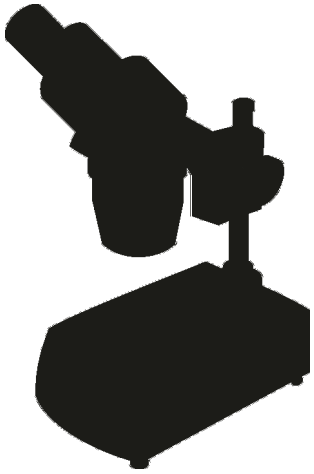
Northwest

Micro Mineral

Study Group

Micro Probe



Fall, 2024 **VOLUME XIII, # 10**

FALL MEETING

November 9, 2024 9 AM to 4 PM

Sons of Norway Columbia Lodge

2400 Grant St,

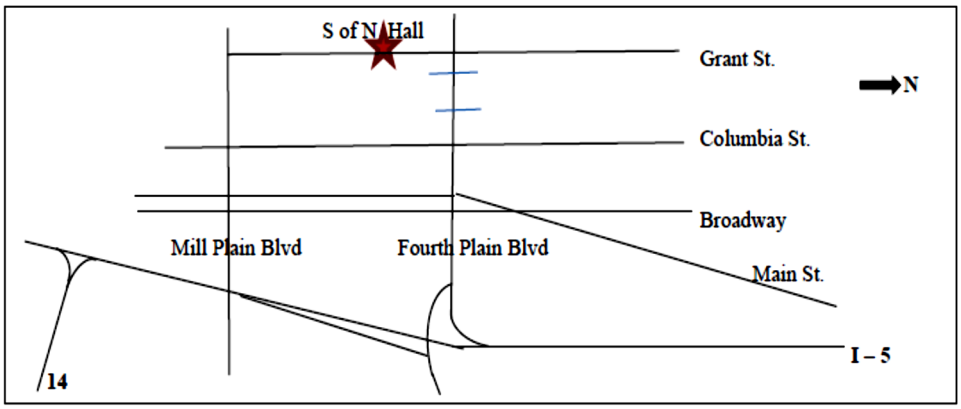
Vancouver, WA 98660

Please read the President's message on page 3 for important meeting information!

Directions:

FROM WASHINGTON HWY 14: Continue west to Interstate 5, keep right and take I-5 North. Then keep right and continue to Exit #1D -Fourth Plain Blvd

FROM INTERSTATE 5: In Vancouver, take Exit #1D to Fourth Plain Blvd. Head west on Fourth Plain Blvd. to Grant St. and turn left. Go two blocks to 24th St.



In this issue:

Don Howard Is Retiring As Micro Probe Editor

Don Howard

Micro Probe Editor Emeritus

Joined the Northwest Micro Mineral Study Group in 1975.

Became editor of the Micro Probe with Vol VI, Number 1, 1985

First article Vol VI, Number 5, Fall 1987:

"Notes on Mineral Identification Tobermorite, Wakefieldite, Wairakite"

Has authored or co-authored about 180 articles in the Micro Probe.

President from 1986-2001

Inducted into the Micromounter's Hall of Fame in 2015.

Don has not only been a friend and mentor for so many of us, but has been a keystone for the Northwest Micro Mineral Study Group. We look forward to his continued contributions to the Micro Probe and to the group in the years ahead.

Northwest Micro Mineral Study Group officers:

President: Beth Heesacker, heesacker@coho.net

Treasurer: Kelly Starns, bikeklein@yahoo.com

Website (NEW SERVER) : http://micromineralstudy.org/

Webmaster: Bruce Kelley bruce.kelley@gmail.com

Editor: Beth Heesacker, heesacker@coho.net

President's Message:

I assume that you have seen the notice on the second page . Don has decided to retire and he has passed the quill pen and ink bottle to me. I am honored that he feels I have the ability to continue the quality of this publication.

To do that though means that I need your help by submitting articles:

Have you gone on a mineral collecting field trip?

Have you noticed a new or interesting mineral in your collection?

Do you have several minerals from a specific location or area or country that you could share information about?

Have you come across a new "toy" that improves your inspection or curating of your collection?

Have you found a new way to store your collection?

Do you have a question about a mineral or an area (maybe one of us has an answer)?

Technical articles are always appreciated.

I am sure that each one of you could come up with more topics. And I am sure that each one of you could write on one or more of the above topics. And you do not have to be a great writer. Can you just outline what you want to say? I am always willing to help with writing or editing your article (your ghost writer?).

A couple of other items of interest that were decided upon at the last meeting:

1) I was reelected President. I will continue to serve in this position and as editor.

2) The group will **not** be providing sandwich fixings at the meeting. There are two reasons. First, we have a very limited treasury and need to pay for the rental of the room where we meet. Second, we have a hard time trying to estimate attendance (which was very low in the Spring). Many times a lot of food is left over. Each member will need to bring their own sandwich(s). Please also bring a salad, desert, etc. to share with the group as usual. Coffee, water, ice and soda pop will continue to be provided.

I look forward to seeing all of you at the next meeting, November 9th. Please bring lots of flats, boxes and buckets of minerals for the free tables. Also any reports/projects/eye candy photos that you can share with the group.

Beth Heesacker

Historical Update
Northwest Micro Mineral Study Group

By Beth Heesacker

It was near the end of 1970 that a group of micromineral enthusiasts gathered and began the formation of the Northwest Micro Mineral Study Group. As we begin our 55th year, it might be of interest to look back and see what has brought us to the year 2024 and see if we are still on track to fulfilling our original purpose.

In the beginning:

> Our Certificate of Incorporation as a Nonprofit organization in the state of Oregon is dated the 8th day of January and does include the following: The Northwest Micromineral Study Group·, Inc is set up for perpetual existence. (Article I) We organized for the purpose of bringing together individuals in the Pacific Northwest who share the common interest of collecting, studying and gathering information on micro-minerals. The emphasis of the group shall be directed toward education purposes.
>
> NORTHWEST MICRO-MINERAL NEWS March 7, 1973

I believe that we have, and continue to, fulfill this commitment. Maybe a few highlights through the years will support my belief. Since I am a relative newcomer to the group, I feel that referring to some of the articles from the Micro Probe will be the best way to do this.

A few newsletter issues were published in 1971-1973 as the Northwest Micromineral News, with official numbering initiated in 1974 and the official name of the newsletter was announced as the Micro Probe. This first official issue lists many zeolites and the origin of their names along with the history of the Goble, OR site and information on the upcoming field trip by a very active member, Rudy Tschernich. This focus on zeolites, under Rudy's guidance, continued for many years. This focus was to be expected since our Pacific NW is heavily populated by this group of minerals.

In 1974 we were also affiliated with the NFMS and sponsored a booth at their show. It was interesting to note that the same plea was made for articles for the Micro Probe as we still must make occasionally to get content for each issue. Presentations were part of each meeting with actual physical slides being used. Attendance was 30 people at the June meeting.

Through 1975 more field trips were announced, specimens collected, studied and collections enhanced. Also, this was the year when the Micro Probe cover layout with the microscope was used. Dues were $3 per year. It was noted in 1977 that Rudy was working on his book about zeolites.

