THE 742nd MEETING,
of
THE MINERALOGICAL SOCIETY
OF SOUTHERN CALIFORNIA

7:30 p.m., Friday, November 12, 1999
Geology Building E Lecture Hall
Pasadena City College
Pasadena, California

Featuring A Talk By
Professor Ling O'Connor

"Metamorphism Associated with the
Emplacement of a Mesozoic Pluton
in the Clark Mountains"

NOVEMBER PROGRAM

Professor Ling O'Connor of Long Beach City College will present data on oxygen and carbon isotope compositions of the contact aureole, country rocks found inside the pluton, and the pluton itself. Based on the isotope data, she will be making some estimations on the metamorphic temperature in the aureole and the composition of the country rocks found inside the pluton.

IT'S SHOW TIME!!

And we are back in Pasadena for The Pasadena Show, MSSC's

52D ANNUAL GEM AND MINERAL SHOW

Theme Mineral – Tourmaline

November 20 and 21

Saturday from 10:00 a.m. to 6:00 p.m.

and

Sunday from 10:00 a.m. to 5:00 p.m.

The Pasadena Center

300 East Green Street, Pasadena, California

For more info visit the Show page.

MINUTES OF THE 740th MEETING OF THE MSSC

The 740th meeting of the Mineralogical Society of Southern California was on September 10, 1999. Bob Housley called the meeting to order at 7:30 p.m. David Perunko then spoke on The Hell Creek Formation in Montana, North and South Dakota.

Bob then made some announcements for shows and other activities summarized in the calendar section of the Bulletin including the San Bernardino County Museum Localities Symposium on October 16 & 17 and the Searles Lake Gem & Mineral Society Show on October 9 &10.

For Show exhibits, Ron Pellar announced that we have a strong showing of exhibits including nine entries for the H. Stanton Hill competition.

For the Show Committee, Jim Schlegel requested that anyone attending any rock shows please take some fliers to put out at the show. He also said that we would need volunteers – more than before – to run the show. For those interested in participating in the show, they may sign up on the Volunteer Signup Sheet at the meeting or contact Dave Smith at (310) 334-1669 or dave_topaz@yahoo.com.

Don Fraser got up to speak on the Champion Mine. He invited us to go visit the mine between 10/6 through 10/20 when he will be there. He said there are still interesting minerals to find including woodhouseite and rutile.

Gus Meister moved we approve the minutes for the 739th meeting, Ed Smith seconded and the minutes were approved unanimously.

arolyn Seitz won the Door Prize and I failed to find what she chose. David Perunko, our only guest, received the Guest Door Prize and to be fair, I didn't find out what he chose either.

The 740th meeting of the MSSC adjourned at 9:00 p.m.

Respectfully submitted,
David Smith, Secretary

MINUTES OF THE 741st MEETING OF THE MSSC

The 741st meeting of the Mineralogical Society of Southern California was held on October 8, 1999 in the Lecture Hall, Geology Building, Pasadena City College. Bob Housley called the meeting to order at 7:40 p.m. and introduced Alan Sailer who spoke on Mars Meteorites.

Bob then made some announcements for shows and other activities summarized in the calendar section of the Bulletin including the San Bernardino County Museum Localities Symposium on October 16 & 17 and the Searles Lake Gem & Mineral Society Show on October 9 &10.

For the Show Committee, Jim Schlegel said that we would need volunteers – more than before – to run the show. For those interested in participating in the show, they may sign up on the Volunteer Signup Sheet at the meeting or contact Dave Smith at (310) 334-1669 or dave_topaz@yahoo.com. As a status report, Jim said that we have between 60 and 70 dealers for the show and almost all are paid up. Thursday and Friday will be setup days. Ron Pellar encouraged all of us to consider entering exhibits. He said that he will have to cut off applications around the end of October. Call him for information.

Bob announced it is time to start the nomination process for Officers of the society. Traditionally, Officers serve two terms when elected. He noted that the Secretary has served three terms and should be replaced. Please replace him. It is also time for election of Directors for the 2000-2001 term. All members interested in being more involved in your society, please consider nominating yourself.

Bob also announced that the Board of Directors would meet on Sunday, Oct 17 at 2:00p.m. at Ron Pellar's home.

Jackie Stutz won the Door Prize and chose a Tektite from Guangdong Province, China. Our only guests, Claudia and Michael Spencer received the Guest Door Prizes and chose samples of Aragonite and Prehnite, respectively.

The 741st meeting of the MSSC adjourned at 9:00 p.m.

