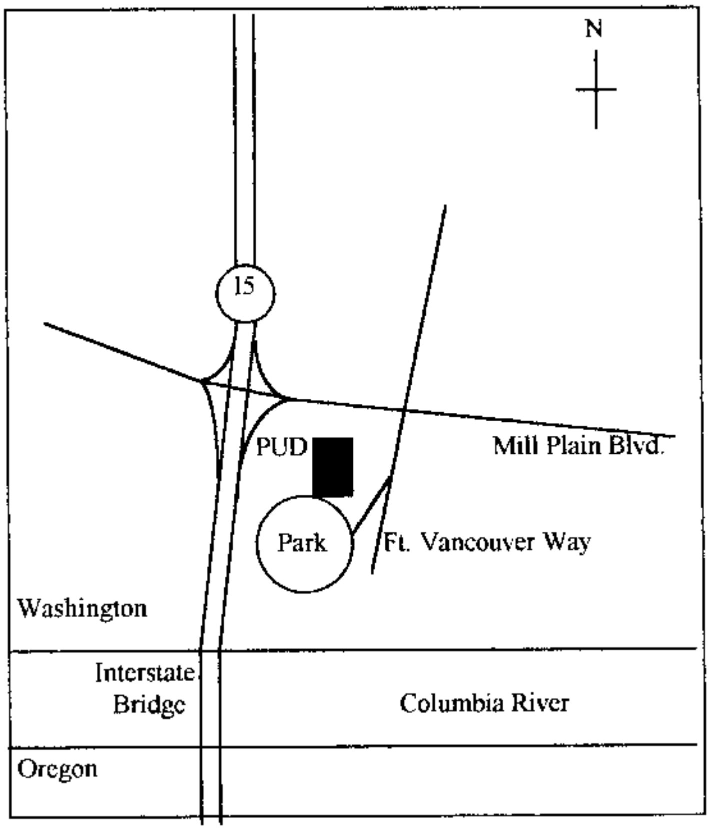
Clark County P. U. D. Building
1200 Fort Vancouver Way
Vancouver, Washington

Bring your microscopes and plan to spend another fall day talking minerals. And do bring something for the free table to share with others, as well as your special new finds and your unknowns to be identified after another glorious summer of collecting. We will have our usual brief meeting followed by our update session to find out what localities are actively producing material and are good bets for collecting trips, at 2 p.m. This will be followed by John Cornish giving a talk and showing slides about the Gopher Valley quarry, and Don Howard with slides of collecting tungusite in Southern California. At 11 am, we will have slides and a talk from Rudy Tschernich about his recent collecting exploits in the Long Ridge, Pe Ell region of Washington.

The kitchen area is available as usual and we will provide lemonade, coffee, popcorn, etc. There will be a snack table, so bring snacks to share with others for lunch and during the day. However, there will be

NO POTLUCK DINNER

in the evening. Restaurants are available in the local area.



IN MEMORY OF GORDON GILBERTSON

Northwest mineral collectors were saddened in August by the passing of Gordon Gilbertson, a long-time friend of so many of us. Gordon was a founding member of our Northwest Micromount Study Group, and a charter member of the Northwest Chapter of the Friends of Mineralogy. He was a member of Oregon Agate and Mineral Society since 1949, serving as President in 1954, and deeply involved in the planning of the programs with OMSI. He was also a member of the Northern California Mineralogical Society, where he participated for many years in meetings and field trips. We have missed him in recent years, when much of his time was spend caring for his wife Minnie after her accident.

Gordon was originally a schoolteacher in the mid-west. He came to Oregon to work in the State Welfare Service, where he became the manager of a district office, and from which he retired a number of years ago.

Gordon, like many others, began in Lapidary. It was the influence of John Cowles that caused his interest in minerals to develop, and he accompanied John in collecting at many of the classic Northwest sites: Goble, New Era, Dog Mountain, Yacolt, etc. Gordon thoroughly enjoyed collecting in the field. He collected with Phil and Beulah Murphy many years ago at Gold Hill, Utah He also collected with Gar Hurley at many of the Arizona localities, including the Ray, 79, Great Southern, Christmas, and Harquahala Mines, from which he had an extensive collection of colorful copper minerals. His material was always well trimmed, mounted and labeled. Many of us have profited by trading or being given lovely specimens that he collected many years ago at some of these classic spots. His collection of minerals and mineral books, gathered over many years, was sold before his death through Bill Leach.

Gordon was a regular at the monthly get-togethers at Beulah and Phil Murphy's house, where we have shared many hours together and swapped a lifetime full of stories. We will miss his quiet enthusiasm and extensive knowledge at all of our meetings. We have lost a truly fine collector and mineral enthusiast, and a really nice companion.

We send our condolences to his wife, Minnie and his sister Evelyn, who survive him.

ANOTHER FAILED STABILIZATION TECHNIQUE FOR LAUMONTITE

by

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Laumontite: what do you think of when you think about this little gem of the mineral world? Personally, I think about the pocket that got away. You know the pocket I'm talking about don't you? It's the new one just discovered at the local quarry where all of the associated minerals have crystallized upon the laumontite and which are now in a pile on the floor of our new pocket all chipped and broken and half buried in a dehydrating white pile. This is what I think about when I think of laumontite and it makes me sad.

I've lost some good pockets this way. I've seen terrific calcites and apophyllites split and cleaved as the laumontite breaks down, taking everything associated along with it. So much leaverite where was once outstanding specimens.

A person can only take so much abuse, and so in my sadness, I found the determination to go on and to change this grievous wrong. With this I decided to go shopping and it was at K-Mart that I found my salvation.

At K-Mart I found what I felt was a miracle product and purchased it and brought it home. What I'd bought was a product manufactured by Carver Tripp called Clear Poly (polyurethane). This is available both in a satin and in a gloss version, the gloss is the style I purchased. Right on the can it stated in bold print that the product would dry crystal clear and would never yellow. I'd found my miracle salvation for my laumontite woes.

Soon I was dipping and painting my newly recovered specimens with enthusiasm and gusto. Many excellent specimens were saved and I was very happy. Too happy I later found out!

At a point sometime recently thereafter, as I was going through my specimens to update an older display, I noticed that my clear specimens had become yellowing specimens. I was shocked and appalled to find that my miracle product suffered from the same problems as had other more lowly products which I'd tried and which I'd discarded in the past. So now, fuming with righteous wrath, I sought for answers as I wondered why this terrible curse had befallen me and my treasures.

Looking on the can I found and called the 1-800 information line and spoke to the lab technician to whom I was referred, and it was here that I learned the truth. The product itself was without fault, as the yellowing discovered was found to originate not from the product but from the water that was still being released by the laumontite and which was accumulating at the surface of the specimen between it and the layers of polyurethane which I'd placed upon it. As a matter of fact, the technician I spoke to knew immediately what the problem was as soon as I described my situation and my usage for their product, thus leading me to the conclusion that I'd not been the first person he'd spoken to who had been lulled into a sense of false security.

So alas, here we are full circle back at the place where I'd started from, and with no clear-cut solution to the dehydrating problem at hand. I wish I had better news to relate, but at least now you too know that it's always best to never say never!

PYRITE FROM THE GOPHER VALLEY QUARRY, SHERIDAN, YAMHILL COUNTY, OREGON

by
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Unusual pyrite crystals are found in zeolite- and calcite-bearing cavities in basalt that belong to the late Eocene volcanic member of the Nestucca Formation north of Sheridan, Yamhill County, Oregon. The quarry exposes a cross section of what is interpreted as a tidal zone where basalt flowed into seawater. The lower portion of the quarry is composed of closely packed pillows of basalt, 2 to 4 feet in diameter, that formed under seawater. As the pillows piled up to the surface of the water, explosion fragments of pillows and fragments of scoria formed a jumbled up pile of loosely stacked debris with numerous openings. Later basalt flows that cooled above the water covered the pillows and explosion breccia with a massive non-vesicular basalt cap rock. Areas of fine-grained sediments are also found in the quarry that could have formed along the shore. Either during formation of the volcanic rock or much later, hydrothermal mineralized water flowed through the loosely packed fragmental rock and deposited thick layers of clay, zeolites, pyrite, and calcite. This paper will deal with the minerals found in the clay at the bottom of the pockets and their origin, while an following paper by John Cornish describes the minerals found in one of the large open cavities above the clay.