> General activity of this meeting will be to organize information on zeolites of the Northwest. President Rudy Tschernich is writing a book about those ZEOLITES OF THE PACIFIC NORTHWEST. He will have lists present at the meeting which he would like each member to review and make additions or corrections as necessary. To make this book as complete as possible member cooperation is essential. If you have specimens from Northwest locations bring either the specimens themselves or pertinent dimensions and other information. All zeolites from EVERY location in Washington, Oregon, Idaho, or British Columbia are of interest for this project.
>
> Micro Probe Vol 4, #1, Spring 1977

The Micro Probe continued to document the interests and achievements of our members along with articles to educate us in our pursuit of excellence. Articles from other sources were often included in its issues.

"WHY MOUNT" - ANOTHER VIEWPOINT

by Eric Wood (Editor of CMMA)
Reprinted from CMMA , Vol 12, No. 10, Dec 1978 ...a publication of the Canadian Micromineral Association

The Micromounter is part artist and part scientist. Both of these attributes help to label him as a non-conformist. To require a micromounter to abide by a set of rules governing size of box, background material, orientation of specimen, and the like is to impose unrealistic restrictions on his or her artistry. Does a judge of paintings downgrade one because of the size of the canvas and another because the background is not black?

Micro Probe Vol 6, #1 Spring 1979

The Micro Probe ceased publication from 1979-1985 apparently due to the lack of an editor. Don Howard came to the rescue and started his many years of service to the group as editor. There was also the change from yearly volumes, with one to three issues, to 10-issue volumes with two issues per year. This did cause a duplicate volume/issue number: Volume VI, #1, separated by 6 years.

Zeolites were heavily studied but in Spring of 1990 a series of articles on the Golden Horn Batholith began. The expertise in the group continued to grow and in 1994 Bob Boggs contributed an article that really kicked off experimentation on the photography of microminerals.

In 1995, dues were raised to $15 which continues to this day,

Personal computers were coming into use and in 1997 Don Howard wrote an article about using the computer for cataloging your collection. We were in the computer age!!

Work on the Golden Horn Batholith continued but a few articles about the Clackamas River drainage started appearing in 2001. Bill Tomkins wrote about the Mercury mines near Lake Harriet and the finding of cinnabar. Don Howard wrote about Jordisite. In 2004 Don also write more about the mercury mines.

George Williams wrote a history of the group in Spring 2010 (which can be found on the NW MM Study Group website - http://micromineralstudy.org/micro-probe-issue-xii/) And more Bill Tompkins' articles on the Clackamas River were published, showing that it was still of interest

Then came the age of image stacking in 2011 with articles by Bob Meyer and Rudy Tschernich. Also to show that the Golden Horn was not forgotten, more articles on this location were written by these two authors.

In 2014, Rudy retired as President and Beth Heesacker was elected to fill that position.

The Micromounters' Hall of Fame in 2015 honored Don Howard by inducting him at the Baltimore Mineral Society meeting. This was a well-deserved honor due to all his efforts in supporting, encouraging, and educating about micromounting.

Beautiful and colorful pictures of microminerals produced by image stacking abound in each publication. And the articles continue with the technical expertise of their authors exhibited.

In 2017, one of our strongest leaders, Rudy Tschernich died.

Filiform Pyrite was a focus starting in 2019 with Starvation Creek but then the Corona virus set in so we could not meet in 2020 or 2021. Here the Micro Probe stepped in to keep us informed. Our editor, Don Howard, continued to update us with his expert articles. I, Beth Heesacker, tried to help with an article or two. And there were reprints from other sources.

Finally, we were able to meet in the fall of 2022. Articles about new sites and new minerals found were published. Members must have been out crawling over talus slopes during the virus years.

In 2024 Don decided to retire as editor and, at the November meeting, Beth Heesacker was elected the new editor.

Now comes the hard part. At this time in history, are we still fulfilling what our Certificate of Incorporation states is our purpose:

> ". . . to bring together individuals in the Pacific Northwest who share the common interest of collecting, studying and gathering information on microminerals. The emphasis of the group shall be directed toward education purposes."

I (Beth) think that we are doing the above, <u>in part</u>. We have our two meetings each year where we gather to share minerals. We have a time of sharing information about minerals by making presentations so we can all be educated about new finds, processes and just to enjoy the minerals. We still have the Micro Probe which does contain educational articles. But are we living up to the challenge to the best of our ability?

I started to attend meetings while they were still held at the Clark County PUD. Large attendance, lots of participation, quality presentations. So active and alive. I know that it has been hard on all of us to not only have to live through Covid, having to move our meetings multiple times (due not only to Covid but to conflicts with meetings held by those agencies that had other priorities) and the loss of some of our long term members with much of the expertise that was shared with all of us.

It has been a rough few years. At the last meeting we had very low attendance (6 members). Maybe it was because of the weekend (Mother's Day) but that was the option we had. I can understand, not all mothers are interested in minerals.

Can we each make a renewed effort to attend the meetings? Can you spend time with your collection in between meetings with an eye to finding something interesting that you can write about? Just a few paragraphs, a page, multiple pages; with pictures if possible. Maybe work up a slide show with some eye candy pictures to share at the meeting.

Please email me if you need help. Thank you so very much and I look forward to seeing all of you that can make it to the next meeting.

Beth Heesacker, heesacker@coho.net

DISCOVERING GERHARDTITE

Don Howard

I am writing this article to illustrate the value of our twice-yearly meetings. I have always enjoyed getting together with others that I consider good friends and touching base. I do not miss one of our meetings except for a good reason, like last fall when I missed the meeting because I was in the hospital, having fallen and broken a leg.

I also have found a lot of treasures on the free table. An example of this came just this Spring. I found two sandwich bags of little rock pieces that I believe Jon Gladwell put there. They had little slips of paper stating where the material came from. I did not recognize either location.

One bag had little gray pebbles. The slip said: *Legrena Slag Locality, Greece.* Not a place I had ever heard of. I found it readily enough on Mindat, however. It seems it is a cove on the Mediterranean Sea. Collectors work the sandy beech for chunks of the slag buried beneath the surface, which they then break open to see what is in the little cavities inside. I looked at some of the pieces in the bag, but did not see anything with crystals of the sort illustrated on Mindat. And none of the pieces were big enough to promise more cavities if broken further. So, this appeared to be a dud, though in the process I had learned about a new location and some of the minerals found there.

The second bag had little green pebbles. My first impression was, “On well, probably malachite.” The slip said, *Tenke deposit MD #228186* . That was easy to find on Mindat: Tenke Mine, Lualaba, DR Congo. I knew that the Democratic Republic of Congo had a lot of interesting copper minerals, so I quickly read on.

It seems that the Tenke mine was no exception. The base mineral was massive cuprite, and that the secondaries contained several rare minerals, especially nitrates. A quick look at pieces confirmed the cuprite, and several green minerals, as shown in figure 1. The cuprite is glassy red only in a few places; most of it is a silvery color with red overtones. I saw no crystals.

Judging from the pictures on the website, whoever broke the rock down to small pieces was probably looking for Buttgenbachite, $Cu_{19}(NO_3)_2(OH)_{32}Cl_4 \cdot 2 H_2O$, a bright blue acicular mineral related to connellite, $Cu_{19}(SO_4)(OH)_{32}Cl_4 \cdot 2 H_2O$. I saw no traces of blue on any of the pieces. What was present on many of the pieces was a dark emerald-green mineral which can be seen to left center in figure 1 and is shown in more detail in figure 2.

