THE 748th MEETING
of
THE MINERALOGICAL SOCIETY
OF SOUTHERN CALIFORNIA

7:30 p.m., Friday, May 12, 2000
Geology Building E Lecture Hall
Pasadena City College
Pasadena, California

Featuring A Talk
by

Rock Currier

"Trekkin in Madagascar"

PRESIDENT'S COLUMN

by Bob Housley

Since my last column I have been traveling a lot and collecting quite a bit. Because of that I had to miss the April meeting and am way behind in identifying, evaluating, and sorting the material I have brought home in the last month or so.

Following the MSSC trip to Borate in March Garth Bricker, Bob and Sugar White, and I went to the Blue Bell Mine to see if we could relocate the sources of two previously unknown minerals that Garth had recently found there. We were successful and got several well crystallized specimens of the pale blue lead silicate. It just might turn out to be a new mineral since its x-ray powder diffraction pattern does not seem to match either of the known lead silicates, alamosite and plumbotsumite. We also got quite a bit more of the hexagonal lead, zinc tellurate, arsenate, but the crystals are still too small to recognize except in the SEM.

The following day we explored the Mammoth Mine and found among other things some nice micros of the rare arsenate phillipsburgite.

On April 8th I stopped briefly at the Felix Mine and got several more samples of orange powdery material that would have been called minium in the past. These turned out to be a mixture of an amorphous appearing mercury mineral and fine grained hemimorphite.

On the 9th Jim Schlegel, Steve Shailer, Bill Besse, John Seibel, Al Wilkens, and I hiked down to the pegmatite

in Pacoima Canyon. I think everyone got some decent specimens of allanite and purple zircon, but the nice pieces that break out cleanly are pretty hard to find. The zircon has an intense yellow fluorescence.

The following day I left for Portland OR to visit my brother. While up their I got to spend about an hour at Shellrock Mountain which is along the Columbia River between Cascade Locks and Hood River. It produces nice micro specimens of stilbite and heulandite on amethyst and I was fortunate enough to find a few. It is a favorite collecting spot for people living in the area.

After returning my brother came down here and we spent May 2 and 3 at Crystal Ridge. We went to a large quartz ledge way up the mountain from where people usually collect. We had last been there seventeen years ago, so we needed to work out the route again. We took a couple of sightings on the ledge from the valley floor with a Brunton compass, then plotted the intersection on a topographic map and programmed my GPS with the intersection. Then we drove up Mazourka Canyon to the far end of Santa Rita flat to a place that was only 0.75 miles away and 800 feet higher.

We thought it would be an easy stroll down to the ledge, but boy were we wrong. As soon as we left the flat the terrain was sufficiently complex, rocky, and brushy that it took us an hour and a half to make to the ledge. The ledge was even bigger than we remembered ranging from two to four feet in thickness and extending for hundreds of feet, also frequently split into several parallel components. Considering the difficult access we were truly amazed at the amount of work that had been done there. All the easy pockets had certainly been found and dug out. Even so we were able to find enough nice crystals to make the adventure worth while and so plan to go back again sometime.

PETERSEN MOUNTAIN TRIP UPDATE

The Memorial Day weekend trip to Petersen Mountain has been cancelled. Jim Schlegel has begun refunding to all who had sent in their checks.

DO I HAVE YOUR EMAIL ADDRESS?

If you have a new email address or have changed yours recently, please let your Editor know. If you did not receive a message from me about the change in this month's speaker, then I don't have your current email address.. Please send me changes at: rthacker@earthlink.net. -Ed

IT WILL SOON BE SHOW TIME

Jim Schlegel is in **URGENT** need of help on the Show Committee. You need not commit to a major life change, in fact Jim would rather have a number of folks doing small jobs. But Jim cannot and should not have to do it by himself, and he is well into the work plan at this point. Remember, members, THIS IS **YOUR** SHOW, NOT **JIM'S** SHOW. And Dave Smith is now accepting sign-ups for time slots on individual tasks during the show. Get yours before they are all gone!!

