

Tips *and* Trips



The Georgia Mineral Society

Atlanta, Georgia

Volume XXXVI/Nine

September 2007

Presidents Message

Do you watch the shopping channels on TV? I have found that at certain times during the week that I get about eight of these channels. Some channels sell merchandise which seems to be expensive. Some sell merchandise which may be quite reasonable. All of them give information on the gems and jewelry. But, is that information correct? Some good information is given out. But often times within a few minutes of viewing some one will say something which is not quite right or down right wrong and misleading. I will give you a few examples.

"Green amethyst is heat treated. It is mined in association with hot springs." True green amethyst is heat treated and possibly at times irradiated as well. All green amethyst was purple when mined and is not associated with hot springs.

"Peridot is often called the evening emerald. Its color is intensified by evening light. Because of its glow it is mined at night." True peridot is nicknamed the evening emerald. The color is often intensified by evening light. The stones do not glow and is not mined necessarily at night.

"Topaz is used as the birthstone for March because aquamarine is so expensive." Aquamarine and bloodstone are the birthstones for March. Topaz is the birthstone for November.

The gem shopping channels have done a great job at promoting stones such as Iolite, Tanzanite, and Mandarin Garnet. You also must pay attention, one channel sells "padparadsha color sapphires." Padparadsha is the highly expensive variety of sapphire. It has a beautiful pink orange color. It is very expensive. Padparadsha color sapphire is an inferior colored sapphire. It has been colored with beryllium oxide.

If you watch these channels do your home work. Learn about gemstones. At times I even found myself tempted to buy some pieces as gifts. All of these channels have money back guarantees. Some offer ring sizing. Again, do your home work and remember buyer beware.

Kim Cochran
President

General Meeting

7:30 PM Monday, Sept 17, 2007

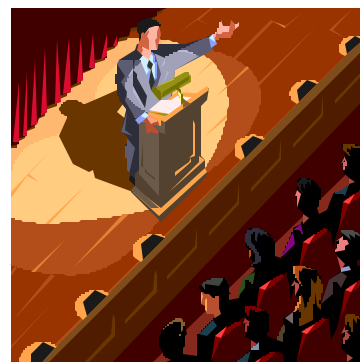
Chamblee Library

4115 Clairmont Road

Atlanta, GA 30341

770.936.1380

(Remember, we meet on September 17th this month because of the Labor Day Holiday)



"The Volunteer Spirit: Sharing our Hobby with Schools and Fernbank"

Jay Gorday has been a very active member of the Georgia Mineral Society for many years. When I stop and think about all Jay does, it gives me a headache!

Well, he not only serves the Society, he goes out into the public arena and gives rock, mineral and fossil talks to schools whenever he's asked. He also volunteers at Fernbank on a regular basis by helping with the "Walk Through Georgia" exhibit and being an "expert on hand" during their mineral ID workshops. If that weren't enough, Jay has also been a regular volunteer with the Science Olympiad held at Emory University every year.

Jay has modestly agreed to come speak to the Society about his volunteering efforts. He'll regale us with stories about how easy it is to speak to the public (once you get your feet...or should I say "vocal chords" wet), and he'll tell us stories about his experiences at the Fernbank Museum of Natural History.

Continued page 4



The Georgia Mineral Society, Inc.
 A Non-Profit Educational Organization
 Seventy Years of Tradition
 Objective and Purpose
 To Educate the Youth of the State
 and the Members of this Society
 In the Field of Earth Science



AFMS Education - All American Club 2003

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Historian	Roxanne Lopez	770.436.0387
Hospitality	Margaret Ronan	404.636.0720
Librarian	Julian C. Gray	770.888.9331
Parliamentarian	Frank Decamnda	770-992-8309
Refreshments	Kim Prakash & Nancy Marden	770.879.0476 770.447.8542
Special Events	Kim Cochran	770.979.8331
Sunshine	Barbara Libby	770.978.2117
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SFMS Rep.	Anita Westlake	404.761.7849

The article submittal due date for the October 2007 newsletter is September 10, 2007.