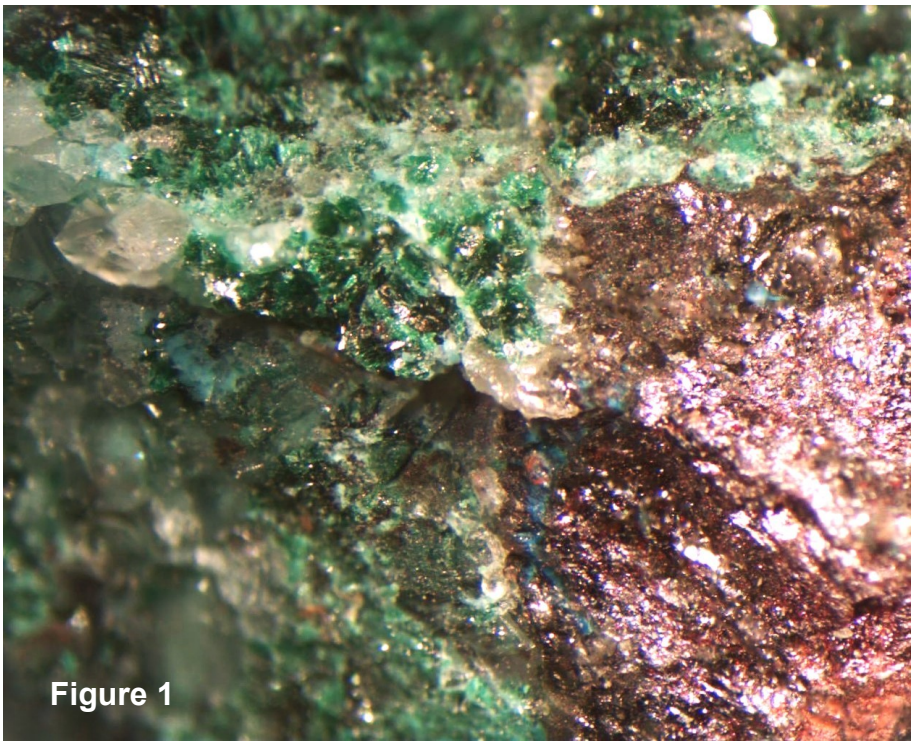


Figure 1

The other copper nitrate minerals listed for Tenke Mine are a pair of dimorphs with the formula $Cu_2(NO_3)(OH)_3$, Gerhardtite and Rouaite. Both phases are listed as dark emerald green.

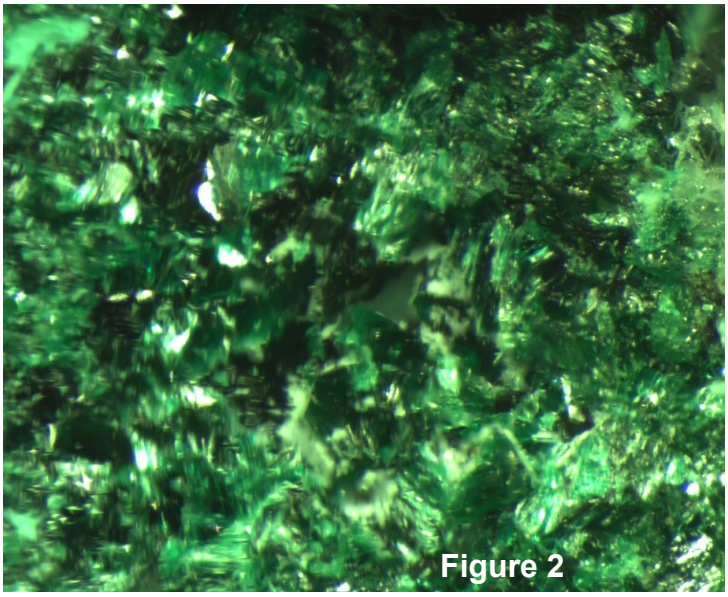


Figure 2

Both occur in tabular crystals of a similar shape. Though Gerhardtite is orthorhombic and Rouaite is monoclinic, the beta angle is only 94°, not far enough from a right angle to be noticeable on tiny crystals. Mindat observes that even the x-ray powder patterns are very similar. The structures illustrated are comprised of sheets of copper and hydroxide with the nitrate radicals located between them. Gerhardtite is said to form flexible crystals while Rouaite is said to be brittle. None of these characteristics are easy to observe on tiny platy crystals. The only thing that I noticed in the descriptions that might be useful was that Gerhardtite was said to have striations. Since I thought that I could see such striations, I have decided to call this material Gerhardtite. Moreover, Gerhardtite is actually the stable form of this compound, though the transformation is said to be very slow. Though I am going to label my specimens Gerhardtite, it is possible that both minerals are present in some of the pieces.

The individual crystals are book-shaped with large flat c-faces. When standing on end, they often form in parallel oriented groups. When laying down, the squarish outline is sometimes visible. This can be made out in figure 2, but is more clearly seen in the reflection of light off the faces at the bottom of the tiny cavity shown in figure 3. Figure 4 is more typical , showing the greenish nature of the light reflections.

I hope this piece serves to show you the process that I use to track down the identity of material from locations that I do not recognize. Mindat is often very useful, and its illustrations can be of great benefit, remembering they are usually of the best material found and not necessarily representative of what you may have on an average piece.

Do come to the meetings and see what treasures the free table may have in store for you. And when you think you have found something interesting, share it with the rest of us in a short piece here in your newsletter.

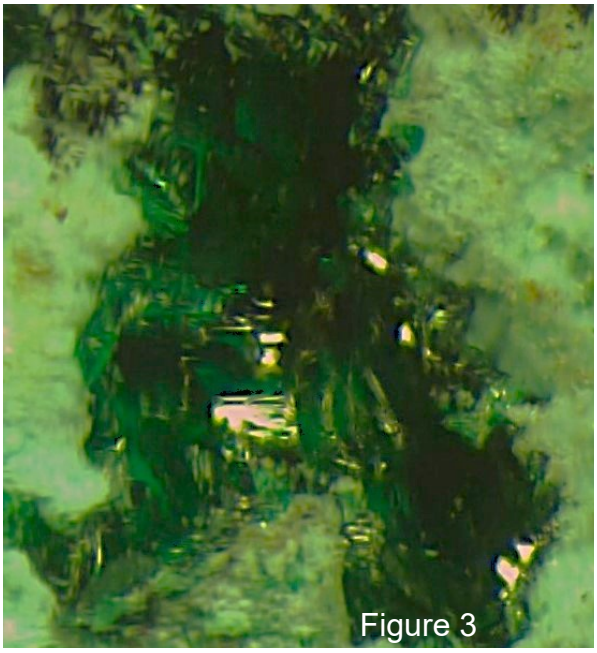


Figure 3

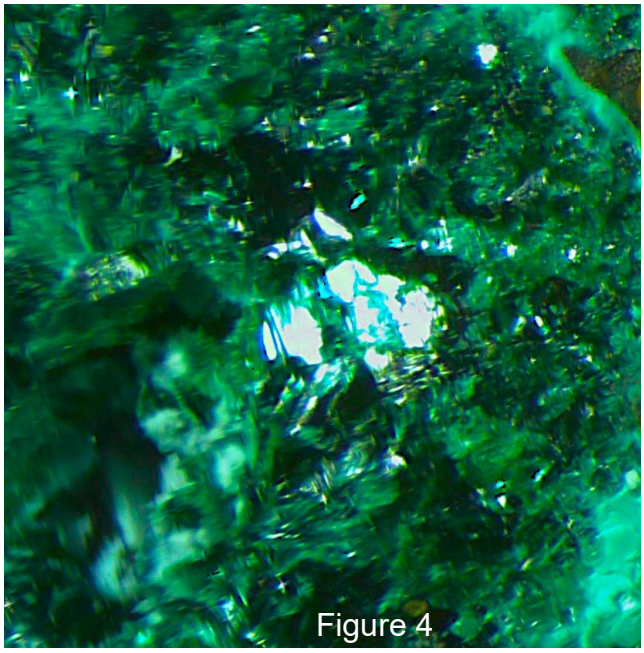


Figure 4

A Tale of One of Two Rocks (USFS 57 Slump)

By Beth Heesacker

This tale begins with a trip up Highway 224 along the Clackamas River with my husband Paul and with Jon Gladwell as guide. After writing a few articles about the geology of the area and breaking some rock from there that was given to me, I decided that I needed to see the area for myself.

