

THE STONE CHIPPER

THE 624TH MEETING OF THE AUSTIN GEM AND MINERAL SOCIETY WILL BE HELD ON THURSDAY, **APRIL 24TH, 2008, 7:30 P.M.**, AT THE AGMS CLUBHOUSE, 6719 BURNET LANE, AUSTIN, TX. PHONE: (512) 458-9546.



The April program will be a talk by **Linda McCall** of the Paleontological Society of Austin on, **“All You Don’t Know About That Road Cut in Georgetown at Exit 260.”**

**AGMS Annual Show
Gem Capers 2008
Palmer Events Center
NEW Show Dates:
October 24th - 26th.
www.GemCapers.com**

THE AUSTIN GEM AND MINERAL SOCIETY, INC.



All American Club Awards
AFMS Gold & Trophy 2002
AFMS Gold 2003, 2004
SCFMS Gold 2002, 2003, 2004

The AGMS is a member in good standing of the South Central Federation of Mineral Societies and the American Federation of Mineral Societies. Its editors are also members of SCRIBE. The club address is 6719 Burnet Lane, Austin, Texas 78757, and phone (512)458-9546. **The AGMS is a 501(c)(3) nonprofit organization.** Visit our website at www.AustinGemAndMineral.org. Contact our webmaster for website updates at DiannH@austingemandmineral.org.

PURPOSE

The purpose of the AGMS is to promote interest and education in the various Earth Sciences and other related subjects.

MEETINGS

The Society meets the fourth Thursday of every month except November and December. November or early December is show month and the meeting, if any, is held after show setup on Thursday before the show. December is the Invocation of Officers meeting held on a date and at a place determined by the officers. Board meetings are called as needed. All members are welcome to attend. Society Officers are listed on the back page of this publication. Please feel free to contact any of them for information.

DUES FOR 2008

Membership dues are:

\$15.00 annually for an adult \$20.00 annually for a couple \$4.00 annually for juniors

THE STONE CHIPPER

The Stone Chipper is the official publication of the Austin Gem and Mineral Society. It is published monthly in Austin, Texas. Minutes of Board Meetings are available upon request. Note, clip art images are under Copyright 2008 by the AGMS and its licensors. All rights reserved. Unless otherwise noted, text items in *The Stone Chipper* may be reproduced in other nonprofit publications as long as proper credit is given to the author and *The Stone Chipper*. All authors who make submissions to this newsletter are presumed to agree with this policy.

President's Message



I can't say enough about those who have been helping out around the facility. It seems when we need something done desperately, there are members who step up and take care of it, so our building and grounds continue in serving all our needs. Thanks to those of you who continue to do, for your hard work and talents/skills. If you have a particular skill or background, please let us know. We may have a need at some point.

Some have also stepped forward with ideas on how to improve the way we do things, and we appreciate that as well. Most recently, David Dow had cornered me at our meeting in March, and made an excellent suggestion for field trips. He suggested that the chair only be responsible for communicating and coordinating with the persons who will actually conduct and plan the trip, similar to how the education chair is set up to do the same for classes. The education chair is not responsible for teaching classes. The field chair should also not be responsible for putting together and leading field trips. This may lead to members being more willing to serve as that chair. By the way, anyone willing to serve as Field Trip Chair, we would welcome your help in this area. I added to David's suggestion that the mineral societies in Arizona take turns at being responsible for planning and leading a field trip, which results in only having to be responsible for two trips per year. In this way clubs also get to share choice locations around the state with other societies that otherwise may not have had the opportunity to collect at them, or even be aware of the sites.

One other idea I overheard at Tucson this year was what their outgoing President does; the President, on his stepping down at the end of the term, donates a specimen to what is known as "The Presidents' Collection." While not required for the office, it has become a tradition that I was considering initiating for our society with one minor variance - not limiting the "gift" to a mineral specimen, although that can be the usual gift. It could be anything from a specimen (possibly for improving our state mineral and rock case), a book for the library, or something else the AGMS could use. You will just have to wait until the December/Christmas dinner when the

new officers and Board Members are inducted to see what I come up with as my outgoing gesture of good will.