GENERAL MEETINGS
 General meetings are held on the first Monday of each month. In the event that the first Monday is a holiday and/or the facilities are not available, the meeting will be held on the third Monday of the month. General meetings are currently held at the Chamblee Branch of the DeKalb County Library System. Any deviations from the above schedule will be announced in Tips and Trips.

The Georgia Mineral Society on the Internet:
<http://www.gaminerall.org>
 E-mail Early Notification Program: A field trip and club news update service. To join, members are requested to send in their current e-mail address to:
gms@gaminerall.org

May Show Committee Chairs

Show Chair	Jay Gorday	770.986.0822
Dealer Chair	Martha Brown	770.448.0876
Exhibits		404.761.7849
Demonstrations		
Hospitality		
Treasurer		
Advertising		
Dealer Dinner		
Database		
Auction		
Set Up/Take Down		

August 6, 2007
GMS General Meeting Minutes

The meeting was called to order at 7:35 PM by Vice President Lizabeth McClain at the Chamblee Library. President Kim Cochran was not present. Approximately 38 people were present, including 2 new members.

SPEAKER

Anita Westlake introduced Tom Batcha, GMS member and new editor, as the speaker of the evening who gave a slide show presentation on Fossils in Georgia. Tom gave an overview of the five different regions in Georgia where fossils are found and the ages which they represent, using maps from publications of the Geological Survey of Georgia. He also showed slides of fossil collecting field trips that he has attended, and brought samples of what he has found in Georgia. After Tom's presentation, Anita presented him with a horse conch shell from the Pliocene age in appreciation of his talk.

COMMITTEE REPORTS (8:17)

Lizabeth McClain – VP Membership – current membership is 600. She is going to try to order name tags tomorrow; let her know if you would like one. The cost is around \$6.00.

Anita Westlake – VP Programs – Jay Gorday will be the speaker at the next general meeting (September 17th). He will talk about “the volunteer spirit” and give tips on how to talk to strangers.

Mary Porter - Secretary – minutes from the July meeting were available. Roxanne Lopez motioned to dispense with reading of minutes; it was seconded by Jay Gorday and the motion was passed.

John Trimble – Treasurer – a CD recently matured and was moved to Sun Trust for 12 months at 5.25%; the operating account balance is around \$49,000.00. He is not fully up to speed from the recent transition of the position.

Kim Cochran – Gem Section – (not present) Lizabeth McClain – at the next meeting they will be completing the peridot necklace that was started two meetings ago. The meeting will be held on August 27th. Kim is resigning as section chair due to lack of time in his busy schedule. The section may go inactive for a couple of years unless someone else can volunteer.

Jay Gorday – Mineral Section – the next meeting will be held at the Gorday's house on September 18th; the topic will be Colorado minerals. RSVP for dinner at 6:30, the meeting will take place afterwards.

Martha Brown – Fossil Section – the next meeting will be held at Martha Brown's house on August 22nd. They will talk about the geologic time scale.

Roxanne Lopez – Junior Section – they met this past Saturday and visited the Henley Mill and the Martin Mine near Helen, GA. There will be a tip to Providence Canyon in November.

Dave Babulski – Micro Mount Section – (not present) Bill

Waggener – the next meeting will be held at Dave Babulski's home on August 11th at 10:00 AM; RSVP for lunch. Details are in the *Tips & Trips*.

Tom Batcha – Tips & Trips – there were a couple of labels lost from the August mailing; contact Tom if you did not receive your newsletter. He will be out of town in September; the October issue may be late since he also does the newsletter for another club.