In a two-day trip up the Clackamas River, we stopped at all the usual sites that were available. Almost all the side roads were gated by the Forest Service due to the 2020 fire cleanup. We were able to drive up USFS 57 toward Lake Harriet. The road did have a gate, but it had been damaged by a tree fall and the entrance was wide enough to drive through. This was a Sunday so those working on clearing the trees from the 2020 fire were not in the area. (As of June 29th the area is open for travel.) Note: All site photos are by Jon Gladwell and all mineral photos are by Beth Heesacker.

Junction of Highway 224 and USFS 57

We had one stop on USFS 57 and one on USFS 4630 to try to find, and we did, collecting at each. The site this report is about is the one on USFS 57, called the 57 Slump. In the past two large rocks had slid down the slope resulting from the weathering of the surrounding much softer rock and came to rest in the talus.

The two rocks on USFS 57 (Yes, Rock2 does look like a female human figure). Paul is checking out what Jon had been chiseling out as I look on from too far away.

There were barriers between the road and the rocks so with my short legs and unsteady walking, I did not make it to the rocks on the first visit. Paul and Jon did supply me with chunks of rock from Rock1 to break with my Zuber. The odd thing I found is that most of the Rock1 matrix was chert, but that is for another story. Rock1 also had a heavy coating of iron oxide on most of the exterior surface, interior vugs and in cracks.

We went up to the site a second time and we were able to get me around the end of the barriers and Paul and I worked on Rock2. There was a lot less iron oxide coating on this second rock, and we could see that there were small white seams in it with only minor iron oxide. Paul and I worked on removing a few of the seams. After bringing them home, I found some very small vugs with stilbite, quartz and calcite.

Now we come to Father's Day 2024. Paul insisted that was what he wanted to do for Father's Day, so we drove back up Highway 224 to the site.

We found the secret for getting me and my short legs over the barriers. One small stool on one side and one small stool on the other side. Now I could easily get to the two rocks in the talus slope.

Paul helping me over the barrier on USFS 57 on trip number three.

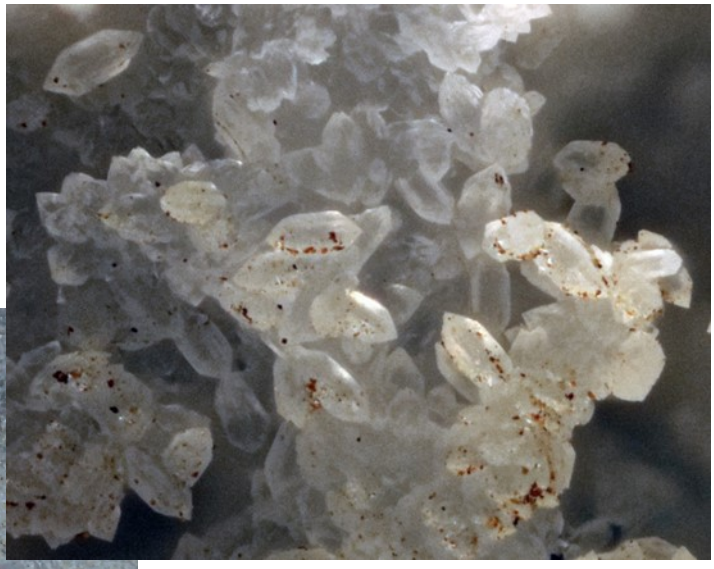
Jon attacked Rock1 and Paul and I attacked Rock2. It wasn't too long before Paul and I broke into a pocket. Jon reminded us to get a picture of the pocket *in situ* and he came over and shot a few pictures before we could destroy it.

The Father's Day pocket *in situ*. Paul's finger to show size.

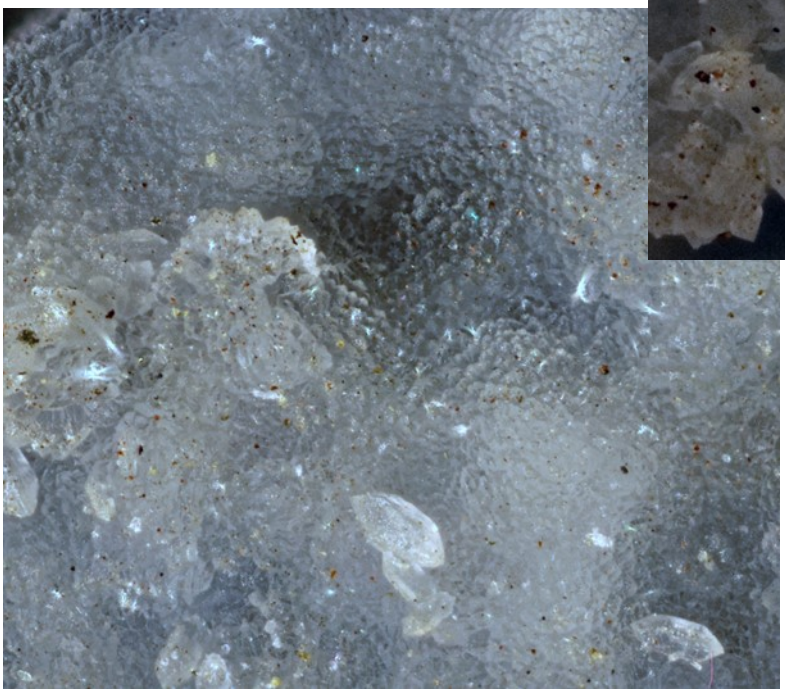
Rock2 has a different matrix (hard basalt) than Rock1 (chert). Paul did a wonderful job working around the pocket as it opened up to get it out in as few pieces as possible. We wrapped the pieces carefully, took it home to trim and photograph the various areas of interest. It ended up providing two flats of great specimen pieces. Since it was Father's Day when we were there, we named it the Father's Day Pocket.

What we found so far in Rock2 are stilbite, quartz (druzy and stalactitic), calcite (rhombic and rice-grain), opal, maybe cinnabar, maybe jordisite or goethite, unidentified needles and "tons" of pyrite. According to other authors, jordisite and ilsemannite can be found in the mercury mines in the canyon below the 57 Slump site. I was able to find something that may be jordisite (or goethite) in the specimens I collected but did not see anything resembling ilsemannite.