Clay was the first mineral to crystallized in the cavities. When fresh it is a blue-gray color with the consistency of pudding, but upon exposure to the air it quickly turns a dark black and becomes hard. Like most zeolite-bearing pockets, a thin layer of black clay lines most of the fragments and walls of the pockets, preceding the crystallization of the zeolites. At the Gopher Valley Quarry, clay also forms a thick layer, up to 2 feet thick, in the lower portions of large breccia-filled cavities and totally fills some of the smaller 2 to 3 foot cavities. Baldwin et al (1955) reports that a dark-green nontronite fills nearly 90 percent of the vesicles in this area. Strange-looking eyes of blue clay surrounded by lighter gray clay with black edges result from partial exposure to the air. Some of the clay masses contain thin horizontal layers or scattered crystals of analcime that grew in and around the clay. Seams of calcite cut through the clay at various angles but the most unusual mineral is the large crystals of pyrite that grew metasomatically within the clay.

The first major pocket, found in December 1994 by Kris Dennis and Jon Gladwell, was called the "Christmas Pocket". It contained a large of amount of amber-colored calcite on drusy analcime, most of which made its way to the Tucson show in February 1995. The calcite covered the walls and large fragments of rock, several feet across, in a pocket that measured 4x3x8 feet after all the contents had been removed. In the bottom of the pocket, a coarse, solid, sandstone-like, clay-analcime mass was encountered in the lower right corner that contained extraordinary aggregates of lustrous, curved pyrite cubes, that reached 4.5 inches across. Sectioning of some of the specimens showed small trapezohedra of analcime in the middle of the pyrite. Cleaning the analcime-calcite-clay mass away from the pyrite with hydrochloric acid revealed pits in the pyrite where the analcime had been covered by pyrite. From these observations it appears that small trapezohedra of analcime, 1 to 2 mm across, formed early in the clay at the bottom of the pocket and were partly or totally covered by the pyrite. As the pyrite grew larger, it extended above the analcime crystals and developed smooth sharp faces without pitted surfaces. Many of these pyrite cubes were highly curved and arched. Analcime appears to have crystallized a second time, covering the pyrite with more small sand-like scattered crystals that were not attached to the pyrite. Calcite then filled in all the open spaces and cemented the mass together.

In addition to the large "Christmas Pocket", several 2 to 3 foot pockets were encountered over the years that were completely filled with clay and flattened pebble-like aggregates composed of drusy pyrite on which crystallized cubes of pyrite, up to 15 mm on an edge. Thick clay layers in other large pockets did not contain either pyrite or analcime. Tiny pyrite crystals and clay commonly form before zeolites in volcanic rocks that originat in seawater but pyrite crystals the size found in the Gopher Valley Quarry are exceptional for a zeolite-related environment.

Most of the pyrite crystals are simple cubes. A few crystals also show tiny triangular corners on the cube indicating octahedral faces or beveled edges on the cube that indicates the presence of a pyritohedron. The most striking feature of many of the pyrite crystals from the Gopher Valley Quarry is their curved habit. Some of the crystals appear to radiate from a central area to form curved faces that are twice as wide from one side of the cube to the other. The largest pyrite aggregate found in the pockets is 4.5 inches across. It displays brilliant, radiating, curved faces that form 75 percent of a wheel-like aggregate (Jon Gladwell collection). The curved habit is caused by offset crystals and dislocations due to structural defects in the crystal structure. The curved habit does not appear to have any relationship to marcasite. Pyrite and marcasite often intergrow at some localities, making the specimens unstable. Pyrite at those localities will first develop cracks, discoloration, and a white powder before they fall apart. Some of the specimens from the Gopher Valley Quarry have been exposed to the atmosphere for several years and do not show any of the signs of disintegration. Most of the specimens from the "Christmas Pocket", cleaned in hydrochloric acid, are still bright and shinny. We hope they stay that way.

The minerals at the Gopher Valley Quarry appear to have crystallized in the order: clay > (analcime > pyrite > analcime) > dark brown calcite > natrolite > analcime > yellow-white calcite > light amber calcite.

The minerals in the clay appear to have formed in the following manner. A iron-rich nontronite clay crystallized as tiny platelets and aggregates that settled into thin layers in the lower parts of the large cavities, accumulating into masses, up to 2 feet thick, and completely filling some smaller 2- to 3-foot pockets. Analcime first formed tiny 0.5 to 2 mm diameter trapezohedra in horizontal layers, 2 to 4 mm thick, within the clay where the clay was less compact or the analcime crystallized scattered throughout the clay. This analcime is a dark greenish-black color due to an abundance of clay inclusions. At the same time, above the clay layer, colorless analcime lined the exposed breccia fragments and cavity walls. Later a disturbance broke many of the analcime layers in the clay to form separated flat layers of analcime. At the same time, analcime shells in the open portion of the pocket detached from the walls and formed piles of broken up analcime plates. In the clay, pyrite nucleated around the analcime fragments or analcime grains and grew by metrasomatic reaction (simultaneous solution and deposition by which a new mineral of partly or wholly differing composition may grow in a body of an old mineral or mineral aggregate) similar to pyrite in growing in solid greenstones or garnets in schist. The iron from the clay and sulfur from the water produced the pyrite. As the pyrite grew into and replaced the clay some of the faces became irregular and malformed while others were sharp and smooth. Where the analcime plates were large, the pyrite formed on both sides of the analcime plate. Where the analcime plate or grains were small, the analcime was engulfed by the pyrite. These specimens were formed by many minute pyrite crystals, under 0.5 mm across, covering an analcime fragment to form a rounded pyrite pebble, up to 15 cm in diameter. This stage was followed by a growth of larger pyrite crystals, up to 10 mm, across on the pyrite pebble. After the crystallization of the pyrite, cracks developed in the clay that were usually completely filled with cream-colored or light amber colored calcite. This calcite also filled any opens spaces between the analcime grains and pyrite to cement the masses together. In the open part of the pocket large calcite crystals were forming.

The clay, zeolites, and calcite were deposited from hydrothermal water moving through a series of interconnected cavities in the fragmented rock pile. When this occurred we do not know. It could have happened millions of years after the rock had cooled and had been buried deep in the ground or it could have happened during and shortly after solidification of the basalt. The presence of "black smoker" sulfide-rich hydrothermal vents along oceanic ridges and hydrothermal waters from underwater volcanoes, such as the new one forming east of the island of Hawaii, clearly demonstrates that hydrothermal water is often present during the formation of underwater basalt. Baldwin et al (1955) reports the altered volcanic rocks of the Nestucca Formation contain up to 30% iron oxides. During removal of calcite from some of the pyrite specimens with hydrochloric acid a large amount of black, metallic, sooty, hydrogen sulfide-smelling liquid was produced from the matrix that may have been in the solution that precipitated the pyrite. The presence of iron sulfides and the intence alteration that produced large amounts of clay seems to indicate that the heat came from a nearby source and may have formed during or shortly after the rock partly cooled. The hot mineralized water could have moved upward through the fragmented rock but was stopped by the massive basalt flow on top that acted as a cap rock. The water could then only move laterally through the fragmented rock perhapes for considerable distances before depositing clays, zeolites, and calcite. Deposits of drusy analcime that form concrete-like layers on one side of many rock fragments in the large open spaces, indicates the water that completely filled all of the open areas had a current that was moving in one direction. Natrolite that grew on the side facing the water flow are broken, matted, and cemented with grainy analcime and calcite to form rather unattractive masses. On the other side of the analcime plates or rock fragments, the solution was less turbulant and allowed natrolite to form long thin delicate needles in these protected areas. Much of the fragmental rock is a soft highly vesicular scoria that should alter very easily in hydrothermal water, yet zeolites and calcite are found only on the surface or in large interconnected cavities, rarely in small vesicles a centimeter into the fragments. The small vesicles within the fragments are barren or lined with a thin layer of black clay. Since the surrounding rock is not highly altered, the elements needed to form the minerals found in the cavities must have been transported from some other area in the nearby rock pile. Several generations of calcite are found in the open cavities. The earliest calcite is a deep brownish-amber color followed by crystals that are creamish-yellow and the last being a transparent amber. These different colors of calcite also fluoresce different shades of cream color under both long and short wave ultraviolet light. The cream fluorscence in calcite is usually caused by inclusions of hydrocarbons (natural oil); therfore, the different intensities of the fluorescence appear to indicated different amounts of hydrocarbon in the water. The different colors of calcite, different hydrocarbon contents, and sequence of crystallization indicates a changing source of hydrothermal water.The abrupt changes seem to indicate this water may have flowed along several pathways in the rock pile that changed during the formation of the minerals.