George Libby – Field Trips – only twelve people attended the trip to Harleyville last month; we are in jeopardy of losing sites and not enough people are attending. Upcoming trips – Chunky Gal Mountain, August 18th; Clio, AL, September 8th (George has samples). DMC trip on September 15th to Dothan, AL for flint and chert. There may be a chance to do some field collecting (no digging) at some road cuts recently developed at the Hackney farm for staurolite; there is a narrow window to go. Details will be broadcast via email if the chance arises.

Barbara Libby –Sunshine Chair – (not present) George Libby – send Barbara any news you may have. Lizabeth McClain announced that Mickey McClain has been appointed the Science Department Chair for the school he is teaching at.

Bill Waggener – Adopt a Highway – the next pick-up will be held on the Saturday of Halloween weekend; costumes are optional. Participants will have lunch afterwards at Two Brothers BBQ; Bill is working on a field trip for after lunch.

Bill Waggener – Education Chair – a total of 8 mini grants were awarded; we had to turn down 5 due to lack of funds budgeted. GMS has been invited to have a booth at the Stone Mountain Rock & Mineral Day on September 3rd (Labor Day), 12:00 – 4:00 (free lunch at 11:30) at the Confederate Museum; Bill needs 2 more volunteers. We have also been invited to participate in the Dinosaur Birthday at the Fernbank Museum on August 18th from 10:00 – 2:00; 2 more volunteers are needed. This is the beginning of speaker requests as the new school year starts; volunteers are always needed to speak to classes. Contact Bill if you can help out; he already has requests from Marietta and Rockdale areas. It was suggested that the Georgia performance standards be published in the newsletter so volunteers have an idea of what to talk about. Anita Westlake spoke about meteorites to the Hendersonville Gem Club; the event was published in the local paper and 16 people outside of the club showed up to hear her talk.

Carl Zigin – Awards – he is drafting a committee for ideas and referrals for award recipients. It was suggested that he have an article in the newsletter describing the various awards given at the annual banquet.

Julian Gray – Library – no one is using the library. Julian will have a catalog of material posted on the GMS website.

Nancy Marden – Refreshments – provided by Lizabeth McClain; Richard brought brownies.

Continued page 6

Speaker for the Month *Continued*

Once you see how easy and fun it is to educate the public about our wonderful hobby, you'll probably want to jump right in and start talking too!

Jay and other members of GMS who give regular presentations, can give you hints about public speaking. (For example, I try to start off by getting a laugh. I started my very first talk by saying "I'm not a professional geologist, but I play one on T.V." Instead of getting a laugh, I saw some people in the front row saying "I've never seen her on T.V...have you?" Well, it made me laugh anyway).

Chances are very good that you know more than your audience and that can help you feel more secure during your talk. Or, you can simply imagine them naked, but that only serves to distract me.

Come join us for a lively discussion that focuses on the volunteer spirit.

Anita D. Westlake,
VP Programs



MEMBERSHIP

Please join me in welcoming the following new members to Georgia Mineral Society: Michael Brady of Marietta, GA; Leigh, Scott, David, and Matthew Britt of Grayson, GA; Carol and Stephen Horowitz of Duluth, GA; Hugh and Rebecca Wilkie of Blairsville, GA; Matt and Jennifer Wilson of Decatur, GA; and Donald Thieme of Athens, GA.

We're glad to have you join us, and hopefully we'll get to meet all of you at a meeting or field trip very soon.

Don't forget to send in those renewals on a timely basis everyone, and please let me know if you have any e-mail or address changes. You may e-mail me at mgm5258@netzero.net or call me at 770-439-5756.

Happy Rockhounding!

Lizabeth McClain
Executive VP/Membership



Attention All Officers and Committee Chairs

Please send your annual reports to me in September. I will compile the final annual report from what I receive.

