THE 744th MEETING
of
THE MINERALOGICAL SOCIETY
OF SOUTHERN CALIFORNIA

ANNUAL INSTALLATION BANQUET
and MEETING

Saturday, January 15, 2000
Beckham Grill and Crown Bar
77 West Walnut, Pasadena
Social Hour 5:00 p.m., Dinner at 6:00 p.m.

Featuring A Talk By

Bill Larsen
on
Rubies of Burma

MEETING

Our Installation Banquet and Annual Meeting will be held Saturday, January 15, 2000 at Beckham Grill and Crown Bar, 77 West Walnut, Pasadena, (626) 796-3399, across from Parsons Engineering and just east of the junction of the 134 and 210 Freeways. Social hour will begin at 5:00 p.m., with dinner at 6:00 p.m. After dinner there will be a brief business meeting and installation followed by our program. The cost will be $32.00 per person for Prime Rib of Beef, $25.00 per person for Grilled Fresh Salmon, and $23.00 per person for Mushroom-Parmesan stuffed Chicken Breast. All dinners will be served with salad, potato, and vegetable. Hot fresh bread, and your choice of coffee, tea, or milk will accompany the dinner. Ticket price includes tax and gratuity. Valet or self parking at Beckham Grill both cost $2.00. Our banquet room is upstairs. Contact: Cathy Casey, (626) 358-7628. Advance reservations, including entree choice, are requested. Phone reservations may be made up until Monday, January 8, or you may send reservations by email to: caseyscurios@earthlink.net. You may leave reservation on voice mail with entree selections and payment can be made at banquet.

BANQUET SPEAKER

Our Banquet will feature a talk by Bill Larsen of Pala International and The Collector, in Fallbrook, California. His program will enlighten us on the "Rubies of Burma" and his many trips to what he considers the most beautiful place on Earth.

PRESIDENT'S COLUMN

Bob Housley

The new millennium I will start my column this month with a state of the MSSC message. I believe we are set to start the new millennium from a solid base. Our legal concerns are behind us, we have just had a great show, our web site is up to date, our programs are good and attendance does seem to be increasing, and our move to a new meeting time and place does seem to be attracting members who were not able to attend previously. As we move into the future I want to see us build from our strengths. Our show is great. We all need to work to publicize it and continue to build up participation and attendance. We also need to resume a full field trip schedule now that insurance worries are over. Hopefully we will also be able to plan a little farther in advance so we can post a speaker schedule for meetings and a field trip schedule on our web site. We still need to work harder to let interested people in the area know about us. We really need membership and publicity chairpersons, but even anyone willing to do a little work in these areas without taking on those responsibilities would be welcome.

Tick Canyon This long time standby local collecting area is now up for sale so it is probably only a matter of time before it is subdivided and becomes inaccessible for collecting. Currently three field trips a year are permitted under the supervision of a CFMS member club. I along with about ten other collectors including a couple more of our members went on one a few weeks ago. Alan Wilkens and I teamed up to thoroughly explore the area and were the last ones to leave. He will write up a detailed account of the trip for a later Bulletin. Amazingly after all this time good howlite nodules are still fairly abundant in the dump. Other than that most of what we found are micro minerals including some nice natrolite and analcime, which he will discuss.

Museum Samples and Rock Piles The Fallbrook Museum had on display nice scheelite and molybdenite crystals from a unknown location near Camp Pendleton. Recently Garth Bricker meet a rancher in the area who thought he might know where they came from. Garth went out on a reconnaissance with the rancher and they spotted one mine dump a quarter of a mile or so off a little used dirt road, and found a very interesting rock pile at a nearby road intersection. Garth and I have now gone back and spent two very strenuous days in the area. One day we fought our way through very heavy brush to the mine dump that was visible from the road. There was nothing of interest there. We also took samples from the rock pile and they proved to be extremely interesting. Some of them consist mostly of schorl and dumortierite, with arsenopyrite and the arsenates scorodite and pharmacosiderite. These also have white coatings on grains that prove in the SEM to be the very rare bismuth tungstate, russellite. A few days ago we went back again now with two goals, one to find the source of this rock pile and the other the original quest for the source of the molybdenite and scheelite. Near the rock pile we found a barely discernible old road through the brush. We fought our way up it for about half a mile and eventually came to another old mine. Unfortunately it also had nothing of interest. I may be crazy but exploring is what I really love so I can hardly wait to get back there and have another try at finding these deposits.