One item I meant to bring up at the general meeting in March was something the Board decided on in March. Any committee chair or officer who has something that needs to be addressed for their specific office or position will require their being present to present the issue, or else it will be tabled until the next meeting they can attend. This will serve two purposes, having the person responsible for the issue actually being there to put forth the agenda item and not making it any more confusing than it need be, and ensuring greater attendance at the meetings from various committee chairs.

I am hoping that by the time you get to read this we will have had a field trip and that all the rock has been broken and tumbled for the Gem Mine at our show. Remember our annual Swap & Sell on 4/12/08, and please consider stepping up to help out as a chair, to give or take a class, and to help out with our show by volunteering in any of a number of areas still in need.

~Alan Cherepon, President

Dues are Due!



If you haven't yet paid your dues for 2008, you can bring in your dues to the next club meeting or send them to the AGMS address, attention treasurer. Check your address label for an update, or if you get the newsletter via email I will send a note that way advising you if we don't have a record of payment yet. As of next month, the newsletter will only go out to members who are fully paid up.



Library News

Andrea Miller has generously offered to serve as a co-librarian with Diann Hill. She has accepted the circulation department.

~Harriet Strieber, Former Co-Librarian



March 2008 Meeting Minutes

Program: The February program was a presentation by Dalan Hargrave, world-famous gem carver, on opal mining at the Juniper Ridge Mine in Oregon.

Call to Order: The meeting was called to order by Alan Cherepon, President.

Door Prizes: The junior who was still present was given a door prize.

Minutes: Diann Hill moved that the minutes of the February meeting be approved. The motion was seconded by Gene Healy and it passed.

Treasurer: Bob Greenway said that the club had a new computer, to which the data on membership had been moved, but that there were gaps in the records which will be updated this month. If you have been advised that your dues were not paid when they have been, this will be corrected.

Old Business:

Alan Cherepon asked the club to applaud the following members: Murry and Dee Fly, Andrea Miller, and Sian Schilnab for rebuilding the fence and gate; Ron Carman for the Judging and Exhibiting Seminar held this month; James Lopez and Richard Dorsey for replacing the water heater; Gef Fisher for getting the workshop in the best shape in years; Andrea Miller for the rock-breaking party held last weekend, with another scheduled next weekend; Dee Fly for replacing the computer; Les and Susan Postlethwait for researching and buying the new copier; and Robert Morriss and others for checking on ways to replace the door with less extensive approaches.

Alan announced that **Ewing Evans had won his fifth Australian Faceters' Challenge**, and that one of his stones was rated with a perfect 100 score.

Mac Ellis announced that as a result of the donations from the club of one-half of the proceeds from the silent auction to the Endowment Fund, the South Central Federation had awarded Patron Certificates numbers 21 through 26 to the AGMS.

Nominating Committee: Diann Hill said that all officers and three board members must be replaced this year. Officers will be elected at the October meeting, which will be held at the show. Alan Cherepon announced that Robert Morriss had agreed to replace James Mercier on the board.

Junior Chair: Alan said that a junior chair is still needed.

Show Committee: Susan Postlethwait announced that Chip Burnette had won the drawing for the volunteer award. She said that we are in desperate need of tumbled rocks, as we use between 600 and 700 pounds for the Gem Mine. There has been one rock-breaking party, and another is scheduled, and volunteers are needed to tumble rocks. There will be a work party scheduled for the Wheel of Fortune soon. New dealers will be chosen at the next Show Committee Meeting.



Show Chair Susan Postlethwait presenting Chip Burnette with Gem Capers 2007 Volunteer Award - Selenite Specimen

Photo by Laura Dow

Library: Harriett Strieber said that Diann Hill has been helping and that Andrea Miller has stepped in and is handling circulation.