DANA COLLECTION: PART II - SILICATES

by John Schwarze

Back in whatever of the last century, when I finished some thoughts on the Dana Collection; I promised or threatened to continue in the future with an explanation of those minerals the Danas never dealt with; the silicates. Well, Dear Readers, the moment has arrived.

As previously mentioned, although the early chemists and mineralogists were amazingly capable and competent, they lacked the technology and worldwide knowledge that would have let them decipher the mysteries and complexities of silicate minerals. As you also recall, the basic components of silicates are silica and oxygen, the two elements that next to nitrogen are the most abundant on earth. Those two elements are also of such a size and atomic structure that they readily join with each other and easily combine with almost every other element. For example, tourmaline typically has six other elements in its structure in addition to silica and oxygen. Therefore, over 25% of all known minerals are silicates and silica bearing minerals constitute over 90% of the earth's crust.

Now, in truth, by any evaluation of the methods used to classify the other types of minerals; the silicates are oxides, basically silicon dioxides. However, to merely lump them into that group would not allow one to rationalize or understand some of the un-oxide like properties that many exhibit. To bring order to this chaos and create some degree of organization, a method other than chemical formula was chosen; but it had to largely wait until the arrival and efforts of another father/son duo, William Henry and William Lawrence Bragg of England. These early experimenters with X-ray crystallography were able to delve into the atomic structure of minerals, especially the silicates and give us a method of classifying the elusive group. After further refinement by Hugo Strunz in the late 1950's we can now gather the silicate minerals into six groups based on their structure, not their chemical composition. This allows mineralogists as well as mere collectors such as you and I to better understand and organize the minerals into family groups. Remember, however, that the following is based upon atomic structure. Unless you own an X ray crystallography machine or a scanning electron microscope, you've got to take the Braggs and Hugo Strunz' word for most of what follows:

Nesosilicates (Neso is Greek for "island") The typical structure for silicates of this group is built around the ratio of silica to oxygen of 1 to 4, or SiO_4. In the minerals of this group, the formula are reasonably simple, usually consisting of silica tetrahedron (an atom of silica surrounded by four Oxygen in a strange looking pyramid) bound to each other by another element such as Iron, manganese, calcium, etc. This characteristic leads to the name of the group since the tetrahedra are like "islands" floating in a sea of whatever. The group contains the garnets, zircon, olivine, topaz, and staurolite among others. So, the next time someone shows you a spessartine garnet, you can show off by replying "Hey, nice looking nesosilicate!"

Sorosilicates (Soro is Greek for "group") In this group the ratio of silica to oxygen changes to a ratio of 2 to 7, or Si_2O_7.In this group, the silica tetrahedrons bunch up a bit and two try to share the same space. Since that is impossible, what happens is that two of the little pyramids join by eliminating one of the Oxygen atoms and sharing the two silica atoms. Try to envision myriad tiny dumbbells. To me this not a very exciting family; with its most famous members being epidote and hemimorphite

Cyclosilicates (Cyclo is Greek for “ring“) Here the ratio of the two elements is one silica to three oxygen or SiO_3. Now things start to get more complicated and the minerals become more exciting. Here the basic tetrahedra begin to arrange themselves so that the true ratio of silica to oxygen is always some multiple of 1 to 3; such as 3 to 9, or 6 to 18. The structure begins to resemble those rings that magicians use, where the rings are joined, then magically single, or double, whatever the magician wants. This leads to a somewhat open atomic structure that allows a myriad of other elemental atoms to go floating through, around, and in the open spaces created. The two stars in this group are the beryls (emerald, aquamarine, etc.) and the toumalines.

Inosilicates (Ino is Greek for “chain“) Unlike the other five categories of silicates, this grouping typically divided into two subgroups: Single chains at a ratio of one silica to three oxygen (SiO_3). (OhOh! Why aren’t they considered cyclosilicates?), and double chains at a ratio of four Silica to eleven oxygen or Si_4O_{11}. You want chains? We’ve got chains! Endless interlocking chains, enough to anchor a ship in the middle of the Pacific. But the chains are not just linear, they interlock, with the result being more like chain mail on some knight, only going on in all dimensions. This is the family tree of two of the most complex mineral groups, the pyroxenes (diopside, jadeite) and the amphiboles (actinolite, nephrite). It has been determined that there are at least 65 different members of the amphibole family and possible and additional 21 that have not yet been discovered. To my knowledge, no one has tackled the pyroxenes.