Stilbite. fov 1.5 mm



Calcite, rice-grain; Quartz, stalactitic.. fov 1.5 mm



Opal, coating; Calcite, rice-grain. fov 2.25mm

Quartz, stalactitic; Stilbite. fov 3.25 mm

Cinnabar?
fov .5mm

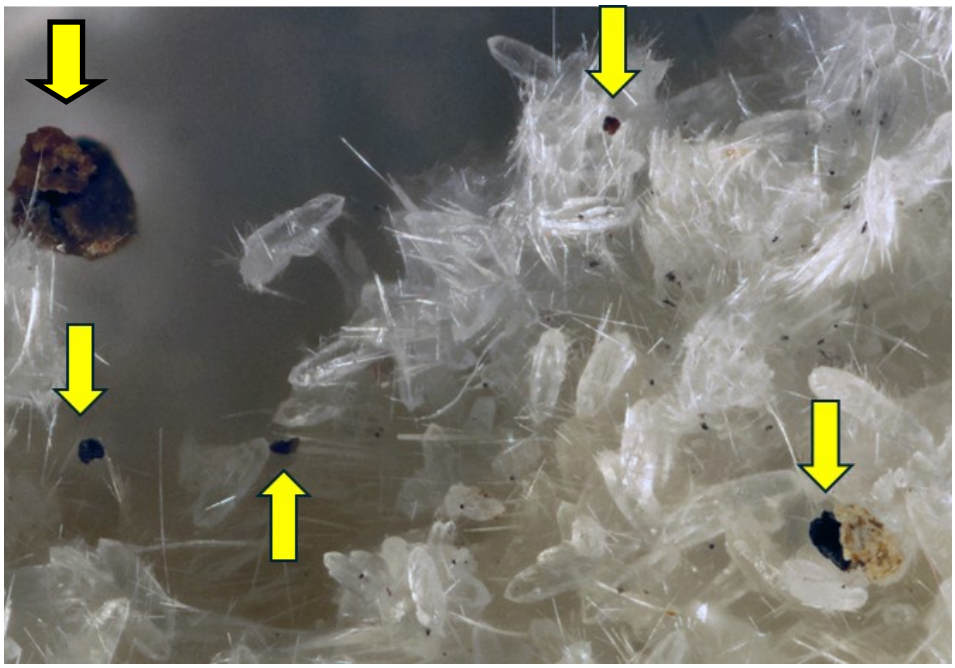
Stilbite; Calcite; Quartz, stalactitic. fov 3mm

Quartz, stalactitic; Stilbite. fov 3.75 mm

Stilbite. fov 4.5 mm

Stilbite; Calcite, rice-grain. fov 3.5 mm

Jordisite or Goethite?



Calcite, rice grain; unidentified needles, unidentified dark material (maybe jordisite or goethite). fov 3.5 mm

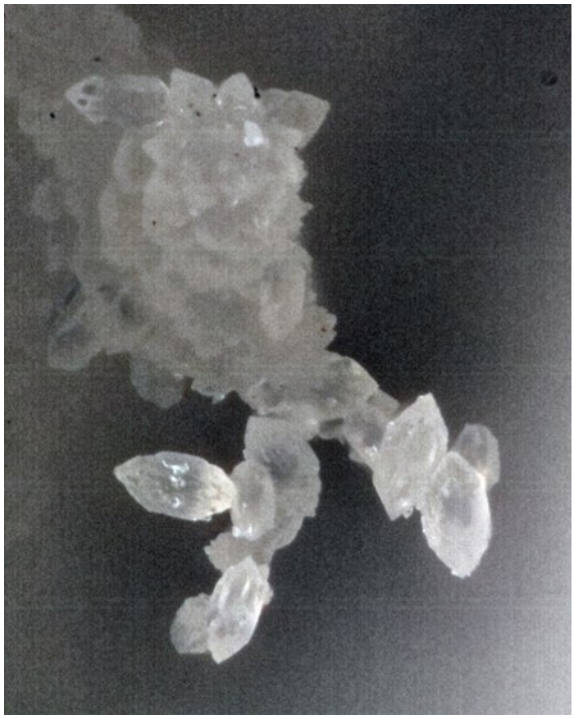
Stilbite; unidentified needles. fov 2.25 mm

Calcite, rice-grain; Stilbite; unidentified needles. fov 4.5 mm

Calcite, rice-grain.
fov 1 mm

Quartz stalactitic; Calcite, rice grain;
Stilbite. fov 1.25 mm

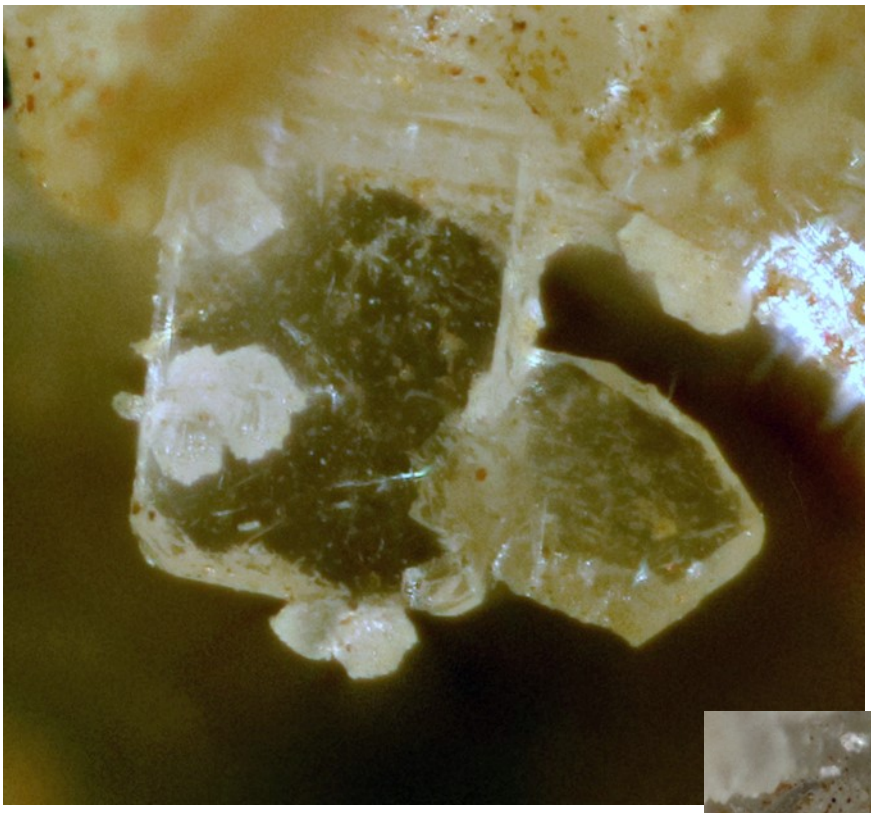
There were a few areas in the pocket that had some very interesting formations.