Respectfully submitted,
David Smith, Secretary

TAKEN FOR GRANITE

By John Schwarze

I have read that if the entire earth were melted and allowed to slowly recrystalize, the result would be one huge homogenous ball of granite. As we are aware, the process of plate tectonics is slowly burying portions of the earth=s sea basins under the continents and the result is granite. (A word to you volcanic rock lovers: AJust keep reading@.)

Why is this so? Well, to begin with, it is preordained by the basic chemical composition of the earth and the chemical composition of granite in particular. In the universe, the most abundant elements, by far, are Hydrogen, Helium and Neon, all gases and too light for the earth=s gravity to retain in large quantities. However, on earth, the prevalent elements are oxygen, silicon, carbon, calcium, etc. all substantial as to weight, the ability to bond with other elements, etc. By weight oxygen makes up 47% and silicon 28% of all igneous rocks. Since our old friend quartz is really silicon dioxide, or one silicon atom to two oxygen atoms, you can immediately see why quartz is as abundant as it is. But we=re talking granite here, and granite is a rock, not a mineral.

A rock is defined as an assemblage of minerals; and the types and proportions of minerals is what gives the rock its= name. In order to be granite, therefore, a rock must have more than 10% quartz in its composition. Most of the remainder will be feldspars (orthoclase, plagioclase, etc.); but the potassium rich feldspars (orthoclase, microcline) must comprise 66% of the total feldspars with the soda-lime feldspars (albite, anorthosite) comprising only 33%.@ Whoa! you say; how am I supposed to figure that out?@ It isn=t easy; but the soda feldspars are almost always twinned crystals, and if you look at the suspected crystal under at least 10X magnification in a strong

northerly light, the soda feldspars will appear the same as looking at the edge of a book or stack of papers.

In addition, to be a granite, the rock must also be light in color; sort of an overall whitish gray. On the arbitrary color scale used by petrologists (Greek for those who study rocks) the rock must register as a 10 or less on a scale of 1 to 100. In other words, it=s got to look like granite.

As mineral collectors, we are, of course, interested in good specimens of quartz and feldspar and the seams and veins in granite can certainly provide those. However, it is the required minor constituents of granite that really hold our attention. You see, to be classified as granite, the rock must also contain a certain amount of Acharacterizing accessory minerals@. These typically are hornblende, biotite, pyroxene, and muscovite; but frequently also includes tourmaline, garnet, and sphene (titanite). If we=ve gotten incredibly lucky, we have chanced upon the most desired portion of a granitic body - a pegmatite.

Pegmatites are so granitic that the core rock of one is referred to as Agraphic granite@. This is rock that is so granitic in composition that the quartz and feldspar have intermingled to the point where they look like some kind of ancient Norse or Hebraic writing. Of course, within the core itself may lie that Holy Grail of mineral collectors; a gem pocket.

While most of us don=t care about such things, those self same petrologists have a tendency to try to over complicate the entire process. Thus we have what amounts to divisions of the Agranite family@ ranging from alaskite (white, few dark minerals of any kind) to gabbro (black, 50% dark minerals whose color overwhelms the few grains of clear quartz). Suffice it to say that for the majority, if it looks and feels like granite, it probably is.

Oh Yes, volcanic lovers! In the classification scheme of igneous rocks, the volcanic equivalent of granite is rhyolite, even down to occasional gem pockets of garnet, topaz, and beryl. At the other end is, of course, basalt; that dark ubiquitous outpouring of rock that covers large parts of eastern California.

QUARTZ FAMILY MINERAL SPECIES [POLYMORPHS]

By Charlie Crutchfield

There are many polymorphs of the quartz [silicon dioxide] family listed in the mineralogy literature. Most textbooks on mineralogy will show the phase diagram of the quartz family, showing what polymorphs or "species" can exist at [say] 1000^0 C and 1000 psi pressure. Only a few of these can exist at ordinary conditions and it is only these that can be possibly be present in any collection. Those that are of interest to a collector, and reasonably obtainable, are: quartz, tridymite, opal, cristobalite, and perhaps melanophlogite. Cristobalite and tridymite are nearly impossible to distinguish by macroscopic methods, laboratory methods are needed. Location, association, etc. are about all are of use to the average collector. The others in the silicon dioxide group: coesite, stishovite, and silhydrite are rare, practically non-obtainable by the average collector, impossible to identify without laboratory testing, and do not occur as attractive specimens. They are listed here solely for the sake of completion.