Thanks,
Kim

October Dinner Meeting
Monday, October 1st, 2007
6:30 PM
Colonade Restaurant
1879 Chesire Bridge Road, Atlanta, Georgia
Cost \$18.00 / person

Once a year it is nice to have a dress get together. Many places offer banquet facilities and many of those sites are very inexpensive but also noisy. The other sites have tended to be very expensive with costs for the room and even the podium. I am sure that these would be very nice but our members would pay from \$35 to \$70 per person. The Colonade has been around for years. The banquet room is separate from the restaurant. The service has been good with sizable portions and eighteen dollars is very reasonable for what we receive. Please contact me for making reservations 770-979-8331. You can pay me then or pay at the door. The deadline for reservations is September 28th. A vegetarian dinner can be arranged if you wish. At the dinner the new officers will be sworn in and awards will be given out. The new President will take over and our fiscal year will begin. I hope to see you there.

Kim



An Awarding Experience

Each year, GMS presents awards as part of the gala festivities at the October banquet.



The awards are as follows:

- Member of the Year *Open to all non-officers.*
- Certificate of Appreciation *Up to three per year.*
- Open to all officers, members and non-members.*
- Gold Nugget *Up to five given per year.*
- Open to all members.*

Please help us determine who shall be honored this year by passing your suggestions for any (or all!) of the awards to a member of the Awards Committee:

Kim Cochran
Anita Westlake
Carl Ziglin

On rare occasion, special awards may also be given, as deemed appropriate. For example, Best Awards Committee Chair might be a good idea. OK, that would be a terrible idea, so we need your input. Please!

Carl
Awards Committee Chair

Mineral Section

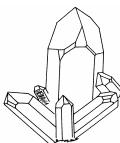
Once again I would like to thank John Trimble for hosting the July Mineral Section meeting. If you missed it, you missed a chance to drool over John' collection of minerals. You also missed a lot of information on Silica Gemstones.

Our next meeting will be September 18 at my house, the address is 1690 Granger Court, Chamblee, GA 30341 The topic will be Colorado minerals. Supper will be at 6:30pm and the meeting at 7:30pm. RSVP to 770-986-0822.

If anyone would like to host a meeting or has ideas for topics, please let me know.

Thanks,

Jay Gorday
GMS Mineral Section Chair



Gem Section

Monday, September 24, 2007 7:30 PM
Kim Cochran's House
2695 Van Court
Snellville, Georgia 30078

I thank George and Libby for hosting the August meeting and for the delicious meal. Ever since the June meeting we have been working on designing a peridot necklace for the GMS collection. I originally thought that it would have been a simple task. It has not proven to be such. At the July meeting it was narrowed down to two ideas and at the August meeting we decided on which design to go with and what materials would be needed to create the piece. So September is upon us, if everything goes well each attending member will work on stringing and knotting the beads. The necklace will finally be complete.

On another note, for several years I have served as Gem Section Chair. I have also held a few other offices in the GMS and other clubs, I have been as active as I could be in eight mineral societies. After a while it begins to get to you, there have been times when I could not physically do one more thing, there was no more time or energy. I have needed a break for a while. At the June meeting I announced that I would not continue in 2007-2008. No one was elected to succeed me. It appears at this time that the Gem Section might become inactive for awhile. It has done so in the past. I am very sorry about this but I need a break. I will continue to serve on the board as Immediate Past President and I wish to keep on as Curator and Gem Box Chair. I thank everyone for their support. I thank everyone for providing a Gem Section program, and for providing a meeting place and food. It has been fun. As usual supper will be served at 6:30. RSVP

Kim Cochran
Gem Section Chair



Junior Section

Next Junior Field Trip
Saturday, November 03, 2007
(11:00 AM - 3:00 PM)
Providence Canyon State Park
Route 1, Box 158
Lumpkin, GA 31815

There will be another opportunity to see Providence Canyon this fall with an expert. There will be no Junior meeting in September or October. I will be attending the November outing and will have handouts for all who attend. Erosion in a grand scale is shown here. I would encourage all family to make the journey to visit this spectacular park. Providence Canyon is one of the great geographic wonders of the eastern United States. Join Professor Rich McWilliams of Thomas University in Thomasville, Ga. for a close-up view of this most unusual state park. \$3 parking. 229-838-6202. Drive time to this park about 40 miles south of Columbus, GA is about 3 hours. Check Mapquest or the state park email for directions. If you would like to carpool or follow me down to the park, please give me a call.