Quartz, stalactitic; Calcite, rice-grain. fov 1.5 mm

Quartz, stalactitic on Quartz. fov 1.5 mm

Quartz, stalactitic on druzy Quartz on Calcite. fov 3.25 mm

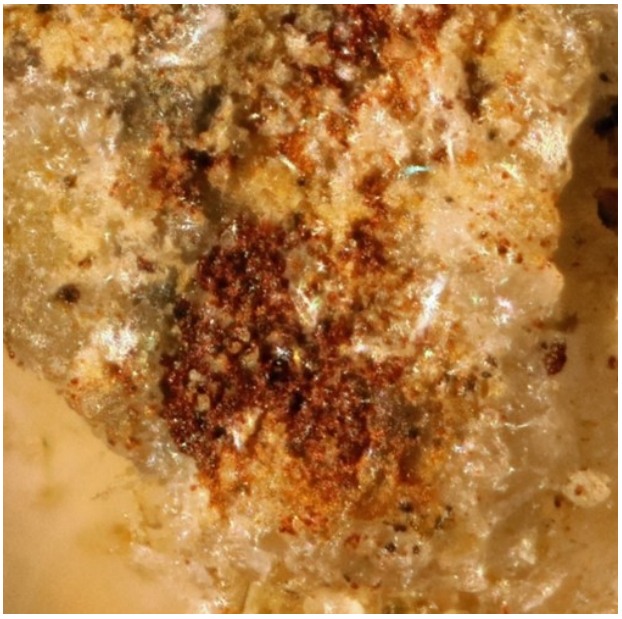


Stilbite; Calcite, rice grain. fov .5 mm

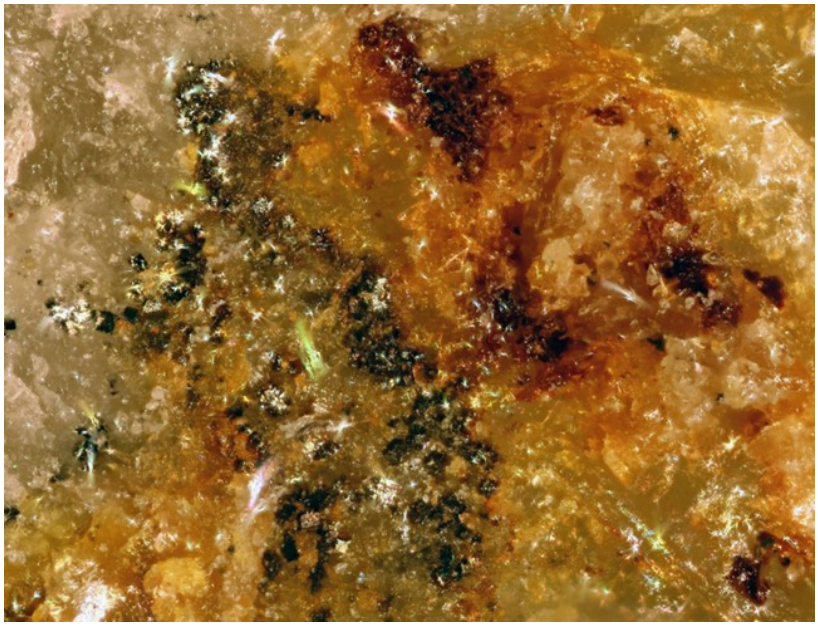
Quartz, druzy cast after Calcite with Stilbite and Quartz. fov 2 mm

Quartz, druzy cast after Calcite with Stilbite and Quartz. fov 4 mm

Since this location is just above the mercury mines, I was on the lookout for cinnabar but was unable to tell if the red in the following two pictures was cinnabar or just a heavy coating of iron oxide or both.



Cinnabar?? Or iron oxide. fov 2mm



Cinnabar?? Or iron oxide. fov 1mm

Acknowledgements:

As usual the identification of these crystals has been a real hard process for me and so I thank all those who helped including Jon Gladwell, Don Howard and Julian Gray. And it would not have happened at all if my husband Paul was not right beside me, helping me to physically navigate both by driving to the area and by helping me over barriers.

Also many thanks to Jon Gladwell and Don Howard for reviewing this article.

References:

Thompkins, Bill. Cinnabar Along the Oak Grove Fork of the Clackamas River, Clackamas Oregon. Micro Probe, Vol 9, #3, 2001. pgs. 6-13

Staples, L. Ilsemannite and Jordisite. American Mineralologist, 36, 609 (1951)

Thompkins, Bill. Cinnabar Along the Oak Grove Fork of the Clackamas River, Clackamas Oregon. Mineral News, Vol. 18, #5, 2002 (same article as in MicroProbe)

Mindat, various pages. Accessed June, July 2024.

Aranga – a history of a quarry.

Jocelyn Thornton

A long time ago, in the 1980s (?) Neville Berkahn and friends started investigating every quarry in Northland looking for interesting minerals. At the larger quarry in Hood Road, west of Aranga they found a good range of zeolites and clusters of one that they could not identify. In 1985 Neville gave samples to Prof. Terahiku (?) (Terry) Sameshima who identified them for him and kept the specimens in his collection.
After his death, they went to Auckland University, where Susan Courtney collected more and wrote a paper for publication in Japan.

Meanwhile Sue and Karl von Blaramberg arranged field trips for micromounters in Northland in 1985.The field notes for Stone's Quarry, Aranga, stated it was in Waipoua Basalt, at the southern end of this large area. It was fairly fresh due to a recent quarry by McBrean and Jenkins. The rock had many large cavities filled with minerals, which were calcites ("rather spectacular crystals"), chabazite (most plentiful – lines most vugs), native copper (thin flakes in some chabazites), garronite-gobbinsite (clusters – identified later as gismondine), levyne (thin singles on edge in the dikes), and thomsonite (compact blades or balls, covering calcite or inside it, with some helictites on the balls).
At this time the quarry was in a single flow.
In 1990, the symposium spent an afternoon in an enlarged area of Aranga Quarry, finding more of the above minerals.
Four years later, we saw Sue's paper, when she gave Jocelyn Thornton a reprint.
Gismondine and Associated zeolites from Aranga, Northland, New Zealand. Geoscience Reports of Shizuoka University No 20 (1994).

During the 1996 micro-mounters symposium in the Waipoua Forest camp, we found the quarry had been extended to twice the area, and a pit was being opened in a lower flow on the eastern side, but out of bounds to collectors. Dikes in the walls were better exposed, and collectors found a belt of large boulders on the south and west sides.
Chabazite, calcite, thomsonite and gismondine were collected. Bluish copper stains led Evan Chugg and Clive Peacock to a boulder with chrysocolla and cuprite, while Mat Singleton found native copper in vugs in dike material, and one specimen had one vug with a cuprite crystal, and another vug with copper in olivine. Just one pinkish boulder was found with cavities lined with coarse colourless levyne on which were rarely found chabazite, thomsonite or gismondine. Greyish rock had cowlesite, though Mat said the area with aragonite spikes on cowlesite had been quarried.

Mat Singleton was a regular visitor to the quarry, since he lived in Tangiteroria in Northland, and had frequent permission from the quarry owner. He also took visiting collectors. Unfortunately no geologist recorded the descent through several layers of scoria and flows over the years in the quarry, although Bruce Haywood recorded the series of flows revealed at Maunganui Bluff, a few kilometres to the southeast.

2000 saw the symposium attendees at Aranga again, where the quarry had a large lower area in a darker basalt. Many vugs had copper wires and also cowlesite, at least one with cowlesite puffs on a copper tree growing on a cowlesite –lined cavity. Wayne Bothwell shared a find of small water-clear calcites on thomsonite on chabazite. Erionite on levyne in small cavities also found. There was good collecting from all areas, and much material was taken away for study in homes.