Education: Diann Hill announced that there is a faceting class starting Wednesday, taught by Craig Brandt. Anyone wanting to join a class or to offer a class should email Joyce Hrapsky, Education Chair. Susan Postlethwait said that during her beading class she made an extra bracelet which she was donating for the auction. She said she will offer a class in odd-count peyote the second weekend in May.

Field Trips: Alan Cherepon said that he had given proof of insurance to the uranium mine operator, who would send it to Conoco for approval. He hopes that we can go on a field trip there in April. Chip Burnette said that there is a field trip set up by the Killeen and Waco clubs to the Valley Mills Quarry on May 15th.

Newsletter: Laura Dow said that she needs one more article, written by a club member, on Brazilian minerals for the *Stone Chipper*.

Workshop: Gef Fisher said the workshop will be open Wednesday evenings from 7 p.m. to 9 p.m. through April. He said members should sign in and sign out when using the workshop, and he cautioned members to be careful in using the slabbing saws. If the material being cut is not kept perfectly lined up, the blade may be damaged.

Dee Fly said that Andrea and Sian had cleaned up the shed and packaged the grit. Anyone taking grit to tumble rocks for the show must sign up and list what is being taken so we will have a record of how much is being used and when more is needed. Andrea also cleaned out the back shed.

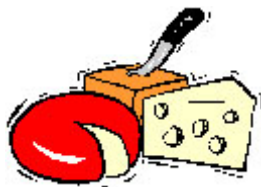
Membership: Linda Northcote announced that 70 members were present, as well as 7 guests and 2 juniors.

Swap Meet: Brian Wetzig announced that the swap meet will be April 12th.

Adjournment: The meeting was adjourned.

~Pauline Denson, Secretary

Refreshments



APRIL: The following persons have volunteered to bring refreshments to the next AGMS Meeting: **Pauline Denson, Jackie Fisher, Gef Fisher, and Dee Fly.**

MAY: The following persons have volunteered to bring refreshments to the May AGMS Meeting: **Alan Cherepon, Betty Lee, David Pierce, and Sherman & Mindy Waters.**

April Program Preview

Do you want to know **all you DIDN'T know about that road-cut in Georgetown at exit 260?** Then come hear my presentation at this month's meeting. I went to the site because at one of the AGMS meetings someone said there

was a lot of neat calcite, etc. and I am a crystal girl and well as a fossil nut. When I got there, besides some really neat cave stuff, I noticed some red clay that was very reminiscent of red clay pockets in the Edwards Formation that contain some pretty neat crystallized fossils (some of it outcrops on Red Bud Lane in Austin). After a month of poking around in every clay pocket I could find with no luck, I hit the mother load! Come see and hear what was found, and what it tells us about what was going on in Georgetown 100 million years ago.

Linda McCall has been collecting fossils and minerals since she was six. She worked at the Vertebrate Paleontology Lab under Dr. Langston when she was a freshman at UT back in the mid-seventies and found the holotype and helped co-author a paper on a new echinoderm from Oklahoma. She has the most complete collection of Del Rio fossils from the Ben White Blvd / Lamar intersection, as she says, "from back when the Toys R Us mall area was a sheep farm." Currently Linda is working on a paper on the Georgetown Edwards fauna with the help of Dr. Ann Molineux. Her house is full of rocks and fossils. She says her husband is very supportive and treats her collecting forays as a spectator sport, taking along a folding chair, a good book, and good wine and hangs out while she hunts.

"The Juniper Ridge Opal Mine"

March Presentation
Review
By Laura Dow



Dalan Hargrave, AGMS club member and renowned gemstone carver, gave the March presentation on the Juniper Ridge Opal Mine in Oregon. Oregon is primarily known for its sunstone but nearby, in South Central Oregon, can be found a bountiful deposit of a chocolate brown to amber colored solid jelly opal.