DUES ARE DUE !!

Hard to believe, but it is that time of year again.

Editor's Note: We are very indebted to John Sinkankas who most generously sent the following work and for

permission to print it.. It provided the basis of his lecture at our show Due to its length, the second portion will appear in the February Bulletin.

TECTONIC REOPENING OF MINERALIZING CHANNELS IN GRANITIC PEGMATITES

By John Sinkankas

ABSTRACT

Tectonic forces which create openings in rocks that later are filled with granitic pegmatite do not necessarily cease their activity with the solidification of the pegmatite. Field evidence suggests that movements of enclosing rocks cause fracturing or of even brecciation of pegmatite with reopening/channels for further mineralization. This may explain the appearance of fractured and doubly-terminated crystals in pockets, the general disorder of pocket contents, and the leaching of certain minerals from one part of the pegmatite with redeposition elsewhere in the system.

INTRODUCTION

Field evidence for this paper was gathered over several decades of prospecting and mining in the pegmatite districts of southern California and northern Baja California, including Aguanga Mountain, Mesa Grande, Pala, Rincon, Ramona, and several districts in Baja California. Pegmatite types examined ranged from those of simple mineralization to more complex bodies, and to the highly complex pegmatites of Pala district in particular. From the signs of pegmatite body fracture and disturbance of pocket contents, plus certain anomalous parageneses, it is suggested that much mineralization during post-magmatic stages is due to tectonic enlargement or reopening of mineralizing channels. Certain phases of this activity, insofar as they account for the fracturing of pegmatite near and in pockets offer an alternative to the recently advanced "pocket rupture" scheme which attributes such damage to development of very high pressures within pockets as crystallization progresses (Jahns, 1982, p.317).

ROCK OPENINGS

Because even thread-like openings in host rock can contain valuable ore minerals, much more attention has been paid to the problem of host rock fracture systems and their genesis than is the case for pegmatites. Furthermore, many ore deposits have been followed in depth and the nature of the enclosing rocks investigated fully. This is rarely the case for pegmatites, especially for the larger bodies producing economic quantities of feldspar, mica, quartz, and gemstones, all of which are ordinarily mined selectively and thus reveal little about the contacts of the pegmatite with host rock or other evidence bearing upon the tectonic history of emplacement. The literature on ore deposits is abundant and detailed, e.g., Lindgren (1933), Newhouse (1942), Park & MacDiarmid (1975) and Jensen & Bateman (1979), and several works also discuss granitic pegmatites but comments on the rock openings filled by pegmatites are less frequent, e.g., Landes (1942) and Schneiderhohn (1961). The latest summaries of knowledge concerning pegmatites appear in „erný (1982) with his extended article on petrogenesis and Jahns' article on internal evolution. An extensive literature is cited but again little is said about fracture systems in host rocks and possible effects of external forces transmitted through the host rocks upon the pegmatites themselves.

The purpose in discussing fracture systems is to show that any large mass of rock enclosing either ore veins or pegmatites had to be initially stressed to failure in order for fractures to occur in the first place. Subsequent opening or closing of such fractures, or the differential movement of walls, could apply equally to pegmatite bodies. If, as pointed out by Jensen & Bateman (1979, p.117), asymmetry in ore vein banding can be due to reopening of veins with further mineralization, which could occur several times, could not pegmatite veins also be reopened - several times? There seems no reason to assume that once pegmatite consolidates that the host rocks can no longer move, and, further, that if such movements do occur they can do so at any stage of pegmatite evolution.