Special Note: Sept 3. Labor Day at Stone Mountain: Rock and Mineral Day from 12 to 4 pm at Confederate Hall.

Roxanne Lopez
Junior Chair
Cell 678-491-0489 Home 770-436-0387

Fossil Section

We had another good meeting. We will not have a meeting in September. The next meeting will be in October.

Thank you. Martha S. Brown - 770/448-0876
www.wlbougouva@aol.com

Martha S. Brown
Fossil section Chair



Adopt-a-Highway Report

Again, thank you very much to all who participated and cleaned up Highway 5 in Ballground on 07 April 07.

We will return to Ballground for the next costumed pick-up event in the fall at Halloween. The date is 27 Oct 07 at 10:00 in the morning. Please plan to join us to continue our involvement in a very mineral-rich area of Georgia.

Respectfully submitted,

Bill Waggener
Adopt-a-Highway Chair

GMS Workday
Saturday, November 10th, 2007 11:00 AM
Kim Cochran's House
2695 Van Court
Snellville, Georgia 30078

August Meeting Minutes *continued*

Two or three years ago the GMS received some great maple cabinets of study quality mineral specimens and for two or three years I have intended to pull out the drawers and arrange the material to be of use. How much have I accomplished? Zilch!

So I am planning a work day similar to the one when we stained the sheds. We will have a covered dish lunch. Afterward we will pull the drawers and arrange them in proper order. As an extra incentive there will be a 100 lot auction for those who helped. Let me stress , **FOR THOSE WHO HELPED!** Let us pray for no rain!

Kim

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GMS MiniGrant

Congratulations to those selected for the Holly Camp Memorial Earth Science Education Minigrant Program:
Anne Fleming
Commerce Primary School, Commerce, Georgia
"Let's Rock"

Carey Garrett
Northwest Laurens Elementary School, Dudley, Georgia
"Kindergarten Rocks"

Craig Coleman
Mundy's Mill Middle School, Jonesboro, Georgia
"Earth Science Resource Books"

Janet Baggett
Northwest Laurens Elementary School, Smyrna, Georgia
"Magnet Madness"

Nadine Hoenes
Lovejoy Middle School, Lovejoy, Georgia
"Diamond Del's Mineral and Gem Identification"

Patti D. Feimster
Sally D. Meadows Elementary School, Vidalia, Georgia
"GPS Unit on Georgia Rocks and Minerals"

Roxanne Atrchin-Lopez
Argyle Elementary School, Smyrna, Georgia
"Science Fair and Stream Table Comparison"

Terry Dukes
Thomas County Middle School, Thomasville, Georgia
"Beam Me Up!"

William G. Waggener
Education Chair

OLD BUSINESS

John Trimble - the next board meeting will be the budget meeting held on August 26th at the home of Irving and Eva Ostrofsky; all members are welcome to attend. RSVP for lunch at 12:00, the meeting will start afterwards.

Lizabeth McClain – there are some additional minor by law revisions still needed. A short board meeting will be held after the general meeting with the present officers to go over the revisions.

NEW BUSINESS

Julian Gray – the Weinman Mineral Museum closed its doors on July 31st and will re-open next year as Tellus; he thanked GMS for their continued support. He also announced that Marty Zin, a well known mineral show promoter, will be holding a show next August at the Holiday Inn near Tellus.

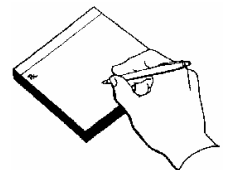
Roxanne Lopez brought posters of a recently discovered cave in Spain that she visited.