More large pockets are expected to be exposed in the Gopher Valley Quarry, probably next year, after the upper level cap rock is removed and the lower level, where the cavities are present, is worked. Many of the specimens are damaged during blasting at the quarry. Careful removal and wrapping of the specimens is needed in order to reduce any additional damage.

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MINERALS FROM THE GOPHER VALLEY QUARRY, YAMHILL COUNTY, OREGON

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The Gopher Valley Quarry is an Oregon locality which has enjoyed well deserved acclaim during the last several years. During this time several large and productive pockets were found and many beautiful specimens were recovered and offered for sale by several Oregon collectors. In May and June of 1997 several friends and I made two collecting trips into the quarry. The following is an account of what transpired during those trips.

With me on this trip was my friend and collecting partner Wes Gannaway. We entered the quarry property via an approximately one-half mile long access road. Off-shooting from this is a right hand spur which enters into the quarry itself between two small hills. At present the quarry is roughly circular in shape with walls surrounding it on all sides, except for the cut where we entered. The walls are all under one hundred feet in height, except for where they near the western end of the quarry. The wall here is presently over one hundred and fifty feet high and continues to grow taller as work advances into the hillside.

Large pillows of basalt are abundant in the lower walls in sizes ranging from three to five feet in diameter. As the walls rise higher the basalt changes from pillows into a denser, more massive flow where pillows disappear. The pillow basalt in the northern end of the quarry is overlying a layer of shale which is exposed dipping at a slight angle into the quarry floor.

Mineralized pockets were found exclusively in the first fifty feet of the quarry's west wall. Previous collectors had worked several pockets prior to our visit. One of these was only four feet above the quarry floor and had an approximate diameter of three by four by four feet. Scraps of analcime and calcite were seen upon the pocket walls and embedded in the abundant gray colored clay which formed the pocket's floor. The color of these calcite crystal scraps was a soft opaque yellowish-white.

As we scanned the walls we were fortunate to find two areas which appeared to have potential. The first was an open pocket about thirty feet above us which was approximately ten feet long and three feet high. From below it looked as if the majority of the pocket's crystals had been destroyed during blasting. Crystals could clearly be seen upon the walls and ceiling of the pocket, but it was obvious that the majority of the pocket's crystals where gone.

The other spot was just across from the open pocket about eighteen feet over to the right and five feet higher, at about thirty-five feet. Here a small dark black hole about four inches wide lay gaping. No crystals were in evidence in the mouth of this hole, but beneath and around it the rock appeared brecciated and re-cemented by small stringers and concentrations of calcite. As we'd looked at this small hole our thoughts were dominated by visions of a monster pocket. What would this small black hole hold for us?

After we checked the quarry, we'd discussed our options while making our way back down to the trucks to get the rest of our collecting gear. This would be a real challenge, but we felt we had the right tools for the job.

Back in the quarry, we decided to work the left hand open pocket first. It was great as I approached the pocket, but once there, I was in for a let down as I noticed chisel and pick marks in the pocket clay almost immediately. Abundant material was still available however, and without much further to do, I started collecting crystals.

The majority of material collected from this large pocket occurred in horizontal veins which crossed through a two foot thick clay layer at the base of the pocket. These veins were crystal lined and averaged two to three inches in width. The color of the calcite crystals within the veins varied, though they were predominately an intermixed golden-butterscotchy color. Other colors found were clears to yellows, burnt oranges and greens. Most all of the crystals from the veins were inter-grown or broken and it was unfortunate that the majority of the pieces recovered would be fit only for fluorescent give away material.

While I collected, I had time to study the pocket and its position on the wall. An intermediate bench, which had been shot away, appeared to be the way the previous collectors had accessed the pocket. However, they must not have had the correct tools to finish collecting the pocket as it's right hand side was virtually untouched. Our finest calcite crystal plates from this pocket were up to approximately six by three inches and were comprised of opaque butterscotch colored crystals slightly over an inch in length. These were exclusively recovered from the open cavity above the thick clay in this right hand side of the pocket.

We finally finished collecting this pocket around dusk after approximately eight hours in the quarry. We left our tools in the quarry that night and would come back the next morning to attempt collecting the black hole.

Our day began at five-thirty that next morning and by six-thirty we were in the quarry and back at work. After a bit of preparation we made the move over and up to the black hole. Once there, the first thing I saw as I looked into the hole was several nice calcite specimens which had formed upon basalt chunks which were covered in dirty natrolite and analcime crystals laying just within the pocket. It was an incredible experience to look deeper and deeper into the pocket and see all those wonderful specimens just waiting to be liberated from their rock bound treasure room! With just my hands I was able to peel away the enclosing rock opening the pocket with very little effort. I stopped once I'd reached a more comfortable working diameter of about two and a half feet and again gazed within. The pocket's interior at this point was three feet wide and three feet tall. It was choked full from side to side and end to end with a twenty inch high jumbled pile of basalt rubble (Photograph #24). These basalt chunks were covered by crystals of analcime, natrolite and calcite.

For the next several hours my primary activity involved reaching into the pocket and lifting out crystal covered, irregularly shaped blocks of basalt while trying to hold back the fall of a dozen more. It was disappointing and unfortunate to find that the majority of the specimens were partially damaged from or inter-grown with this chaotic mass. Clean specimens were also very rare and almost everything had some type of damaging ding or blemish. Luckily there was lots of material!

As I continued collecting I moved beyond the initial material immediately before me and had come upon several large blocks which had exceptional calcites upon them. I told Wes what I was coming into and we both got very excited. Looking back into the pocket, my hard hat reflected the sunlight just right and shot a beam of light into the pocket's interior. If I'd been excited before, my excitement paled in comparison to the feelings I received as I looked into the pocket and finally beheld the back wall, six feet away. And what a sight it was, the entire back wall of the pocket glowed an incredible golden-ambery-brown color as the light from my hat shined into a monstrous calcite group over a foot and a half long! I was dumb-struck and amazed at this incredible sight. At this point we stopped collecting and took a picture of the pocket right then and there (Photograph #25).

Most of the specimens collected from the pocket were miniature to large cabinet in size. Three specimens, including the back wall calcite group, were larger. The first large museum sized specimen recovered came from the largest basalt block pulled from the pocket. This slab was three feet long and eighteen inches in diameter. It sat against the right hand wall of the pocket and is the one in Photograph #25 with the large yellowish-amber calcite group upon it, also note in Photograph #25 the larger ambery-brown colored calcite crystal directly above and separate from this group. This crystal is partially overgrowing its matrix and is seven inches long by three and one half inches wide by four and one half inches tall.

In order to get this huge rock out I was forced to break it apart at the mouth of the pocket. The zeolite minerals on its surface were all damaged and all I was hoping for was to keep the calcite group intact and recover it as a large cabinet specimen. I took my hammer and chisel and drove steel into the block attempting to break it down. With very little effort my chisel disappeared as it plunged through several unexpected pockets filled with natrolite crystals which were exposed as the rock broke in two. These pockets were all several inches tall and were commonly up to twice that long. The pockets were beautifully mineralized with radiating hemispheres of natrolite which completely lined the pockets with crystals one half inch long. Fortunately, these pockets were unaffected by the conditions which had destroyed nearly all of the main pocket's zeolite specimens. One major exception to this had only just recently been exposed as the ceiling of the pocket (Photograph #25). This expanse of predominately natrolite and analcime sparkled a brilliant white and was undamaged over its entire two by three foot surface. This ceiling plate produced many of the finest quality zeolite specimens, as well as several truly exceptional calcite and zeolite specimens.