FRACTURES IN SHEETLIKE PEGMATITES

Pegmatite body shape is important in respect to the likelihood and ease of reopening mineralizing channels. In the Ramona district sheetlike bodies are emplaced in well-developed subparallel fractures (Simpson, 1965). Fracturing within the bodies is very common along centerline planes but also throughout many of the bodies where "ladder" type openings (Bateman, 1950,fig.5.4-20) were created by movements of fracture walls. Similar fracture sets, sometimes criss-crossing, occur in the several subdistricts of the Pala district, especially Hiriart Hill, and also in Rincon, Mesa Grande, and elsewhere. In these areas the host rocks were severely fractured to begin with but were "healed" by injections of pegmatite. In some bodies the pegmatite adheres firmly to the enclosing rock, but in many more it does not. In many bodies the cohesion between upper, coarse-grained pegmatite and lower, fine-grained aplite is so poor, especially along centerline planes where inward-progressing crystallization meets, that miners customarily take advantage of this easy separation to uncover a pegmatite and peel off the upper half to expose the centerline system of vugs. Thus, in districts where many sheetlike bodies occur, the integrity of the fractured host rock may be little improved by pegmatite "cement." The corollary is that tectonic movements that take place at any time after initial pegmatite injection can readily reopen old fissures or cause new ones in the pegmatites themselves.

EVIDENCE FOR REOPENED CHANNELS

That the weaknesses in both pegmatite bodies and their enclosing rocks does result in reopening of mineralizing channels is shown by fragmentation of pegmatites, formation of numerous angular and interconnected cavities, the presence of euhedral crystals some distance away from pockets, and other signs as will be described. Perhaps the extreme case of pegmatite brecciation that can be recalled is the Ware pegmatite atop Aguanga Mountain in San Diego County. Similar brecciation occurs in the nearby Maple Lode pegmatite (Reed, 1983). In both bodies, the space occupied by the pegmatite resembles nothing more than backfill, being composed of thoroughly shattered pegmatite rock, with the fragments rolled out of normal position, and the interstices filled with a fine-grained mixture of albite, lepidolite, quartz, topaz, and a remarkable pale blue elbaite in small prisms. In the Ware body, only one or two places

show "normal" pocket configuration, and it appears that it is from these pockets, now exhausted, that much of the commercial gem elbaite and topaz came. The presence of these species and late-stage associates in the breccia elsewhere in the body suggest that the bodies were emplaced as firm, unbroken pegmatite, then were tectonically shattered by differential "rubbing" of the walls which allowed ingress of later, complex mineralization or its redistribution, from concentrations elsewhere in the body.

POCKET QUARTZ

In many cavities in the Ramona pegmatites quartz has been removed from shattered fragments of pegmatite, especially graphic granite, and deposited elsewhere in the cavity upon the walls or upon other fragments of graphic granite. In leached pieces, virtually no quartz may remain and only schorl and sometimes spessartine is found in addition to the perthite. Where quartz overgrows other fragments of graphic granite, it does so at the ends of the exposed quartz rods. Such fragments may also bear small rosettes of cleavelandite on what otherwise appear to be fresh fracture surfaces. Additional species noted on these fragments include small crystals of topaz and acicular crystals of dark green elbaite. In one large pocket of several meters along the dip, excavated in a pegmatite near the Hercules in the Ramona district, all of the pocket was filled with a rubble of graphic granite of the kinds just described, also quartz crystals, and in feldspar cavities small crystals of spessartine and schorl. Leaching of quartz from graphic granite resulted in formation of large crystals at the upper end which depended from a hoodlike mass of "bull" quartz, which had been the pocket sign originally used to find the pocket. The quartz hood had covered over large euhedrons of perthite. While the dissolution and redeposition of quartz, and the hood closure, suggest a closed circulation, the extensive shattering of the pegmatite to begin with could have only come from a strong external force.