DOOR PRIZES (9:01) – **Margaret Ronan** – she thanked Alex Lopez for handing out tickets; the new members were invited to choose door prizes first; numbers were called.

A motion was made to adjourn the meeting at 9:15 PM. It was seconded, and unanimously approved, ending the general meeting. Immediately following, the board members present met for further by law revisions which were reviewed. The revisions will be emailed to board members to be approved. They will then be published in the newsletter and voted on at the following general meeting. The board meeting was adjourned at 9:45 PM.

Respectfully submitted,

Mary Porter
Secretary



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Micromount Section

There will be no Micromount section meeting planned for September. A meeting is being planned for October, but the date and meeting place has not been set as of this time.

Thanks,

Dave Babulski
Micromount Chair



Call for Speakers!

The Southeast Chapter of the Friends of Mineralogy
 Annual Fall Symposium
 Saturday November 3, 2007
 Holiday Inn Cartersville (I-75 exit 293 in front of the
 Weinman Mineral Museum)
 This Year's Topic: *Mining in the Southeast*

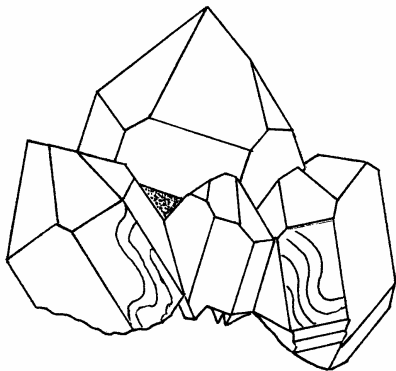
Suggested Schedule:
 9-10 - Coffee reception, welcome, updates
 10-12 - Lectures
 12-1:30 - Lunch
 1:30 - 3:00 - Lectures
 3:00 - 4:00 - Business Meeting
 4:00 - 5:00 - Auction

This year's symposium is dedicated to historic and current mining activities and their minerals. We are seeking speakers who will do brief talks on any subject related to mining in the Southeast. The goal is to have seven speakers do talks every half hour, so each talk will need to be 20-25 minutes with a few minutes for Q&A and transition time. Anyone interested in participating as a speaker please contact Jose Santamaria, SE/FM Vice President joses@weinmanmuseum.org or 770.386.0576.

Please volunteer, spread the word and suggest someone. We can't do this without you!

Jose

Jose Santamaria, Executive Director
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 Cartersville, Georgia 30120
 Ph: 770.386.0576 x401
 Fx: 770.386.0600
www.weinmanmuseum.org



Sunshine News

SEPTEMBER 2007 BIRTHDAYS

- 9/02 Cera Dennis
- 9/03 Marybeth DesJardins
- 9/03 Jacob Hottenstein
- 9/04 Charlotte Nichols
- 9/05 Doug Daniels
- 9/05 Haakon Jones
- 9/06 Jeanette Banks
- 9/08 Shirley Borders
- 9/08 Brittany Daniels
- 9/08 Katie Morris
- 9/10 Marie Aldridge
- 9/12 Stephen Horowitz
- 9/14 Bunty Cantwell
- 9/15 Kate Hammill
- 9/15 R.J. Phillips
- 9/17 Adam Barwood
- 9/18 Linda Batcha
- 9/18 Stephanie Mason
- 9/19 Dennis Buchanan
- 9/19 Andrea Redmon
- 9/21 Frances Fleck
- 9/21 Michelle Hottenstein
- 9/21 Judith Musick
- 9/22 Jeff Clinton
- 9/22 Maia Santamaria
- 9/23 Dave Babulski
- 9/23 Wayne Dodd
- 9/24 Jose Santamaria
- 9/25 Paul Rutter
- 9/26 Shelby Barwood
- 9/27 Jessica Hyaduck
- 9/30 Kay Langley
- 9/30 Pamela McMurray



SEPTEMBER 2007 ANNIVERSARY

- 9/30 Cat and David Denton

Please send information on news you would like to share with GMS. My email address is angelonsite@bellsouth.net.