For more information on the complex relations of the many phases of the quartz family of minerals, see any good book on mineralogy, especially. "Dana's System of Mineralogy" Vol. III, by Clifford

Frondel, 7th Edition, 1962, J. Wiley and Son. On the web see: www.scilib.uci.edu/HSG/GradGeoscience.html#geo-min

and www.minerals.net/min . For mineral locations in California, see: "Minerals of California" by H. Earl Pemberton, Van Nostrand and Reinhold Co. 1983.

SILICA FAMILY MINERALS

QUARTZ This is perhaps the most common mineral, found everywhere, and is well known to all. It occurs in all colors, luster is vitreous

Field Marks: Hardness, vitreous luster, conchoidal fracture, hexagonal crystals with striations across the prism faces.

CRISTOBALITE This is found as two main types in nature. One type is opal, or opaline silica which is described below as a distinct species. The second type of cristobalite is truly crystalline. The crystals are usually quite small, under 1 mm. It is white or colorless. The habit is most commonly octahedral, sometimes cubical. It is only found in igneous rocks. Crystalline cristobalite is fairly common in igneous rocks in volcanic areas, especially in obsidian where it is found in cavities as dull white spheres with a radial fibrous structure. It is also found in cavities in obsidian as minute [ca. I mm], near white, rough spheres resembling minute snowballs.

Field Marks: Cristobalite is best recognized by associations and at a known location.

OPAL [SiO_2 nH_20] Opal is micro- or crypto-crystalline cristobalite and for many years was thought to be amorphous. Opal can be nearly any color, the luster is usually vitreous to dull. For details on the nature, structure, and synthesis of Opal, see the article in "Scientific American" p 84, April 1976. From the average collector's standpoint, Opal can be considered as a separate distinct mineral species, not merely a variety of cristobalite. It is usually found with a rounded surface and also occurs in veins. It is really a very common mineral, but gem quality material is quite rare. A well-known site in Southern California is the Opal Mine, northeast of Red Rock Canyon State Park, where good gem quality specimens have been found. The writer has found excellent specimens of clear, colorless, hyaline opal near Ludlow. On the web at www.desertusa.com there is much information on opal and specimen localities in our deserts.

Field Marks: No crystals or cleavage, play of colors [sometimes], hardness (less than Quartz or chalcedony]

TRIDYMITE Tridymite is found only in igneous rocks as is cristobalite, and is nearly always found in company with it. It is also actually quite common, but good recognizable specimens are rare. Tridymite crystals are commonly very small, clear, white to colorless, pseudo-hexagonal plates and often twinned also as "Triplets", hence the name. It has been found in the obsidian from Coso Hot Springs, as sparkling plates perched on the minute cristobalite balls, mentioned above.

Field Marks: The crystal habit, environment, and color.

COESITE This phase of silicon dioxide was synthesized in l953, but was first found in nature in l960 in Meteor Crater, AZ as irregular microscopic grains. It has since been found in other meteor craters in the USA, Germany, and Arabia. It has also been found in kimberlite, i.e. diamond-bearing

volcanic necks. I have seen specimens of coesite only once, at the Meteor Crater gift shop, a vial of off-white powder.

Field Marks: Environment and density, laboratory tests.

STISHOVITE Like coesite, stishovite was first made in the laboratory in 1961 and in 1962 was found in nature at Meteor Crater, AZ. As with coesite, it is formed under extreme conditions such as a meteor strike. The synthetic material formed as needles and laths, up to 0.05 mm. in size. The material found at Meteor Crater was colorless-white fine grains, mostly of sub-micron size, mixed with coesite and silica glass.

Field Marks: Environment and high density, laboratory tests.

MELANOPHLOGITE This mineral is silicon dioxide containing a small amount of some unknown organic matter. It usually occurs as modified cubes. In California it is found in Santa Clara County on cristobalite in serpentine as modified cubes up to 5 mm size with adamantine luster. On exposure, melanophlogite is said to lose the organic component, and then change to cristobalite. All specimens are said to turn black when heated. Melanophlogite was first identified in sulfur deposits in Sicily, these specimens contained 5 - 7% of $S0_3$. That found on basalt on Kilauea, Hi contained 17% $S0_3$. One analysis of a specimen from the California locality shows the composition as: $C_2H_{17}O_5$ $Si_{47}0_{92}$, with no sulfur present. The actual nature and chemical composition of this substance is rather poorly known, and what little is known, may well be incorrect.

Field Marks: Crystal habit, low density, and locality, becomes black when heated.