I broke the slab down further and into thirds, producing the first museum sized specimen of our trip. This specimen stands fourteen inches tall by ten inches wide by fourteen inches deep. Several clean and dirty pockets of natrolite are exposed in its matrix. The top of the specimen is crowned with a dirty analcime and natrolite crystal layer typical of the pocket upon which crystallized a several inch wide group of yellowish-gold opaque calcite crystals up to one quarter inch in height, and a large complex yellowish-amber group of penetration twinned calcite crystals four inches long by two inches wide by two and one half inches tall. Crystal faces in this group are commonly curved and striated. With the break up and removal of this large blocking slab, work proceeded deeper into the pocket quickly.

The second large plate came out soon thereafter. This specimen's matrix was a large dirty slab of analcime and natrolite sixteen inches long by twelve inches wide by five inches thick. Straddling this is an impressive eight inch long by three inch wide by four inch tall, transparent to opaque, yellow group of penetration twinned calcite crystals. During cleaning this specimen's natrolite crystals were removed, revealing the sparkling analcime crystals beneath which now make up this beautiful specimen's matrix.

Continuing deeper into the pocket, I was at the point where most of my body was inside. I'd been slowly collecting specimens carefully away from the big amber colored calcite group against the back wall and for the most part this had been an easy and very enjoyable chore.

This last big specimen was truly a sight to behold. It was so incredibly immense looking, sitting there against the back of the pocket. At a foot and a half long and a foot wide and tall this piece would require my complete and undivided attention! The specimen was loose, like almost everything else in the pocket, and I was hoping to use this to my advantage. First I cleaned out the floor of the pocket as best I could and then tried to set my body inside as comfortably as possible before finally reaching for the crystal. I set my right arm down along the floor with the thought that I'd roll the specimen down onto my arm and be able to slide my arm out while cushioning the specimen.

With a slight yank, I pulled the specimen away from the wall and swung it down to my arm as pretty as you please. Nice and smooth, no problems, and now all I had to do was slide out. This is when the problem started. True, it wasn't much of a problem, but nonetheless, it sure stopped me dead. I couldn't get the leverage to pull myself and the specimen from the pocket! I remember being so excited and pumped up with adrenaline as I lay there panting with that beautiful monster resting on my arm. I wanted to laugh out loud because it seemed like such a silly predicament to be in, but instead, I only grunted and hunkered down for another attempt. This time my luck held and slowly, oh so slowly, I was able to slither backwards out of the pocket with treasure in hand!

I felt giddy and overwhelmed as I reached the ground tightly clutching my prize that day. It was awesome! I was sweating and shaking and laughing. I hadn't eaten or drunk anything, I hadn't even gone to the bathroom in the last eleven hours and I was exhausted; but we'd found treasure! Wes took a picture of me holding our new prize. I was dirty and tired and I had this goofy crooked smile on my face. I felt like the great hunter holding the one that didn't get away!

Several small plates were removed soon thereafter and this essentially finished up the pocket. The pocket's completed diameter was roughly three by five by six feet. During the course of that day I'd collected from several small areas on the right hand wall as well as from the ceiling with hammer and chisel. These were the only times I'd used tools within the pocket.

We had boxes and boxes of material sitting on the quarry floor along with all of our gear and it took us many trips to remove all of our things. Once it was down at the trucks and all packed away we basked in the glow of a job well done. We'd collected forty flats of material the majority of which would be fluorescent materials which we will give away to children during mineral talks. Though rare, we did manage to find a few things which we've added to our collections and which we are justifiably proud of-- just ask us!

A second trip was made into the quarry almost a month later. I invited two other collecting friends of mine to accompany me on this trip. Fred Gribler and Amy Kiesbuy drove over from Coeur d'Alene, Idaho and we set out to find more treasure. We worked both pockets again and managed to collect another twenty flats of material. Again, the majority of this material was damaged, dinged and broken; however, we managed once again to find a few decent specimens to swell our collections ranks.

From the left hand lower pocket we collected more calcite specimens from within the veins. As I dug through the clay I received a pleasant surprise when I found the first of several dozen specimens of crystallized pyrite. The pyrite crystals had formed upon a hard analcime, clay-included, flat plate-like matrix approximately one-sixteenth to one-eighth of an inch thick. The pyrites were incredibly bright and lustrous and formed on one or both sides of plates which were up to three inches long and an inch wide. Most crystal faces are well formed while others are a splotchy patchwork of pyrite and clay. Rarely were sharp crystals found which were mirror faced and cubic. More common were cubes with curved faces often displaying octahedral modifications. These crystals are up to three-eighths of an inch and formed commonly as groups of crystals strung across their matrix. Several specimens with curved faces had developed to such an extent that rough spheres formed. These were up to one and one quarter inches in diameter and had completely enveloped their matrix.

After working in this pocket for several hours we moved over to the upper right hand pocket and recovered several more decent specimens. Primarily we found good material from this pocket's upper ceiling plate. We used a forty inch chisel to collect several specimens which had remained out of reach on the previous trip.

An observed crystallization sequence for these pockets would be:

Pocket #1 (Clay-filled pocket)

Thick layer of clay > analcime > pyrite > analcime > natrolite > butterscotch calcite > orange-green calcite > golden-butterscotch calcite > clear-yellow calcite.

Pocket #2 (Breccia-filled pocket)

Thin layer of clay > analcime > pyrite > analcime > root-beer calcite > natrolite > small yellow-gold calcite > large generation ambery calcite.

A few notes in closing about the minerals.

Calcite. Calcite has always been the primary mineral which collectors have sought when working this locality. The staggering diversity of these calcite's colors and their rhombohedral forms, as well as their aesthetic appeal, have all worked together to secure the place of this locality in our northwest collecting hearts.

Both of our pockets were represented by a wide range of colors and forms well reflecting the multiple phases or generations of calcite mineralization. In our second pocket, the generation which produced the forty pound amber-colored calcite group, truly formed a spectacular specimen (Photograph #26). To the author's knowledge, specimens of grouped crystallized calcites in this size range have not been previously encountered in Oregon's basalts. This specimen and this pocket are deservedly noteworthy in this regard. This large cluster has one other feature which sets it apart from not just northwest calcites, but from most world calcites also; this specimen has within it at least four separate visible enhydros. These appear to be two phase inclusions and although solid matter may be present it is invisible to the naked eye. The largest bubble is nearly one inch across and travels freely within its track-way quite near the surface of a crystal nearly four inches in diameter.

These crystals are also fluorescent and phosphorescent in both short-wave and long-wave ultraviolet (U.V.) light. Long-wave (U.V.) light produces the strongest fluorescence, emitting very bright colors varying from creamy white-yellows to yellow, golden-yellow, yellow-green, orange and dull burnt shades of orange and brown. The color of their phosphorescence in long-wave (U.V.) is yellow to yellow-green. In short-wave (U.V.) light the colors emitted do not change although their fluorescence and their phosphorescence is less intense.

Natrolite. Another remarkable aspect of our second pocket was it's intense zeolite mineralization. Previously, natrolite had only been found in small quantities at the quarry. This pocket with its abundant natrolite and analcime crystals represents a major zeolite find for this locality.

Our finest zeolite specimens were those where accicular natrolite crystals formed as tiny bundles fanning outward from a single point, looking very much like a wedge-shaped slice of pie. Several of these natrolite fans were commonly found attractively perched on individual analcime crystals. The natrolite crystals were never more than one inch in length. The optics of the natrolite were verified using a polarizing microscope.

Pyrite. Pyrite was also recovered from the second pocket in two specimens. The first specimen found was a small patch of anhedral pyrite frozen in matrix. The second was a small group of six nearly one-eighth inch cubic crystals on analcime.