Meanwhile Mat had found a boulder with tiny turquoise-blue spheres among chabazites. Jocelyn took her one gifted specimen to the Rochester Symposium where Tony Nikischer of Excalibur Minerals took it away and identified it as a calcite vanadium silicate, cavansite before returning it to Jocelyn.

Mat searched in vain for the source in the quarry, and then Ted Wearden found another specimen down by the crusher.
There were more visits from collectors drawn to the area, and more species reported.

Fergus Stott found a vein with minute pseudobrookites, so when Jocelyn received a specimen she looked again at her shiny black plates and recognised them as ilmenite.
Judy Rowe looked at white balls of needles, and Dermot Henry at the Melbourne Museum identified then as okenite, in 2003, the first find in New Zealand.
Apophyllite in small barrels were found, and later clusters of pointed columns were seen in/on okenite., and bladed stilbite, with flat tops.
Gismondine, thomsonite, chabazite and calcite were still being found in various combinations, and the thomsonite was greenish sometimes – later the colour was found to be caused by vanadium.
Another boulder with larger cavansites was found, without enclosing okenite, but the newly-exposed western quarry face could not be accessed because a large lake of water lapped against it. When the Wellington club visited in 2008 the lake was still there, so collecting was in other areas.

By 2009 when the symposium members visited, the lake was reduced to very shallow puddles, and the back wall was visited, but not collected, as we had been told it was unstable. However, photographs were taken. Later Rod Martin described the curving exposure of an ash band at the base of the wall, in which are incorporated small pieces of breccia. The ash is hardened and brick red, and this grades up into solid grey basalt, with numerous large cavities at the base with okenite in most of them. This is the source area for the cavansites.

Rod Martin, breaking cavansite.

They were found in rocks scattered across the quarry floor. Judy Rowe found the first blues, then Jocelyn, and these were in reddish rock. Then others found more, many with okenite, in 4 or 5 pieces the size of footballs, and other smaller specimens.
Rod described the cavansites, found in two forms, in rosettes, balls or flattened, or in smaller sprays of thin blades. Larger single blades showed twinning, which indicated the possibility that they are pentagonite, and this year Peter Elliott confirmed that they are indeed pentagonite, in sprays or singles. Rod found two large pieces, and broke one up to share with those who failed to find their own 'blues'. We were still picking up specimens of most of the main Aranga minerals, although I do not recall any gismondine in these layers.
Collectors were split into groups, as some accessed the old top layer.

Neville Berkahn was collecting on a lower level, and wanted to return to look for the cavansite.
A month later Mathew took him, and the two were photographed by the red arch where the cavansite occurred, and Neville found a large slab covered with blue balls, which he did not share with Mathew.

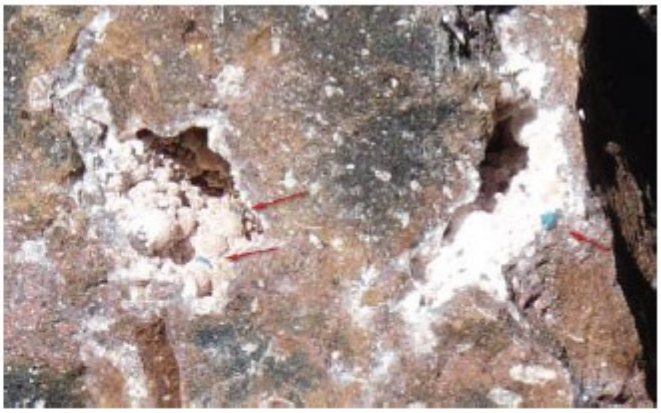
In 2016 we returned, to find the quarry was widened and deepened, the cavansite wall exposure gone, and also a third level visible on the back wall. We still found the basic material, calcite, chabazite, thomsonite, levyne, copper wires on black saponite in cavities, and helictites on thomsonite balls.
Mat had collected marvellous calcites enclosed in thomsonite and holding clear doubly-terminated calcite prisms and rare butterfly twins.
He also brought to share large specimens lined with chabazite, holding large calcites covered with okenite and scattered with golden ferroan calcite. There were tiny little black bricks on some of them, between the okenite, calcite and chabazite.

Peter Elliott and Tony Kampf took the little black bricks, and found … waipouaite !

Nothing lasts forever.
In 2022 we had a symposium in the Tangihua camp, and learned that the Aranga quarry had a new owner, who was closing the quarry to collectors. Mat had managed to get permission for a last visit.

The quarry has been excavated down three levels, and for the first time there was machinery there. We scavenged the areas with large boulders, and even a little bench where the road descended to the main floor. Mat opened a cavity with areas covered in a coral-form of thomsonite, with helictites and small clear calcite crystals scattered on top. Garth found some calcite enclosed in stripes of thicker and thinner greenish (very pale) thomsonite.
We have no further reports of finds.
Perhaps we will see more at the next symposium, when we have investigated all our specimens.

Rod Martin crossing in front of the back wall, 2022.



Cavansite locality and specimens, Aranga Quarry field trip, 2009. Photos by Rod Martin.

Reprinted from Micro-Scope (New Zealand), June 2024

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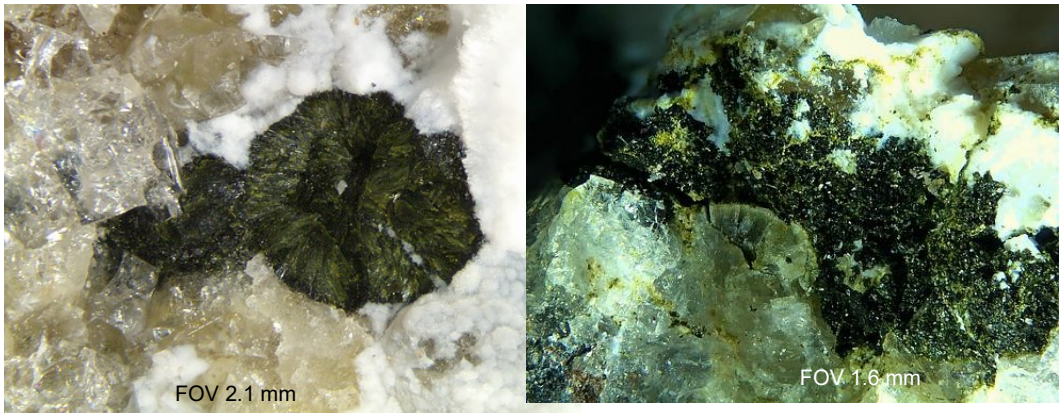

Waipouaite. Aranga Quarry, Northland, New Zealand. Collection of and photograph by Rod Martin. Originally posted on Mindat. Used with permission.

Waipouaite, a new polyoxovanadate from the Aranga Quarry, Northland.

Notes by Jocelyn Thornton, for this newsletter.

It is official, full details published in the *American Mineralogist,* Vol. 109, p 934-939, May 2024.