KEATITE This substance is a man-made phase or polymorph of silicon dioxide, and is not yet known to occur in nature. It is included here since it may possibly be found in nature sometime in the future as was coesite. The laboratory conditions of temperature and pressure under which it was formed are less extreme than those under which coesite and stishovite were formed. The synthetic material appeared as microscopic square platelets, up to 0.05 mm in size.

SILHYDRITE [$3SiO_2$ H_2O] A hydrated form of silica. White and porous. Found as soft white microcrystalline grains and porous masses in Trinity County, CA.

Field Marks: None of any value, a one locality mineral [so far], requires laboratory tests for identification.

Mineral	Crystal System	Hardness	Specific Gravity
quartz	rhombohedral	7	2.65
cristobalite	tetragonal	6.5	2.33
opal	amorphous	5.5-6.5	2-2.25
tridymite	monoclinic	7	2.26
coesite	monoclinic	8	3.01
stishovite	tetragonal	[8-9?]	4.28
melanophlogite	tetragonal -pseudocubic	6.5-7	2.00-2.05

keatite	tetragonal	?	2.5
silhydrite	orthorombic	[1?]	2.15

CALENDAR

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

November 20-21: Pasadena, CA MSSC's PASADENA SHOW

November 27-28: Mojave Desert Gem & Mineral Society, Barstow Community Center, 841 Barstow Rd, Barstow. Bob Depue 800-253-2954

December 4-5: Rialto, CA. Orange Belt Mineralogical Socitey, The Masonic Lodge, 260 South Palm Ave. Beverly Jenkins (909) 882-7598

January 15: MSSC Installation Banquet

January 23: MSSC Board of Directors Meeting, home of Carolyn Seitz.

NOTES FROM THE EDITOR'S DESK

Well, first an apology from your Editor for the cover of the September issue of the Bulletin, the one that said our meeting would be July 9. I know how it happened, but not why. No excuses, I looked write at it and it looked fine. For those who save the Bulletin, let me know and I will send you a corrected replacement cover.

Then there was (or wasn't) the missing October issue. I do plan to produce it in the interest of maintaining the record. I won't get into the why's and why-not's except to request that content contributors please adhere to the deadline of the 20th of the month.

If you have not yet been called by Dave Smith, please call him at 310-334-1669 or e-mail him at: dave_topaz@yahoo.com and tell him to pencil you in on an empty slot to work at least one hour at the show...**YES WE REALLY DO NEED YOU !!**

You may recall that the GPS system encountered its Y2k test before the rest of the world, and we all wondered how our units would fare. Bob White wrote, " The GPS receiver seems to work just fine. Our swimming pool seems to be drifting slightly southwest however. I'm sure that's plate tectonics at work." Mine is fine also, and I have not heard of any incidents, so it looks like that hurdle is behind us.

The article on "Mining For Gunsights" generated a couple of interesting contributions. George R. Rossman <grr@gps.caltech.edu> wrote: "I've been to the Hilton calcite deposit several times. It is inside the park, but there is a fair amount of calcite outside in the badlands to the east. Everything I have seen is sub-optical to near-optical quality (or worse). It tends to form (0001) plates which are the c-axis plates used for sights (centered uniaxial optic axis figures when the calcite is placed between crossed polarizers). It is not hard to find. The road was labeled 'calcite canyon' last time I was there.

Chuck Heald, <chuckbarb@juno.com> a longtime MSSC member wrote: "Several friends and I

visited the area and collected some nice specimens. We drove up the wash from Truckhaven over a fairly well traveled two-track road to the area. If you have an Auto Club map of either San Diego County or Imperial County you can see that the mine area is indeed inside of the Anza-Borrego State Park boundary, now. Since the Salton-Borrego Highway was opened, the easiest way to get to the calcite area is from a point near the micro wave relay tower, where a road goes to the area. I'm not sure it is open for cars, but can be hiked. I was one of the founding members of the Pasadena Movie Club, and we used to go on camp-outs to various places in the Anza-Borrego Desert, and one time camped near the relay tower and hiked into the calcite area. That was over 25 years ago, and was the last time I was there."

Come Spring, would this make an interesting field trip?

Many thanks to Kent Lauer for crafting and donating the H. Stanton Hill Award won at last year's show by Irv Brown. It will be shown along with Irv's display at this year's show.

And we welcome new members Irv Brown, San Diego, Rachel Marie Ross and Clark Ward, Dana Club members from Pasadena, John Assimos of Granada Hills, David Delis of Glendale and Derek Cooper of Ridgecrest.

For those with an interest in the Calico area east of Barstow, San Bernardino County, several sections have come on the market that might offer interesting collecting opportunities. You can check them out at www.CaliforniaLand.com.

Ed.