Analcime. Rarely did we find crystal "sheets" of analcime in our second pocket. These sheets are comprised of dozens and dozens of individual crystals all joined together and only as thick as the eighth-inch crystals themselves. The analcime crystals are terminated on both sides of these unique specimens. Two of the largest sheets are roughly three inches in diameter.

Clay of an undetermined composition. The clay within the first pocket was thick and tenacious and a grayish-blue in color. Rarely were blue "eyes" encountered in the clay. Also rarely found in the clay were calcite crystals which were incompletely formed, displaying surfaces usually pitted and irregular. Pyrite crystals also rarely displayed faces which were incompletely formed. Very little clay was found in the second pocket.

Acknowledgments: First and foremost, I would like to thank Rudy Tschernich for his terrific input, and for the phone call prompting these trips. Also, I'd like to thank Wes, Fred and Amy for accompanying me on these trips and for the timeless field photographs. Last, but certainly not least, I would like to thank my wife Gloria for her support as I pursue the other gems in my world.

WAIRAKITE FROM THE 200/237 ROAD QUARRY, WOLF POINT, COWLITZ COUNTY, WASHINGTON

by

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Many zeolites have been reported from the 200/237 Road Quarry, near Wolf Point, Cowlitz County, Washington (Tschernich 1994, 1995a, 1995b, 1997). To date 24 minerals have been found including scolecite, mesolite, analcime, chabazite, yugawaralite, stilbite, heulandite, epistilbite, apophyllite, erionite, offretite, levyne, phillipsite, cowlesite, calcite, quartz, clay, pyrite, thomsonite, gonnardite, mordenite, laumontite, and analcime. This paper deals with the two members of the analcime group, analcime and wairakite, both of which have now been identified at the 200/237 Road Quarry.

Analcime and wairakite form a continuous series from the pure sodium end member, analcime, which is very common in surface rocks to the calcium end member, wairakite, that is common in active hydrothermal systems deep in the earth. Tschernich (1994) reported colorless trapezohedra of analcime, up to 3 mm in diameter, alone in some of the open cavities in the dark black basalt that makes up the upper portion of the quarry. Since then analcime has been found, in the dark rock, on one specimen of cyclic twinned epistilbite (see micrograph #692) (Don Howard, pers. comm.). Tschernich (1995a) also reported small, white, poorly-formed trapezohedra of "analcime", up to 2 mm across, with yugawaralite and mordenite that had been covered by calcite, heulandite and chabazite in two small cavities in a soft green tuff in the lower portion of the quarry. Both the colorless analcime and the white "analcime" were tested with EDX by Don Howard and Bart Cannon for their chemical elements and found to be opposite end members. The colorless crystals from the black basalt contained only sodium with no trace of calcium and is pure analcime. Nearly all analcime found in open cavities at the surface at other localities is pure analcime, so this is not unusual, but the other sample that was found in the tuff contained no sodium at all. It is the pure calcium end member wairakite (see micrograph #691). Both occur in the same quarry but not in the same type of rock and appear to have a different sequence of crystallization. The main difference may be that the wairakite crystals had been completely covered by calcite while the other was exposed to the solution in the cavity.

I have been looking for wairakite for years without success, until now. I have over time developed a hypothesis of why we do not find wairakite more commonly. Specimens collected at the surface should reflect the ancient hydrothermal activity that occurred deep in the earth and the minerals that formed there. Samples taken from geothermal wells in active hydrothermal areas clearly indicate what minerals are crystallizing at those temperatures, pressures, and chemical content of the water. The hydrothermal water in these wells is a weak sodium-chloride solution with very small amounts of calcium and other ions. Samples brought up from these wells commonly contain wairakite or an intermediate composition between wairakite and analcime. Rarely is pure analcime present. After the hydrothermal water cools and the rock is eroded to expose the altered rock, you would expect to find the same amount of wairakite or intermediate analcime group minerals along with the other zeolites, but we don't. Nearly all of the analcime group minerals are pure sodium-rich analcime at the surface. Could the minerals have changed chemical composition from the time they crystallized to the time we find them? Zeolites are well known for the capability of cation exchange, so it is very possible. From observations of the sequence of crystallization at many sites we know that pure sodium analcime crystals are found with many other pure calcium zeolites and often is the only sodium-rich mineral at the deposit. That is a little strange until you consider the possibility that the analcime specimen you have may have crystallized as a calcium-rich wairakite and has changed by cation exchange with the solution in the cavity. If this is true nearly all analcime crystals in open cavities found at the surface are sodium rich. That is true. How would one test the hypothesis to see if they have changed? Suppose a calcium-rich wairakite was totally enclosed by an impervious mineral such as calcite, quartz, feldspar, or epidote so that the zeolite could not react with the weak sodium chloride solution and change. Such crystals when chemically tested would still be wairakite. Several examples of this embedding has been reported. In the Mt. Hood area in Oregon, totally filled veins contain epidote covered by wairakite which is in turn covered by chlorite and chabazite with no open space remaining where a solution could react with the crystals. On Vancouver Island, British Columbia, Canada crystals with a chemical composition ranging from pure wairakite to sodium-rich wairakite are covered by calcite, muscovite, prehnite, epidote, and quartz. In Japan, the main source of micro wairakite found in mineral collections, it is found in veins and cavities that are covered with calcite which has been partly removed. Now at the 200/237 Road Quarry we have analcime exposed in an open cavities and wairakite in ones that have been covered by calcite.

In conclusion, in order to find wairakite, look for crystals that appear to have the morphology of analcime that are totally enclosed in another mineral that water can not flow through (this excludes other zeolites) particularly calcite because it can be easily removed. The chemical composition of the crystals must be tested for the presence of calcium. If calcium is dominant over sodium it is wairakite.

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NEW MINERALS (AT LAST) FROM MILL CREEK QUARRY, BUELL POLK CO., OREGON

by

Donald G. Howard

Mill Creek quarry has, for several years now, been an excellent source of colorful and interesting specimens, ranging from intensely colored micros to lovely cabinet specimens. The production this spring has been particularly prolific following the large blast in early spring. Fresh unweathered material atop the debris pile has produced many many cavities of dark orange stilbite with interesting quartz, some of which possessed a decidedly lavender cast, at least when freshly broken out of the boulders. Much of the quartz showed scepters, and even reverse scepters. Calcite was also in fair abundance in the cavities. Collecting was fabulous while it lasted. Now all the blasted material has been crushed for use on roads in the area, and we will have to wait several years at least for the next blast. Meanwhile, the walls of the quarry are difficult and dangerous to work, and only a few things will be produced. But we can anticipate another day in the future when the quarry has been blasted. So far, each blast has produced better and better material.

The only real trouble with this otherwise very productive locality has been the lack of variety in the minerals present. Stilbite, orange, milky or clear in color, has been the primary mineral. The unusual sprays of quartz have been described previously (see the Microprobe, Vol. 8, #2, page 30-32).

The spring collecting produced much more calcite than had been collected previously. Most of the calcite is in the form of rhombohedrons (1011) whose six faces are parallelograms with acute angles of 75°. Occasionally, beveled edges are present. These form single crystals and intergrown groups. Generally they are translucent and practically colorless. Mickey Marks has found a large cavity where the calcite was golden colored and had centers that were strongly colored red (See photograph #27). A few rhombohedrons are more steeply pointed, with parallelogram faces nearer 60°. Still more elongated crystals form clusters of slender needles. Most of the calcite crystals have rough, wavy, or crudely striated faces. There is a wide range in sizes of crystals, from the smallest micro size to large crystals several inches across. Calcite in the less fresh material shows strong signs of etching and partial dissolution.

SAPONITE

The blackish material, previously described as clinochlore, is actually the clay mineral Saponite. Numerous cavities gave thick layers in which this material formed extended groups of hemispherical clusters, the surface of which is glittery and shows signs of parallel blading (See photograph #28). Broken balls display a well-developed radial structure. The interiors are black or very dark green in the freshest material, more of a bloody orange in somewhat oxidized material, and rusty orange with a lighter surface color in the most oxidized material. The fresh material gave a very good x-ray diffraction pattern leading to its identification as saponite, which is a member of the smectite group. This is a very iron-rich saponite. The quartz and calcite definitely formed after the saponite, while the stilbite formed before.