The mine is a claim on BLM property owned by Kent Newnham since the 1970's. It can be found on the Columbia Plateau which is a flat area that is reached by climbing up hills from a flat desert area where one reaches a totally different environment of pines and aspens. The mine itself is a U-shaped trench. The matrix is very hard rock that requires the

Above photo - Dalan Hargrave with Juniper Ridge Opal, Photo by Laura Dow.

use of jackhammers. The opal is found in nodules and can itself be razor sharp when broken so eye protection and gloves are a must. The opal is not difficult to find and according to Dalan, "it's literally everywhere!"

The opal is not multi-colored as one normally thinks of opal, but is instead a jelly opal or so called "fire" opal. The nicest quality opal is usually found in the center of the eggs or nodules. It is often a darker brown on the exterior and a nice chocolate brown on the interior. It may also be dendritic.

It is recommended that before working these stones, you allow them to "cure" for upwards of a year. This is so the opal can dry out and stabilize. Dalan recommend first cutting off the external matrix, cleaning it with a soft dry brush, and then allowing it to dry slowly while avoiding excess heat that might make it crack. He uses a saw with oil and leaves the oil on it to help slow down the drying process. Depending on the size, he allows the opal to cure for 3 months to a year. Dalan gave several tips on how to cut and polish the opal, especially for faceting it. Dalan of course, like to carve it! For more information on the mine, you can go to www.junipoerridgeopal.com or Dalan's site at www.gemstarz.com.

Board Minutes Synopsis March 11, 2008

NOTE: These are synopsis minutes. For full text of board minutes, please contact the club secretary, Pauline Denson.

~Editors

CORRECTION FOR MARCH NEWSLETTER - The Board Minutes were incorrectly labeled as dated January 8, 2008. In fact, they were the minutes from February 5, 2008. My apologies.

Longhorn Trophy is the source for our name tags. Bob Greenway, treasurer, reported that the club received less money from the Show Committee than was budgeted. This will put a big dent in our operating budget. The shortfall will be announced at the general meeting, but no money will be moved from savings until it is needed.

Bob will call the city to request another trash can as ours has disappeared.

Dee Fly said that the fence repair is finished, Richard Dorsey and Les Postlethwait installed the new water heater, and she has purchased Roundup for use on the weeds in the parking lot.

It was decided that we could use our old deadbolt for the door and we don't need a panic bar but do need a closer. The window leak issue was tabled so Robert Morriss could look at the door and leak problem to render an opinion on what is necessary.

Dee Fly said the copier has been purchased and installed.

Rusty Wallace did not accept the appointment to the Board to replace James Mercier. Robert Morriss was appointed instead.

Andrea Miller said that she has been discussing co-chairing the Library with Harriett Strieber.

The 1/3, 1/3, 1/3 disposition of class fees was not working in some situations. The club should establish a rate per hour for each type of class, based on wear and tear on equipment, use of electricity and water, supplies, and cost of instruction. Dee Fly will get with the people who teach to set guidelines.



AGMS Swap Meet

Austin Gem and Mineral Society would like to invite you to this year's AGMS Swap Meet to be held on April 12, 2008 in the AGMS Clubhouse parking lot. Set up starts at 9:00 AM and the booths open at 10:00 AM and close around 5:00 PM.

We invite you to bring your treasures to identify, trade, swap or sell.



Austin Gem and Mineral Society
6719 Burnet Lane
Austin, TX 78757
www.AustinGenAndMineral.org

All money will be paid to the club and instructors will then be paid by the club. Fees must be paid 15 days before the start of the class or at the start of the class, at the option of the teacher. No classes will be scheduled without going through the Education Chair. Checks will be given to the Treasurer.

Dee said that Mindy Waters may take the Junior Chair position.

Andrea Miller said there is a rock breaking workday scheduled for Saturday from 10:00 a.m. to 4:00 p.m.

Ron Carman said eleven people attended the Exhibitor and Judging course, and that everything went well. He will do a report, with pictures, for the South Central Federation and the American Federation.

Alan Cherepon said that he hopes to have the Karnes City trip on either April 5th or 19th.