Phyllosilicates (Phyllo is Greek for “sheet“) These silicates typically have a ratio of two silica to five oxygen in their structure or Si_2O_5. Here, finally, is a group where the atomic structure can actually be seen or, at least, its effect on the outward appearance of the mineral. The silica and oxygen atoms line up a usual; but tend to stay in two dimensions; flat, like a sheet of paper. There is some thought that this is due to the fact that the minerals in the group all have a relatively high water content. As mineralogists say, they are all “hydroxyls“. The representatives are the micas and the clays. This are all characterized as flat, flaky minerals that peel off in sheets. In this case, the sheets actually represent a layer of silicate tetrahedrons discretely layered one atop another. I guess, theoretically, one could keep peeling layers until you had one that was actually one molecule thick. It is this characteristic that not only allows us to amuse ourselves by separating plates of muscovite mica; but also causes landslides in clay bearing soils.

Tectosilicates (Tecto is Greek for “framework“) And, finally, the simplest group; one where the ratio is merely one Silica to two oxygen, or SiO_2. Well, that’s a lie. The ratio may work out to one to two; but the reality is that the two oxygen atoms are always shared with the silica structure next door, so truly the ratio is an endless compact group that grabs adjacent silica and oxygen in eight directions like the Queen in a game of chess. If 90% of the earth’s crust is composed of silicate minerals, then something like 75% of the 90% is made up of tectosilicates, primarily quartz and feldspars. Quartz itself can be composed in eight different ways, or polymorphs, depending on its symmetry, temperature of formation, etc. When you then consider the varieties - amethyst, opal, agate, flint, on and on- our simple quartz becomes a very complex mineral. The feldspars follow the same pattern of complexity, with most of them involved in what is called a solid solution series. What this means is that they all share their other elements, such as calcium, potassium, and sodium, in such gradations that you never encounter a feldspar that is composed of the chemically determined formula. Most feldspars are either classed as potassium feldspars (microcline, orthoclase) or as sodium/calcium feldspars (albite, anorthite).

In addition to quartz and the feldspars, this group also includes the zeolites, those odd little minerals that give up their water content when heated and regain it from the air when cooled. They also allow their water to be flushed out and replaced with new water or other chemicals. This is why they are used so extensively in water softeners and as “molecular sieves.” We are probably most familiar with natrolite and stilbite.

Don’t be put off by all of this. As I said when I started down this road, my purpose was merely to explain what is referred to by the term “Dana Collection“; to give a little insight as to why minerals are arranged the way they are in museums and big time collections. It’s perfectly all right to keep collecting minerals because they’re red or found in shapes that resemble cats. Collect and keep them in whatever manner you like. Enjoy them and cherish them. And, for goodness sake, buy and read a good mineral book.

NOTES FROM THE EDITOR'S DESK

I am a little short on detail, but at Tucson, Casey and Jane Jones along with co-author Gene LaBerge received the award for best article of 1999 in the Mineralogical Record for their article on the Flambeau mine in the March-April issue. Irv Brown won the big one, Bill Besse also won for best toe nail specimen, and Sugar White won at least one award for photography....it was a So. Cal evening.

NEWS FROM BILL RADER

Editor’s Note: When Bill received his appointment, he had little time to say goodbye in order to arrive in Austin and get settled in. I have received a couple of emails from Bill, and I hope he will not mind that I share them.

“Hello, Ron:

Have done very little in the way of mineral collecting; just a few calcite geodes locally. Have done a fair amount of fossil collecting in the Austin area, Wimberly in adjacent Hays Co., and up north in Coryell Co., where they are doing quite a bit or roadwork. Have collected many urchins nd ammonites (both fulls and partials) in all three areas, but especially up north (75 heart urchins in two hours from one cut one Sunday afternoon and 56 more in four hours on yet another Sunday).