PYRITE

The basalt matrix contains evidences of pyrite. Distorted crystals, resembling those from Coffin Butte (See Micrograph #11, Microprobe v.8, #2), have been found measuring up to several millimeters on a side. Very, very fine, glittering pyrites have been found scattered on the surfaces of the stilbite and quartz crystals in a few cavities.

ALIETTITE

One cavity, about 1 cm across, with orange stilbite on the bottom and colorless stilbite on top, shows small clusters of dark green saponite intermixed with a snow-white, claylike mineral. X-ray diffraction discloses that the soft, waxy white mineral is Aliettite, a mineral that has not been previously reported from the Northwest (see photograph #29).

Aliettite was first reported in 1969 from a weathered serpentine from Ferriere in the Nure Valley of Italy. It has since been found in serpentinized rock from Monte Chiaro in the Taro Valley of Italy, and from Precambrian dolomites in the Congo. This appears to be the first reported occurrence in a basalt environment associated with zeolites.

Structurally, aliettite is an interleaving of alternate layers of talc and saponite. These are both basically magnesium silicates. The very white color, in contrast to the dark saponite, would indicate very little iron present in this mineral. Aliettite appears to have formed at a much later time and under considerably different conditions than saponite.

Aliettite from Mill Creek Quarry is represented primarily by one small specimen. A second specimen shows a little snow-white material coating very black, fresh saponite that may also be aliettite. For those of you who have been fortunate enough to collect recently at Mill Creek, please be on the lookout for more of this unusual mineral in your specimens.

CHABAZITE

One specimen of dark orange stilbite in a cavity about 4 centimeters long has a cluster of clear, nearly colorless calcite, and next to it a tiny group of clear glassy crystals that resemble levyne. Their heavily twinned surface structure would lead us to believe that they are chabazite variety phacolite. This is a much more plausible mineral chemically to be in this environment than levyne. The whole cluster is only about 1 millimeter long, and is not situated in such a way that testing would be feasible without destroying the only known specimen. The material is not obviously different than much of the calcite and quartz until it is examined microscopically. Again, please be on the lookout for other cavities which have traces of this mineral.

LAUMONTITE

At one time several years ago, I noticed a cavity of light-colored stilbite that appeared to have had laumontite in it. John Cornish has reported finding another cavity containing laumontite recently. The laumontite appears to have formed on top of the orange-colored stilbite but beneath the clear, colorless stilbite that forms the second generation in many cavities. Laumontite is rare here, but clearly it does occur, so keep an eye open to see if some of your cavities contain some.

Once again, the rock is crushed and the quarry has been tidied up to the point collecting will be difficult. But we can all wait for the fabulous stuff that will appear when they finally blast it again!

Adding Video to the Russian MbC-10 Microscope

Guy Hammer

When I bought Lanny's microscope last May, I had no idea that I would someday add video to it. It came with a camera adapter and Zenit 35mm camera, so I did entertain thoughts of taking micro-photos with it. I got as far as obtaining the adapter needed to attach my Pentax bayonet mount cameras to the screw mount on the microscope, but alas, it was quickly determined that the difficulty of positioning the specimen, setting focus and exposure, not to mention the 24 hour turn around to see the results made this unwieldy at best.

Drawing inspiration from several Mister Wizard episodes I hit on the idea of hanging a video camera on the scope. The advantages were obvious. Real time results, a way to share the view with a group and it would make it possible to display a collection of micro-mounts with the vision impaired or folks that just find it awkward to peer into a microscope. Imagine that - folks would no longer have to take it for granted that I have a micro collection!

I realized from the beginning that just hanging a camcorder on the scope and running the output to a TV set wasn't going to give me the results I was after, as video camcorders with interchangeable lens systems are rare and the resolution would not be adequate for the application. On the other hand I didn't have a clue as to what kind of equipment I need. Some education was in order. I had seen some nifty small industrial video cameras on display at URS Electronics in NE Portland, so I stopped by and asked for a closer look. A new problem I hadn't thought of was immediately apparent as the imaging area of the video camera was much smaller than that of a 35mm camera.

A quick search of the World Wide Web turned up a page listing the dimensions of different camera mounts. (http://www.a1.nl/phomepag/markerink/mounts.htm - that's A One, N Ell) This was of some help. I remember turning to Edmund Scientific in the past when looking for a replacement lens for an antique 8mm projector, so I ordered a catalogue. In the meantime I consulted with the proprietor of the local camera store. He gave me a load of back issues of several photography magazines and some old catalogs, but I found little there of use. Then a co-worker loaned me her husbands Edmund Scientific Optics and Optical Instruments catalogue. Pay-dirt at last! They not only had a technical discussion on the subject, but offered a video tape primer on video microscopy. I wasn't sure at the time how to pronounce microscopy, so I ordered the video tape.

After watching the tape (several time) I knew what I had to do. A color high resolution industrial video camera was in order. Edmund sold them but the price was quite a bit more than I paid for the microscope - this didn't seem reasonable. A video relay lens was needed. Edmund had them for $230 - this I ordered. A high resolution video monitor would be needed. Again, Edmund had them but they were smaller than what I had in mind and very expensive. I had visions of using this thing in front of a large group and wanted at least a 20" monitor. I decided to seek out a local source for the camera and monitor and see if I couldn't save some money.

I found two local sources for the camera and monitor. URS Electronics mentioned above and Anixter in Beaverton. Anixter is where we buy our network equipment where I work, so I figured they would give me a better discount. After comparing prices Anixter was indeed about $200 dollars less than URS, so they got the order. Let's review the equipment ordered to date:

1) Tape on Video Microscopy P/N A52,578 Edmund Scientific.
2) Video Relay lens P/N A37,820 Edmund Scientific.
3) Sony Color Video camera SSC-C370 Anixter
4) Sony Color Video monitor KV-20V60 Anixter

Looking over the equipment it was evident that some "glue" parts would be needed to get the components working together. The camera had a BNC jack for its output and the monitor had an RCA jack for input. I rummaged around at work and found a length of 10-BASE/2 network cable that had BNC plug connectors at each end. (Radio Shack P/N 278-965 will work) I added a BNC jack to RCA plug adapter (Radio Shack P/N 278-250) to complete the video cable.

The camera wanted a 12v DC power source. A Radio Shack P/N 273-1652 AC to DC adapter was perfect for this. I didn't want to have to deal with the screw terminals the camera used for its power connection, so I got a Radio Shack P/N 274-1563 DC power jack that matched one of the adapters furnished with the power supply, a couple of short lengths of wire and an old ball point pen cap. With this I fashioned an in-line jack that I could leave attached to the camera. (Note - a Radio Shack 274-1577 in-line jack will work for this and you don't have to tear up a perfectly good pen! Wish I'd found one sooner.)

The Video relay lens fit the camera perfectly, but I had one more hurdle before I had a system. It seems that the Russian's decided to go with the world telescope standard of 32mm for the eyepiece size on their scopes instead of the world microscope standard of 23mm. I was considering having a sleeve machined to make up the difference. I built up the end of the relay lens with black electrician's tape for testing and that worked so well I haven't pursued the sleeve idea. On a standard microscope one wouldn't have to deal with this - just plug it in and go. The lens/camera combination was happy in the third eyepiece adapter that fit the camera mount, but should work fine in place of one of the standard eyepieces. I did find that I need to come up with a shim about the thickness of a nickel to match the camera's focal point with that of the eyepieces.

The final result works great and made a hit at the May 1996 meeting of the NW Micro Mineral Study Group.

COMPUTERS AND CATALOGUING

by

Donald G. Howard

This is the first of what I hope will be a continuing dialogue about the use of computers in preparing and maintaining a catalogue for our collections. Last issue, I sent out a request for feedback on what sort of programs you have been using, and what kind of features you would like to find in the ideal cataloguing program. A big **thank you** to all of you that responded. Your comments have been helpful and illuminating (well, they at least confirmed my own prejudices!). Please send me comment often about what you have discovered, or straighten me out if what I say below is cockeyed, or express a different opinion, or ...... I hope some of you who have a different perspective will write up a page or two from your own viewpoint that we can include in future issues.