Diann Hill moved that if a committee chair has an issue for the Board to consider they must attend the board meeting. Robert Morriss seconded the motion and it passed. Diann suggested that this be brought up at the general meeting and in the newsletter.

It was decided that door prizes be limited to no more than three for adults and one for juniors, and that they be given after the program.

Dee Fly said that the map showing location of the club house on our web site was not very big and asked if we could do a link to Google for directions. Diann said she will do it.

Dee Fly advised Diann that the Nominating Committee must be made up of two board members and two general members, and that the committee needed to find candidates for five offices and three new board members.

NOTE: Please send notices of changes of address or to report errors on the mailing list to: **Bob Greenway**, treasurer. To get signed onto the AGMS email list and/or to receive the newsletter via email, please send a note to the editors at StoneChipper@austingemandmineral.org.

~The Editors

Important Last Minute Items

During the April Board meeting, several items were addressed that we felt needed to be included in the April *Stone Chipper*. These are as follows:

- Our workshop has rules of use, and what to do to avoid abusing the equipment. Since a couple of saw blades were recently damaged or ruined, and rather than wait until it turns into an epidemic, the existing rules were looked into. In previous years it was common knowledge that only people who were trained in the use of the specific equipment were to use it. With that training is one commonly recognized aspect of using a saw to cut rock. Know what you are cutting; for instance, are there major or minor fractures that could cause the piece to break during cutting and the blade to be damaged? You should never leave a saw unattended while it is running. If this is too long a time for you, consider taking the rock to a retail store and pay them to do this (ever wonder why they charge so much to cut things?). The Workshop Chair will help the Board review the existing rules of workshop use and care, and additional items (especially for saw use) will be reviewed and posted in both the workshop and saw shed. This is run on an honor system and it is up to you to follow the rules. We may have a saw use class for all who wish to use the saws, depending on what the Chair, instructor, and Board can work out.

- We are still in need of a Nominating Committee Chair and members. We still have vacancies for two from the general membership and two from the Board. If you have yet to serve the Society in some way, this may be an excellent opportunity for you, as it typically only requires coercing members to run for an Officer or Board position.

- We are in need of other Chairs, including a new Show Committee Chair following the show this year, as well as a Junior Programs Advisor, and Field Trips Chair. The Field Trip Chair should consider that they will not be responsible for putting together and arranging or running the trips. They are only the coordinator and communicator, making sure that notices are placed in a timely manner and coordinating with other societies as needed. Our Society's well-being depends on these volunteers to continue in the essential business of the organization.

• Seeing the mass exodus after the program in March to buy and sell items during the business meeting, there will be no selling or buying during any aspect of the meeting. Any buying and selling will be limited to any time prior to 7:15 p.m. before the meeting, and following adjournment of the business meeting. Anyone breaking this rule will be asked to leave, and if need be, consideration of additional consequences by the Board and general membership. We are a non-profit organization and do not want to threaten this status in any way.

• Dues are due for some of you (you know who you are). The dues help pay for a number of AGMS needs and are just one way of helping use maintain a building (which few societies have the privilege of owning).

• The Board sees the need to shorten the business meetings and will attempt to do so by the following; all chairs with items to report on, and who were present at that month's Board meeting to present this item to the Board, will need to be lined up on the side of the room so we don't have to search for you during the meeting. If you are not in line to give your report, you will not be permitted to give one. Those who cannot stand will need to have a chair for their use (if you need one, let us know before the meeting, and we will reserve chairs for those in need, along the right side, if you are facing the front of the room). Consider having the President summarize or even present your item at the meeting. Not all committees need to provide items at every meeting. Only do so if it is really something important, timely, and seriously needed.