Peter Elliott at the University of Adelaide and Tony Kampf in Los Angeles County Museum of Natural History have worked together to arrange a vast collection of detailed analyses of these tiny green-black minerals. It is quite easy for us collectors to call them calcium vanadium silicates or black bits, but the discovery of the way that the elements have linked together has brought us a totally new form of a natural mineral, with a very long formula to go with the structure.

$$Ca_3(V^{4+}_{4.5}V^{5+}_{0.5})O_9[(Si_2O_5(OH)_2][Si_3O_{7.5}(OH)_{1.5}].11H_2O$$

Waipouaite is a polyoxovanadate, (POV = lots of oxygen, plus vanadium) which has a novel structure based on $[(V^{4+},V^{5+})_5O_{17}]$ polyoxovanadate units, which are unique in natural and synthetic phases. Laboratory synthesis of POVs has proved to be a great challenge, and the discovery of waipouaite demonstrates that these compounds can form under natural conditions.
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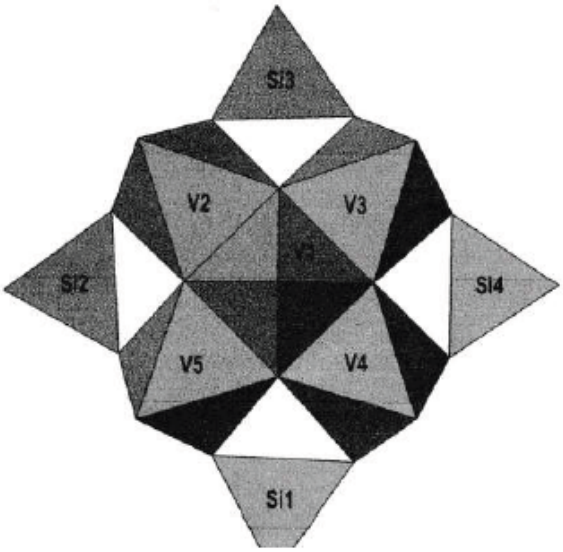
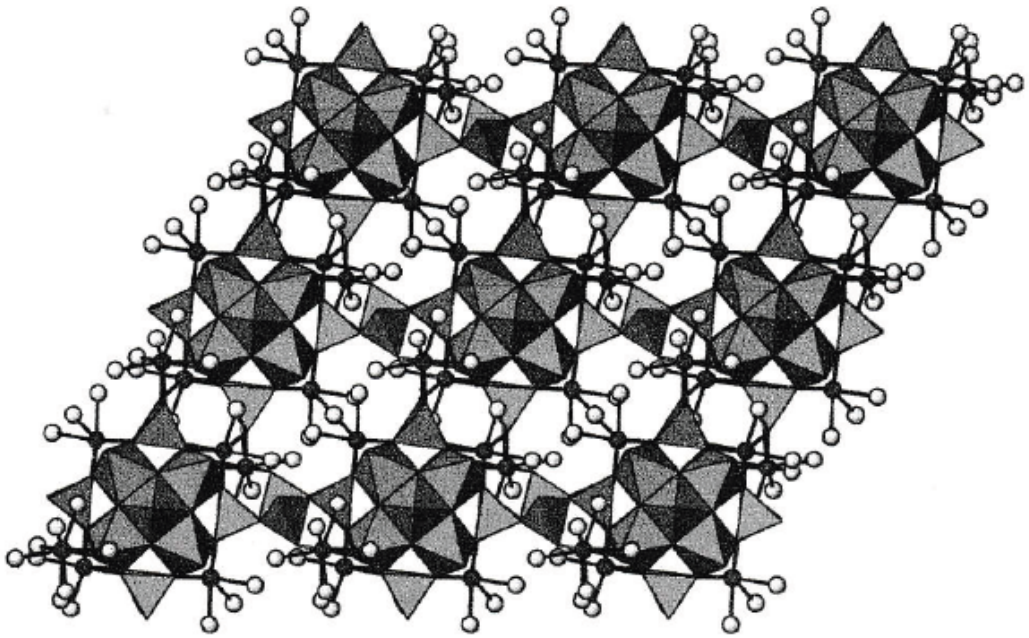
The pictures of the crystal structure help explain the unique character of waipouaite.



The structural vanadate unit has five VO_5 square pyramids linked at their bases (the number 1 on the central pyramid pointing up is invisible in the scan.) The outer four silicon tetrahedron are linked to the pyramids by their bases.

These units are linked with other silicon tetrahedrons, and also by a chain work of calcium units, which form a flat network. Other elements are left out.
In the diagrams, the calcium is marked by a darker ball and the oxygen by an empty ball.



This is a horizontal view of the network, which is somewhat weakly linked to the layer below, so the mineral cleaves, as we have seen when thinner greenish slices of crystal remain on a broken specimen. (My apologies to the crystallographers. I am trying to understand all the amazing technology that produced their description of this new mineral.)

The authors stated that the synthesis of polyoxovanadates (POVs) is a very fast-growing area of research in material chemistry driven by their structural versatility and potential applications which result from the flexible coordination chemistry of vanadium and its wide variety of valence states. POVs can be structurally, electronically and magnetically altered by the incorporation of different elements, such as silica, germanium, arsenic and antimony. The last two are simpler, but do not make high dimensional frameworks. Less progress has been made on silica and germanium additions (SiPOV and GePOV). One scientist, Y. Gao, noted that the stabilisation and isolation of new types of vanadosilicon is a great challenge and requires new strategies in the laboratories.

"The discovery of waipouaite demonstrates that SiPOVs can form under natural conditions and may open up new synthetic pathways for the preparation of these compounds"

Waipouaite is the latest new mineral to be found and identified from New Zealand. To remind our readers, I attach a list of our other Type Minerals.

Type Minerals from New Zealand, in chronological order.

Date	Name	Formula	Author
1866	Taranakite	$K_3Al_5(PO_3OH)_6(PO_4)_2.18H_2O$	Hector and Skey
1885	Awaruite	Ni_3Fe	Skey
1932	Tuhualite	$NaFe^{2+}Fe^{3}+Si_6O_{15}$	Marshall
1943	*Hydrogrossular* described by Hutton, but later changed to straight grossular by the IMA.		
1950	Huttonite	$Th(SiO_4)$	Pabst and Hutton
1955	Wairakite	$Ca(Si_4\ Al_2)O_{12}.2H_2O$	Steiner and Coombs
1964	Wairauite	CoFe	Challis and Long
1971	Akatoreite	$Mn^{2+}{}_9Al_2Si_8O_{24}(OH)_8$	Read and Reay
1977	Motukoreaite	$Mg_6Al_3(OH)_{18}[Na(H_2O)_6](SO_4)_2.6H_2O$	Rogers,Chisholm,Davis and Nelson
1989	Feruvite	$CaFe^{2+}{}_3(Al_5Mg)(Si_6O_{18})(BO_3)_3(OH)3(OH)$	Grice and Robinson
1991	Coombsite	$K(Mn^{2+})_{13}(SiAl)_{18}O_{42}(OH)_{14}$	Sameshima and Kawachi
1997	Ferroceladonite Ferroaluminoceladonite	$KFe^{2+}Fe^{3+}Si_4O_{10}(OH)_2$ $KFe^{2+}AlSi_4O_{10}(OH)_2$	Li, Peacor,Coombs and Kawachi

I described this list with illustrations and publication details in the *Australian Journal of Mineralogy,* Vol. 19, No. 2, 2018. pp 27-34.

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Golden Horn Batholith, Washington, USA

I know that there are many of you that have collected at Washington Pass/Liberty Bell and there are others, like myself, Beth) who have not been there. Both groups might be interested in this video by Nick Zentner on the geology of the area and, if nothing else, take in the wonderful views.

https://www.youtube.com/watch?v=PWPeTJQGcDA

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Some smiling faces at NCMA 2024. Genie, Don and Cindy.
Photo by Bruce Kelley.

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