I also hope that we can begin to bring computer stuff to meeting so that those of our brethren that are not so far into software (yet) can try out and get a feel for our favorite programs before they lay out their money for one. Hopefully, we can save someone from investing in a program that just won't do their job.

That said, let me comment on what I have learned from you, and give some suggestions from my own personal bias.

Basically there are two types of systems in use. The first is a primarily a species list, in one form or another, similar to Michael Fleischer's, but computer searchable. There are a number of versions. These usually contain mineral names and chemical formulas, and physical data such as hardness, specific gravity, crystal system and habit, cleavages, color, etc. They may also include information about important locations where each mineral is found.

The second is one of a number of data-bases that the user can enter a variety of information about his own specimens. Some of the systems people reported using were: DATA PERFECT, EXCEL, MS ACCESS, CLARIS WORKS, and FILEMAKER PRO. Each of these allow the user to set up whatever fields he wants, to enter data, and to print reports. Typical fields include a code number, mineral name, associated minerals, location (often broken into several categories), specimen size, date collected/obtained, price and/or value, person from whom obtained, chemical formula, physical data (i.e., fluorescent, density, hardness, etc.), and room for remarks. It is certainly possible nowadays even to include digitized pictures of your specimens, or even recorded verbal remarks.

The important thing to look for in the "glossary" type of program is the ease with which new species can be added. Many programs of this type make no provision for additions, but provide "updates" on a semi-regular basis -- usually for an additional fee. It is much better if you have the option of adding new species as they are described, as for instance in *Mineral News*. The ease with which searches can be made should also be examined.

Several things also make the "data-base" type of program more useful:

- The fields that you set up should be of variable size, so that you do not have to decide how many characters to allocate beforehand. This also minimizes the amount of disc storage your data base occupies.
- It should be possible to add new fields at a later time without having to retype any of the data already entered. That way, you do not have to get it exactly right beforehand.
- Sorting should be versatile, easy, and rapid. The program should never "lose" files while sorting. It should not be necessary to store a copy of your file each time before a sort.
- There should be great flexibility in setting up formats to output your data, so that you can create a variety of reports. The report forms should be retained in memory so that you do not have to recreate them every time you want a report. Report forms should be something you make up rather than a "canned" feature fixed by the program that you cannot alter.

A few systems have attempted to combine both of these types into a single operating system. These are usually large and cumbersome. They should also be judged against all of the above criteria.

One of the advantages of the "glossary" system is that you do not have to enter much of the data, that it is already there to reference, and this is true. However, most of the databases have the usual word processing features -- copying, cut and pasting -- so that once the data on a particular mineral species has been entered, it can be quickly duplicated or transferred.

Personal Testimonial

Finally, I would like to describe the system I am using and the reasons that I have for choosing it. I was after a system to catalogue my collection -- that is, something of the second type described above. I wanted to be able to print out parts of my data, such as all the minerals from a certain locality, or all the minerals that contain zinc. In order to avoid having to set up a number of chemical categories, I wanted to be able to enter chemical formulas and to be able to sort on them. And I wanted the chemical formulas to look like chemical formulas. That meant, the software would have to support subscripts and superscripts.

The only system I could find that did subscripts and superscripts at all was FILEMAKER PRO by Claris. So after a few tentative tries at some of the other systems available, I went out and invested in FILEMAKER PRO on the recommendation of my son (who manages a large computer system professionally and has lots of contacts to make recommendations.

I certainly have not regretted the purchase. To date, I have over 2500 entries. In all the searches through the data that I have made, I have never lost a file or even a data item. The search system is fast and accurate. Any field can be searched for any string of characters, including letters and numbers. This means that I can search the formula field for Cu to find all the copper minerals. The one drawback here is that the search system does not differentiate between upper and lower case characters, so that if I try to search for Co, it will turn up with all of the carbonates as well as the cobalt minerals, so some fooling around is necessary. However, for most elements, the symbol is unique. Carbonates can be separated from cobalt minerals by searching for CO_3 . Most uranium minerals contain the radical UO_2 that is unique. The system is not perfect, but it does most things and does them well.

Text fields are of flexible length (from 1 to 64,000 characters) automatically. The time you specify a shorter length is when you create a layout prior to printing. There are a number of standard layouts, but you can easily alter them, or create your own. The system remembers the layouts you have designed, and you can keep dozens of layouts active and switch between them at the click of a mouse. Printout options are therefore very flexible and easy to use. The size of fields can be change at any time without affecting the data contained, and new fields can be added (or deleted) at any time.

Records can be duplicated with the click of the mouse, and then edited to represent the differences from entry to entry. This can greatly cut down on entry time and effort, especially when combined with the quick and efficient search options.

I currently have 6 fields -- number, mineral name, formula, and three fields for location (city, county, state). I intend to add others later. 2500 entries take up about 1.8 Mb, only slightly more room than the operating system takes up (about 1.6 Mb).

We like the system so much that we use it for many other things. For instance, the club membership is in a file, including names, address, phone number, email address, for what years dues have been paid, etc. The roster is printed from this file using one layout, mailing labels using another, financial reports by individual (for our use) using another. The flexibility is tremendous. We are enthusiastic users and can strongly recommend this system to you as a user-friendly database.

We are using a DOS/Windows 3.1 system. For people running Mac computers, a very similar system is available as CLARISWORKS. Though it operates slightly differently, it has most of the same features once you figure out how to access them. Bill Tomkins has been using CLARISWORKS for almost everything except making labels, which he does with Avery MAC Label Pro.

Other User's Systems

Doug Merson has been using MS ACCESS and has built his own species table. His major complaint is that it does not support super/subscripts. He has had some experience with Mindat-32 and with Barry Murphy's system.

Joe Horton started very early with DATA PERFECT, and has amassed some 4000 entries. It clearly has sorting capability and produces reports flexibly.

Richard Blackman has been using EXCEL, primarily because of its ease and flexibility in sorting.

We hope the above information is useful to you. We warmly invite others to write up a short testimonial evaluating the strengths and weaknesses of the system that they have adopted for publication in upcoming issues.

FIGURE CAPTIONS

Photograph Number is in the upper left corner on the back of the print.

#24. Analcime, Natrolite and Calcite
Gopher Valley Quarry, Sheridan, Yamhill Co., Oregon
The 3-foot diameter pocket filled with rubble, as first exposed.

#25 Analcime, Natrolite and Calcite
Gopher Valley Quarry, Sheridan, Yamhill Co., Oregon
Detail of the back of the pocket, showing the cluster of large calcite rhombohedrons in place. The white area above is a clean exposure of natrolite and analcime.

#26. Calcite Crystals
Gopher Valley Quarry, Sheridan, Yamhill Co., Oregon
The cluster of calcite crystals after removal Specimen measures approximately 18 inches long.

#27. Calcite on white Stilbite (x 2)
Mill Creek Quarry, Buell, Polk Co., Oregon
Golden rhombohedron with darker orange phantom within

#28. Calcite and Saponite on Stilbite (x 8)
Mill Creek Quarry, Buell, Polk Co., Oregon
Lustrous black balls of saponite with bladed surface markings on orange stilbite.

#29. Aliettite and Saponite on Stilbite (x 8)
Mill Creek Quarry, Buell, Polk Co., Oregon
Fuzzy, soft white balls, mixed with dark green saponite. The cavity lining shows the colorless layer of stilbite growing over the richly-colored orange layer.

#30. Quartz on Stilbite (x10)
Mill Creek Quarry, Buell, Polk Co., Oregon
A clear scepter growing out of a polycrystalline base. Another fine-grained mass of quartz is in the background. See the micrograph below for a detail of the base material.

Micrograph Number is in the lower right corner on the front of the print.

#657. Quartz (x320)
Mill Creek Quarry, Buell, Polk Co., Oregon
Detail of the ends of the quartz that forms the base beneath the scepter in photograph #30. The three faces of the rhombohedron are reasonably sharp, while the prism faces are very rough.