SIGNIFICANCE OF SPESSARTINE

Aside from occurrences in the pegmatites of the Ramona district, euhedral, gem quality spessartine is virtually absent from pockets elsewhere. In the Ramona bodies, the crystals occur in two ways, first, as residual and commonly very irregular translucent to transparent masses in leached pegmatite, and second, as fine euhedra perched on cleavelandite and associated with terminated schorl crystals as well as clear smoky quartz crystals which in their perfection rival those from Alpine vugs. In both modes of growth, reopening of the pegmatite channels was necessary.

Like other pegmatites in the region, the Ramona bodies normally contain spessartine only as minute crystals in lower half pegmatite, in part giving the patterning to the so-called "line rock, or enclosed in coarse pegmatite of the upper half. In the latter situation the crystals, clear, reddish-orange to orange, and up to about one cm in diameter, are thoroughly shattered and unfit for gem purposes. Wherever leaching has occurred - but never in aplite it seems - the spessartine may occupy hollows in the rock, especially in a kind of feldspar rendered so porous by leaching that local miners call it "popcorn rock." Spessartine here is reheated and may yield gem material. However, the best gem material, and the matrix specimens so prized by collectors, occurs as clear, ball-like euhedrons perched on cleavelandite rosettes with schorl and smoky quartz crystals. These occur only in centerline vugs and it must be assumed that the spessartine was supplied by leaching from outer zone pegmatite and redeposition in vugs.

Fragmentation of pegmatite and recrystallization of species brought in from other sites upon fracture surfaces is common in other bodies besides those of Ramona. In the Esmeralda mine, Mesa Grande, specimens were collected in situ of graphic granite overgrown with oriented quartz crystals, also found were coarse pegmatite of feldspar-quartz-mica, with overgrowths of euhedral stellate twins of muscovite and terminated colorless quartz. Remarkable specimens of fragmented graphic granite and pegmatite overgrown with quartz and fluorite occur in the pegmatites of the Crystal Peak region of Colorado and presumably in many other pegmatite districts.

Somewhat more complex mineralization has also been found on the Ramona pegmatite fragments, including small colorless topaz crystals, elbaite, epidote, axinite, apatite, and laumontite although the latter is rarely found because of being so easily removed by surface water.

CRYSTAL EDGE ABRASION

Tourmaline and quartz crystals commonly display rounded places upon otherwise sharp face junctions. These are not etch or solution marks, nor are they the result of careless packing of unprotected specimens. The character of these marks suggests that were created by one crystal rubbing against another. The smoothness of the surface is about that which would be imparted by rubbing with 220-grit sanding cloth. Abrasion marks were first noted on blue elbaite prisms from the Tourmaline Queen mine at Pala and at first were thought to be due to carelessness in handling, but when it was recalled that each crystal was packed in paper as soon as collected, the special nature of the markings was recognized.

Other specimens were examined and crystals were found with similar edge marks from other pockets in the Tourmaline Queen but also from pockets in the Mesa Grande and Ramona pegmatites. A small vug in a narrow Ramona pegmatite furnished a handful of equant smoky quartz crystals, each about 3 to 5 cm, found loose. All edges were so rounded that they appeared to have been tumbled in a gem-making machine. A large, stubby prism of elbaite from the Tourmaline Queen mine displayed a different type of mark: a narrow polished groove, about 1 x 3 mm, on the c-face. All of the face was dull in luster because of a thin overgrowth of very small rhombohedra, from which this marking stood out because of its high luster.

Two causes for these markings are postulated, the first being sustained turbulent flow of liquids through the cavity which caused rubbing of several crystals together, or, second, seismic vibrations sustained over millenia. If the marks were caused by turbulent liquid, it indicates that the pocket was open at both ends and that such flow continued for a considerable period of time.