~Alan Cherepon, President

Local Show Announcements

Apr 12-13

Abilene, TX

Central Texas Gem & Mineral Society

www.txol.net/rockclub

Apr 12

SWAPMEET

Austin, TX

Austin Gem and Mineral Society

www.austingemandmineral.org

Apr 18-20

Marfa, TX

Chihuahuan Desert Gem & Mineral Club

paulgraybeal@sbcglobal.net

May 3-4

Lubbock, TX

Lubbock Gem & Mineral Society

Ed Reis, (806) 799-2722

~www.rockngem.com

ANNOUNCEMENT

The **Dallas Fine Mineral Show** is being held **May 2-4** at the Embassy Suites Hotel near the Galleria, 14021 Noel Road, Dallas, Texas. It is mostly a mineral show but there will also be a couple of fossil dealers. There will be over 50 dealers from around the world. The hours are 10 a.m. to 6 p.m. on Friday and Saturday and 10 a.m. to 5 p.m. on Sunday. For more information go to www.DallasFineMineralShow.com or email svldave@aol.com.

Class Offerings

FACETING - There is still space available for the faceting class which starts this Wednesday, April 2nd, and will continue for six consecutive weeks, 7:00 - 9:00 p.m. Fee is \$30 and includes supplies.

BEADING - The next class will be peyote stitch. A pin will be made during class which will be suitable for our vests. Fee is \$30 including supplies. Tentative dates are May 3rd or May 4th.

SILVERSMITHING - Even if you have indicated an earlier interest in this class, please send a new response. A class is planned for six consecutive Tuesdays from June 3rd through July 8th, 7:00 - 9:00 p.m. Class fee will be \$60 plus cost for a portion of the tools required. A list will be provided prior to class.

CABBING - We are taking an informal survey to see if anyone would be interested in a daytime class (1:00 - 4:00 p.m.) Please indicate which day is preferable. Alternatively, please indicate if a 6:00 - 9:00 p.m. class better suits your schedule. Again, please indicate your preferred day of the week. Class duration for either day or night would be three sessions, once a week, for a total of nine hours. Fee is \$30 which includes supplies.

PLEASE SEND ALL REPLIES TO Joyce Hrapsky.

A.G.M.S. Calendar

Apr 12 - AGMS Swap Meet 10:00 a.m. - 5:00 p.m.
 Apr 15 - Paleo Club Meeting - 7:00 p.m.
 Apr 16 - Beginning Faceting 7:00 p.m.
 Apr 17 - Show Committee Meeting 7:00 p.m.
 Apr 19 - TENTATIVE Field Trip to Falls City
 Apr 23 - Beginning Faceting 7:00 p.m.
 Apr 23 - Clubhouse Clean Up (volunteers needed)
 Apr 24 - Club Meeting - 7:30 p.m.
 May 06 - Board Meeting 7:00 p.m. - 9:00 p.m.
 May 07 - Beginning Faceting 7:00 p.m.



Field Trips

A field trip is TENTATIVELY scheduled for Saturday April the 19th to the Sickenius mine near Falls City. The departure time is somewhere around 7 to 7:30 a.m., meeting up in Falls City at the Busy Beaver, with a departure around 9:30 a.m. from that convenience store. There are more details to come later via the email list, but let me know if you are interested. Of course you must be a member of a mineral club in the Federation for insurance purchases, and must sign a waiver.

Although there is no fee, per se, I'd like to collect \$5 to \$10 per head. The mine manager is coming on his own time to let us in, and I'd like to show our appreciation, either in cash, or maybe in a belt buckle with some local wood, or whatever. In addition, maybe something for the corporate guy in Oklahoma with Conoco, that gave his permission. Let me know what you think about this. So let me know if you are interested in the trip. Contact Paul Bordovsky.

SHOP TIPS

Rock too big? Saturate a 1/2" rope with gasoline and tie it around the stone where you want the split to occur. Ignite the rope and wait until the brief hot flame dies away. Strike the stone several times with a sledge hammer, following the charred mark of the burned rope. The stone will fall cleanly apart where the rope has been bound.

*~From Gem-N-I Newsletter 10-03, via Breccia 12/04,
 Shin-Skinners News 4/05*

The Origins of the Brazilian Pegmatite Gemstones

By Robert L. Morriss, P. E.