#692. Analcime on Epistilbite (x 18)
Wolf Point Quarry, Cowlitz Co., Washington
The analcime is clear (with the usual fractures) but has an etched "worm-eaten" surface. Notice the cyclic eightling of epistilbite that it is growing upon at right. These crystals were exposed as found.

#691. Wairakite (x150)
Wolf Point Quarry, Cowlitz Co., Washington
A tiny trapezohedron with minor cube faces, etched out of calcite. The surfaces are complexly marked and the edges are not sharp. The crystal is milky white. The matrix is clay but the cavity also contains considerable acicular laumontite in sprays.

PHOTO CREDITS

Photographs #24, 25 & 26 (and specimens)	John Cornish
Photograph #27 (and specimen)	Mickey Marks
Photographs #28, 29 & 30 (and specimens)	Donald Howard
Micrographs #657, 692 & 691	Donald Howard
Specimen for Micrographs #657 & 692	Donald Howard
Specimen for Micrographs #691	Rudy Tschernich

NOTE

Instead of the Swap Meet in Longview,
the follow event has been scheduled for next Spring.
Mark your calenders.

Pacific Northwest Field Collector's Rendezvous

Saturday, March 28, 1998
10 a.m. *to* 5 p.m.

Clackamas Meeting and Banquet Facility
15815 S.E. 82nd Drive
Clackamas, Oregon
(*just off I-205 at hwy. 212/224*)

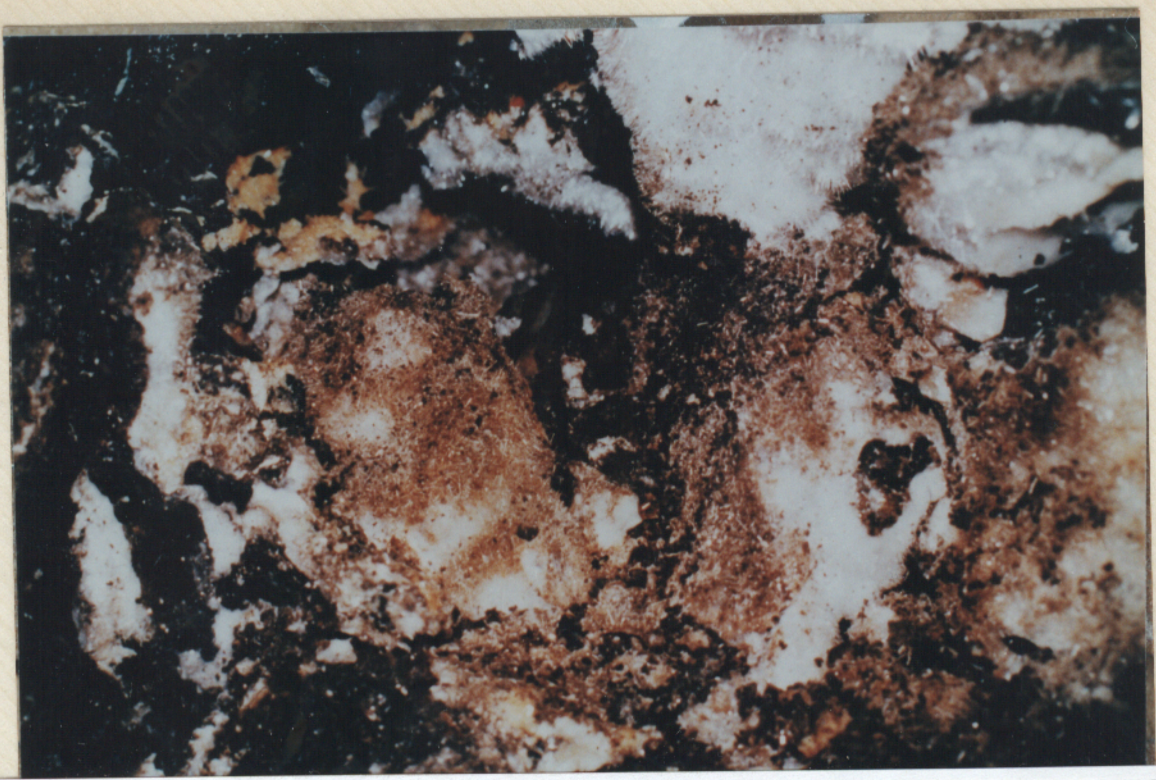
FREE ADMISSION

53 table spaces available
Set up Friday night or Saturday morning

$25 with 6-foot table ($20 without)
Approximately 24 to 36 dealers represented

Collecting locality presentations Saturday afternoon
Field Trip Sunday

For more information, contact:
Jon Gladwell
(503) 771-4123
email: myrddin@zephyr.net



#24 – ANALCIME, NATROLITE, CALCITE – GOPHER VALLEY QUARRY, SHERIDAN, YAMHILL COUNTY., OREGON

#25 – ANALCIME, NATROLITE, CALCITE – GOPHER VALLEY QUARRY, SHERIDAN, YAMHILL COUNTY., OREGON

#26 – CALCITE – GOPHER VALLEY QUARRY, SHERIDAN, YAMHILL Co., OREGON

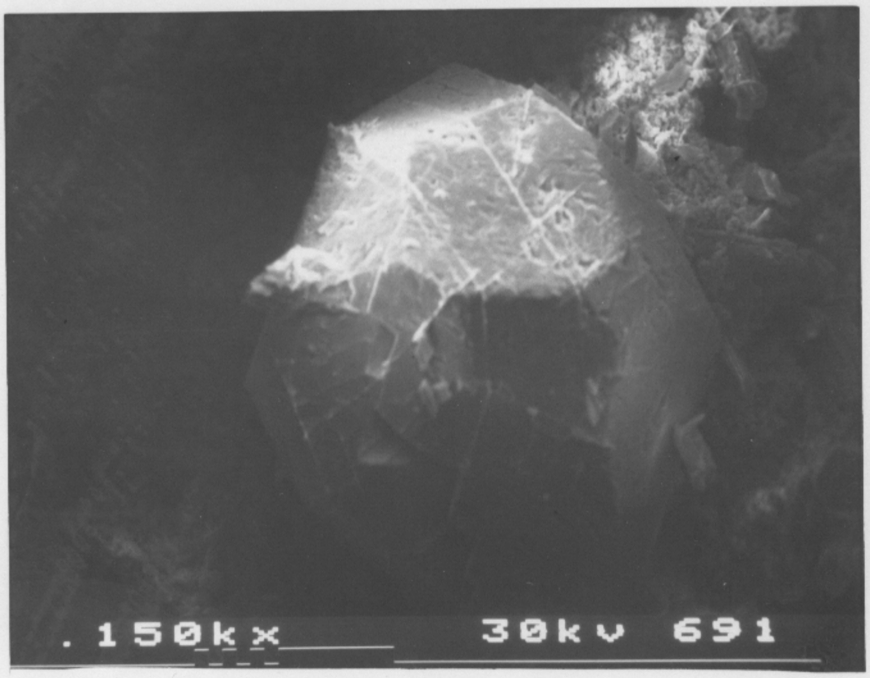
#27 – CALCITE, STILBITE – MILL CREEK QUARRY, BUELL, POLK COUNTY, OREGON – 2X

#28 – CALCITE, SAPONITE, STILBITE – MILL CREEK QUARRY, BUELL, POLK COUNTY, OREGON – 8X

#29 – ALIETTITE, SAPONITE, STILBITE – MILL CREEK QUARRY, BUELL, POLK COUNTY, OREGON – 8X

#30 – QUARTZ, STILBITE – MILL CREEK QUARRY, BUELL, POLK COUNTY, OREGON – 10X

#692 – ANALCIME, EPISTILBITE – WOLF POINT QUARRY, COWLITZ COUNTY, WASHINGTON – 18X



#691 – WAIRAKITE – WOLF POINT QUARRY, COWLITZ COUNTY, WASHINGTON – 150X

#657 – QUARTZ – MILL CREEK QUARRY, BUELL, POLK COUNTY, OREGON – 320X