POCKET WALL SPALLING

The slab-like fragments of pegmatite that so commonly line pockets, or sometimes fall into the pocket debris, make it possible for the collector to easily excavate pockets. Spalling is common in ore vein vugs as well as in Alpine vugs, but whereas high internal pressure in pegmatite pockets has been advanced as the cause of such spalling, it has not been for ore veins or Alpine vugs. Possibly the earlier phases of complex crystallization in some pockets are conducive to development of higher pressures than is the case for ore veins or Alpine vugs.

In view of the changing physico-chemical environment in which pegmatite is formed, spalling may result from differing internal stresses in crystals brought about by changes in cell size, which, in turn, are brought about by changes in the chemistry of the nutrient solution. Thus, it may be reasoned, that the very compact types of pegmatite that surround pockets, especially graphic granites, can be warped by changes in the cell size of the feldspars, perhaps augmented by changes in the internal pressures of inclusions. Stresses that build up may reach a point where the rock fails along curved surfaces that produce more or less concentric slabs of wall pegmatite. The phenomenon may be likened to the spheroidal spalling of domed granite masses.

If, on the other hand, it is assumed that such spheroids separation takes place because of very high pressure in the pocket, then the crack systems should be radial rather than concentric.

continued in the February Bulletin

WILEY WELL DISTRICT FIELD TRIP
January 31 - February 4, 2000

Hosted by CFMS Field Trip Chairman - North - Dick Pankey

By now I hope your plans are finalized to join us for 5 great days of collecting trips, happy hours, potluck dinners, campfires and generally all around rockhound fun. The flier that was printed in the November Newsletter has the directions to our campsite and the schedule of our daily trips. There are plenty of good campsites for trailers, motor homes and tenters. For those that don't "camp", there are good motels in Blythe only 25 miles away.

I saw Michael Peterson at the Directors' Meeting in Visalia and he gave me more information about the new sites. The recently discovered site near Clapp Springs is called "The Lost Larry Lode". The material is a volcanic melt, a dome of material approximately fifty yards across. The material ranges from beige to salmon pink, and everything in between. It cabs/spheres exceptionally well and is a mysterious delight trying to figure out what it really is. The second location is about five miles from Palo Verde (just east of Wiley Well). There are fossils and petrified wood to be found that are beautiful and well preserved - the coral, shells, and stems are clear and obvious, and the wood is heavy and of many sizes. This is a little known site on the Colorado River bench.

Jim Strain, Public Lands Advisory Chair, has finalized arrangements with the BLM to dedicate the Hauser Beds as a "Rockhound Educational and Recreational Area". The dedication is scheduled for Monday, January 31. This is the day we are scheduled to collect at the Hauser Beds. We are fortunate and honored to have this dedication made during our trip to the Wiley Well District. The BLM representatives will be joining us for our potluck dinner and will give us some campfire talks about the Hauser Beds and other topics affecting the area.

To help me plan and accommodate all who will attend this trip, please call, write ore-mail me with your `reservation". Since our insurance situation was resolved, this trip is open to members and guests. Make your plans to join us, whether for a day, a few days or the whole week, at the Wiley Well District. Dick Pankey, 4310 Kingsly Dr., Pittsburg, CA 94565 Ph: 925-439-7509 Email: dickpankey@iuno.com.

from C.F.M.S. Newsletter

DEDICATION OF HISTORICAL
ROCK-COLLECTING AREA

By Isabella Burns

A dedication of the Imperial and Riverside County Geode Area (known as Hauser Geode Beds) as a Historical Rock Collecting Area is scheduled for January 31, 2000 at the collecting site. This will permit the continued collecting of geodes, nodules, and other rocks and minerals in the area. There will be some rules for us to follow to help protect the threatened and endangered species in the area. Jim Strain is working out the details of routes that will be open, rules when digging, trash removal, etc.

This area has been collected since the first humans came into the area. The Indians made tools from some of the material. A driver on the Butterfield Stage Route was the first known person to find the geodes. Years later his son, Joel Hauser, was challenged to find the place where his father had found beautiful geodes; thus made

the area famous. CFMS clubs have made many field trips here through the years.