INTRODUCTION

The State of Minas Gerais, as well as portions of surrounding states, constitutes the East Brazilian Pegmatite Province, one of the world's largest pegmatite groupings. While pegmatites are not uncommon, being found in conjunction with most granite intrusions around the world, the East Brazilian Pegmatite Province is remarkable for the volume and species of gemstones found within and adjacent to the pegmatites. What makes these Brazilian pegmatites different?

PEGMATITE FORMATION

Pegmatites are one result of plate tectonics. When a section of oceanic crust is subducted under a continental crust it may carry down with it a burden of water-rich sediments derived from the adjacent continent. These sediments, derived from continental crust, consist mostly of lighter mineral debris. As the oceanic crust penetrates deeper into the Earth's mantle, the increasing pressure and heat begins to melt the crust and its sediment burden. The presence of water in the sediments lowers the melting point of the sediments so that this material melts at a shallower depth. The molten mass, buoyant due to the heat and lower weight mineral content, tries to rise upward through the cooler overlying continental crust. This upward travel is very slow, and the rising material is cooling, so often the stiffening mass of material comes to rest a mile or more below the surface. At this depth the material, destined to become a granite or granite family rock, cools very slowly. Depending on the size of the initial molten mass it may be called a stock, a pluton, or a batholith. Our granite in the Llano uplift, (think Enchanted Rock), would be a batholith. If the rising mass reaches the surface, the resulting volcano will discharge a rhyolite type magma.

Within the mass of molten but cooling material, elements begin to combine into molecules and molecules assemble into crystals. Silicon and oxygen combine to form quartz, growing as crystals. Mica and one or more feldspars likewise assemble from the available elements and these three minerals, very slowly growing as interlocked crystals, become the rock we know as granite. As it solidifies, granite has little room for other minerals so the "leftover" elements are concentrated as a very fluid melt under high pressure which is either forced into

the faults and cracks in the surrounding rocks or trapped in the interior of the granite mass. The melt that is trapped within the granite cools very slowly, insulated by the still hot granite, and the elements combine into larger crystals of quartz, feldspars, and other minerals. Some crystals grow several feet long and may weigh hundreds of pounds. The melt injected into the surrounding rock is modified by both the minerals in the rock and the cooler temperature at the melt-rock contact, and may produce additional minerals upon cooling. These secondary growths of crystals from the “leftover” elements, within the granite mass as well as in the surrounding rocks, we call pegmatites. Again, some such igneous intrusions will form few or no pegmatites.

GEMSTONE CHEMISTRY

Derived from sediments eroded from a continent’s surface, as well as minor amounts of volcanic material from deeper in the mantle, some of the Brazilian granite intrusions carried an unusual mix of elements. From unknown sources came the rare light elements lithium, beryllium and boron, as well as the more common magnesium and aluminum. The more common heavier elements such as calcium, silicon, oxygen, iron, chlorine, and fluorine are there since seawater was present in the sediments. Trace elements and heavy metals were present, if only in small parts. In addition, it appears that the Brazilian granite intrusions were subjected to repeated heating events, again a result of the tectonic activity at this continental boundary.

Given these constituents, multiple episodes of heat and pressure, and a great extent of time, what can result? The cooling granite intrusions crystallized the quartzes, feldspars, micas, and minor granite minerals, pushing aside the fluid soup of remaining elements. These penetrated the fractures and cracks of the new granite as well as the host schists and gneisses that form the roots of the continental crust. Here chromium and vanadium, the coloring agents for emerald, were available. The crystallization process ended with the formation of the pegmatites and a multitude of gemstones, detailed below.

Beryls are beryllium aluminum silicates, with trace elements giving us the various colors of emerald (green), aquamarine (blue to blue green), morganite (pink), heliodor (yellow), and goshenite (clear). Beryl locations yielding aquamarine and emerald are found throughout Minas Gerais.

Topaz, an aluminum fluorine-silicate, is found in the vicinity of the State Capitol, Belo Horizonte. Nearby is the city of Ouro Preto where the unique honey colored “Imperial Topaz” is mined.