Am going to help select display minerals for UT Department of Geological Sciences (UTDoGS) and may be asked to display some of my own material (fossils/minerals). Say hello to everyone for me. Bill R.

Date: Sun, 27 Feb 2000

Today, I went up north to Coryell Co. to collect some of the roadcuts to which access has been made easier because of shoulder work along the highway.

I went to one cut with numerous large rills that had been scoured somewhat by the heavy rains we

had last week. I spent about five hours there, and in the course of that time collected almost exactly 100 heart urchins. I also came up with a number of nice bivalves with growth lines (there are a number of robust species to be found there) and some equally nice gastropods displaying sculpture on the whorls (again, there are several large species to be found there). Ammonites seem to be scarce at this locality.

I also went down the road farther in the direction of Gatesville to check out another small cut that I had seen some weeks earlier with my parents. It also produced. There was a large oyster bed with a robust species of oyster and a very large species of "ram's horn," larger than any I have seen to date. I found a dozen or so heart urchins and two regular urchins. The latter appear to be Texaster, one of which is at least two inches in diameter, easily the biggest I have ever collected, which makes me believe it is a species I have not seen before. There were a few fragmentary ammonites, but they appear to be too weathered to be of any diagnostic value.

There are still about three cuts left to inspect, two small and one of intermediate size. I'll let you know if they produce.

You would crack up if you saw the bedroom I'm staying in at my parent's place. One side of the room is covered with boxes of fossils and minerals and is beginning to resemble my place in Santa Monica!" Biil R.

From the Internet:

From: Ronnie Van Dommelen <dommelen@is2.dal.ca>

Subject: Crystal Line Drawings

As newsletter editor for my club, I have needed illustrations of crystals from time to time. Thus, I have been creating some line drawings of various crystals (simple forms and combinations), and have decided to add them to my website so others can use them too. You can find them at : http://is2.dal.ca/~dommelen/crystallography/index.html. Happy Collecting,

Ronnie Van Dommelen, PhD Candidate

CALENDAR

May 12: MSSC monthly meeting, 7:30 p.m., Geology Building, Pasadena City College

May 6 – 7: Bakersfield, CA
Kern County Mineral Society
Kern County Fairgrounds, 10 – 5 both days
Gary Paddock 661-589-3517

May 13 – 14: Reno, NV
Reno Gem & Mineral Society
Reno Livestock Events Ctr Exhibits Hall
1350 N. Wells Ave, Sat 10-5, Sun 10-4

John Peterson 775-849-1522

May 21: MSSC BOARD MEETING
Costa Mesa Show, 10:00 a.m. No Host Breakfast

May 19 - 21; Escondido, CA
Palomar Gem & Mineral Club, Inc.
In a vacant store in Del Norte Plaza Shopping Center
1O - 6 daily, Don Parsley 760- 745-6181

May 19 - 21: Red Bluff, CA
Superior Calif. Gem & Mineral Ass., Inc.
Tehama District Fairgrounds
Highway 99E
Hours: Fri. & Sat. 9 - 5; Sun. 10 - 4
Paul Carter (530) 872-1983

May 20 - 21: Newbury Park, CA
Conejo Gem & Mineral Club
Borchard Park Community Center
190 Reino Rd.
Hours: Sat. 9 - 5; Sun. 10 - 5
Don Pomerenke (805) 492-4276

MAY 20 - 21: Yucaipa, CA
Yucaipa Valley Gem & Mineral Society
Scherer Community Center
12202 Ist. Street (and Avenue B)
Hours: Sat. 10 - 6; Sun. 10 - 5
Henry Cobb (909) 795-37JL6

JUNE 3 - 4; Glendora, CA
Glendora Gems
Goddard Middle School
859 E. Sierra Madre
Hours: Sat. 10 - 6; Sun.: 1O - 4
Mark Thompson (626) 335-38.i4

JUNE 3 - 4; WEST HILLS, CA
Rockatomics Gem & Mineral
Boeing Recreation Center
8500 Falibrook Avenue
Hours: 10 am - 5 pm
arley Rogers (805) 495-6i84