When in 1990 the desert tortoise was listed as endangered under the National Environmental Policy of 1969, Sue Hickman said to me that this could be more of a problem for our rock collecting than the California Desert Protection Act. Since then we have monitored the studies that have been done regarding the endangered desert tortoise and other animals and plants added to this list. Three plans for the protection of these endangered species are being developed - The Northern and Eastern Colorado Desert Coordinated Management Plan (MEMO), The Northern and Eastern Mojave Desert Plan (NEMO), The West Mojave Plan.

The NEMO Plan includes the geode sites where we have collected for years as being an Area of Critical Environmental Concern (ACEC). When the Environmental Impact Statements were completed, Dick Crowe explained this at the CFMS Show and Convention in Ventura in 1997. He also has given presentations at the Holtville Rockhound Round Up, to several societies, and at the 1998 Field Trip South Seminar at the Whittier Club Claim.

The idea of losing another collecting site concerned Jim and I; so at the July 2 CFMS Meeting at Monterey, we requested the support of the CFMS Members to pursue the concept of a rockhound park to be established in this geode area. When Jim Strain asked Ed Hasty, the California State BLM Director, at that time, about our idea of a rock-collecting park, he gave us his approval. Jim has about completed the efforts to make this area of Riverside and Imperial County a Historical Rock Collecting Area. He still needs to make sure roads, rules for use, and other details are completed, and we will be ready for the dedication of The CFMS Historical Collecting Area on January 31, 2000. Everyone is welcome to join us for this prestigious occasion. When plans are completed, information will be available from Jim Strain, Isabella Burns, and at www.cfmsinc.org. from C.F.M.S. Newsletter

CALENDAR

January 15: MSSC Installation Banquet

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

February 10-13: Tucson Gem & Mineral Show, Tuscon, AZ, featuring Brazilian minerals.

February 18: MSSC monthly meeting, 7:30 p.m., Geology Building, Pasadena City College.

February 26-27: Del Air Rockhounds – Sierra Polona Rock Club – Woodland Hill Rockchippers, Valley Plaza Rec Ctr, 12240 Archwood St, North Hollywood, 10 – 5, http://sites.netscape.net

March 4, 5: Monrovia Rockhounds, LA Cnty Arboretum, Arcadia, 9 – 4:30, Mark Carney (626) 303-6355

March 4, 5: Ventura Gem & Mineral Society, Ventura Co. Fairgrounds, 10 W. Harbor Blvd, Sat 9 – 5, Sun 9 – 4, Jay Baumier (805) 644-3962

March 11,12: Pasadena Lapidary Society, San Marino Masonic Temple, 3130 Huntington Drive, San Marino, Sat 10-6, Sun 10-5 Alex Sergienko (323) 258-1394

NOTES FROM THE EDITOR'S DESK

I want to take this opportunity to thank everyone who has contributed to your Bulletin during

1999….each of your submissions are very much appreciated. In chronological order, John Schwarze who has gone well above and beyond and has carried me many months, Randy Hurst, Bill Moller, Lanny Ream, Janet Gordon, and Charlie Crutchfield . Thank you, and may your contributions inspire others.

I have had a discussion with the U.S. Postal Service regarding the occasional shredding of the Bulletin. It seems that some of the high tech machinery can't walk and chew gum at the same time, but I am advised to alter the format so the stapled portion is on the bottom and I am trying that this month. I may also try a more secure tape if I cannot obtain better adhesive material to hold the pages closed. If your issue arrives in unreadable form, you need only let me know and I will produce another copy for you

Congratulations to Bill Rader who has been accepted to graduate school by the Geological Sciences Department of the University of Texas, Austin. Bill will be in Austin by the time you read this and classes begin January 18. Bill has worked very hard for this achievement. He has promised to let me know his email address as soon as available.

Ed.