The tourmaline group, particularly the elbaite family that includes the colored gem materials, has a very complicated (and flexible) chemical formula. Formation of these tourmalines requires the presence of sodium, calcium, lithium, magnesium, aluminum, manganese, boron, oxygen, fluorine, silicon and iron atoms, as well as the hydroxyl ion. Well, not every tourmaline has all of this selection of atoms, but most of them will be present. Tourmalines can be any color as well as colorless. Tourmaline locations are widespread throughout the pegmatite province.

Brazilianite, an alkaline sodium aluminum phosphate, incorporates sodium, aluminum, phosphate, oxygen and the hydroxyl ion. It appears that the limiting element here is phosphate, as Brazilianite is a rare find.

It should be noted that all of the mentioned gemstone crystals require the presence of one or more of the light elements, (lithium, beryllium, boron, fluorine, magnesium, aluminum), most of which are rare or totally absent from most pegmatites. It is the presence of these light elements in the East Brazilian Pegmatite Province pegmatites that allowed the formation of the described gemstones.

REFERENCES

1. Dott, Jr., R. H., and D. R Prothero. *Evolution of the Earth*, fifth edition. New York, New York: McGraw-Hill Inc., 1994.
2. Hamblin, W. K. *The Earth’s Dynamic Systems*, fourth edition. Provo, Utah: Burgess Publishing, 1985.
3. Heilbron, M., and C. Valeriano, et. al. “Tectonic Episodes Related to West Gondwana Amalgamation in the Ribeira Orogen (SE Brazil).” *The Proceedings of the 1st Symposium on Neoproterozoic-Early Paleozoic Events in SW-Gondwana*, Rio de Janeiro, Brazil, 2004.
4. Morteani, G., C. Preinfalk, and A. H. Horn. “Classification and Mineralization of the Pegmatites of the Eastern Brazilian Pegmatite Province.” *Mineralium Deposita*, October, 2000.
5. Sinkankas, J. *Mineralogy*. New York, New York: Van Nostrand Reinhold Co., 1964.
6. Teixeira, J. B. G., A. Misi, and M. da Gloria da Silva. “Supercontinent Evolution and the Proterozoic Metallogeny of South America.” *Gondwana Research*, April, 2007.

THE STONE CHIPPER
DAVID & LAURA DOW, EDITORS
6719 BURNET LANE
AUSTIN TEXAS 78757

StoneChipper@austingemandmineral.org



Address Correction Requested

Austin Gem and Mineral Society

For membership information write: AGMS, 6719 Burnet Lane, Austin, TX 78757

2008 Officers

President: Alan Cherepon
First V.P.: Dee Fly
Second V.P.: Paul Bordovsky
Secretary: Pauline Denson
Treasurer: Bob Greenway

Board of Directors

Chip Burnette (1)
Richard Dorsey (1)
Diann Hill (1)
Ron Carman (2)
Robert Morriss (2)
David Wenger (2)

Committee Chairpersons

Annual Show	Susan Postlethwait
Building Chair	James Lopez
Mineral Display Cases	Betsy Gager
Education/Classes	Joyce Hrapsky
Federation/Conservation	Paul Good
2 Field Trip	Ron Carman
Committee:	Chip Burnette
Historian	Ed Gage
Hospitality	AGMS Members
Junior Advisor/Programs	Vacant
Library Co-Chair	Diann Hill
Libray Co-Chair	Andrea Miller
Membership	Ron Guzman
Newsletter Editors	David & Laura Dow
Program	Paul Bordovsky
Scholarship	Jeff "Stretch" Young
School Programs	Wing Evans
Sunshine	Kathleen Howard
Workshop	Gef Fisher



April 2008

Editor Awards

2003-1st AFMS New Editors, 1st SCFMS

2004-4th AFMS

2005-2nd AFMS, 1st SCFMS

2006-6th AFMS, 2nd SCFMS

2007-6th AFMS, 1st SCFMS