Thanks. You are all in my prayers, be well and you will hear from me next month.

Everybody have SUNSHINE in your life.

Barbara Libby,
 Sunshine Chair

The Micromount Corner

IRIDESCENCE IN MINERALS

There is a mystical quality to the brilliant intense colors of iridescent minerals that are reminiscent of the beautiful intense colors in peacock feathers or some butterfly wings. The word *iridescent* is defined as the change in hue (color) of an object as the observer changes position. A common example is the iridescent colors of an oil film on water or the moving iridescence of a soap bubble. Iridescent colors can be among the purest and most brilliant and cannot be matched by even the brightest pigment in their color depth and intensity. Some examples from the mineral world are the minerals Bornite, Covalite, iridescent Chalcopyrite, iridescent Pyrite, iridescent Labradorite and iridescent Hematite. (The name Turgite is sometimes used and indicates a hydrated form of a mixture of Goethite and Hematite). So let's examine this fascinating effect of nature, iridescence.

Robert Boyle, who was a contemporary of Isaac Newton in the seventeenth century, gets the credit for first formulating a theory for iridescence. More than a hundred years later, the English physicist Thomas Young explained iridescence in detail. According to the definition of iridescence by Thomas young, iridescent colors, such as those produced from a thin layer of oil on water or the skin of a soap bubble occur in the following way: Very thin plates of films reflect some on the incident light waves from their mirror-like top surfaces. The un-reflected light passes through the film and travels on until it meets the lower surface of the film where again some of the light is reflected. This reflected light from the lower surface of the thin plate or film and now travels in the same direction as the light reflected from the top surface and eventually rejoins it. However because of the extra distance the light had to travel after reflecting off of the lower surface of the thin plate or film, the light waves may be out of phase with respect to the light waves reflected from the top surface of the thin plates or film. How large this phase difference is depends on the thickness and refractive index of the thin plates or film, the angle the light strikes the tin plates or film and the wavelength of the incident light. If the phase difference between the two sets of light waves is a multiple of exactly one wavelength, the two waves will constructively interfere with each other and there will be a strong reflection of light at that wavelength (or color).

If the full spectrum of colors in the form of "white light" is incident on the thin plates or film, then for a given film thickness and refractive index only one color will be at the correct wavelength to satisfy the conditions of constructive inference. In other words when white light is directed at the thin plates or film, only one wavelength or color will be strongly reflected at a particular angle. All other wavelengths or colors are either absorbed or scattered.

In the case of iridescence in minerals, the situation is more complex. Instead of one thin film or plate, there are an ordered series of parallel thin films and associated microstructures that cause an even stronger constructive interference than would occur with only a single thin film. This results in the reflection of even more pure and intense colors. Akira Saito and others, working Japan, have described this effect in the *Morpho* (*Morpho*

Didius) butterflies of South America. These butterflies exhibit a brilliant metallic blue color in their wings. They showed that this color was a result of lamellar or multiple layer structure in the cuticle of the butterfly wing and associated complex series of microstructures that intensified the color and manifested the color over a large angular field of view. As we shall see in the following discussion, this same multiple layer construction is also responsible for iridescence in minerals.

K.Z. Baba-Kishi and others in Hong Kong, China showed a similar arrangement of multiple thin films of ferric and cupric sulfates and associated microstructures as the cause of iridescence on the surface of Chalcopyrite. They also report that in some cases the surface of Chalcopyrite can alter to the minerals Bornite and Covalite with a resulting characteristic bluish iridescence. With this mineral, active hydration of the surface can alter the thickness of the thin films with the resulting disappearance of the iridescence. The mineral Pyrite shows this same oxidation created thin films that result in iridescence. With Pyrite, the oxidation typically continues because of absorption of water from the air with the reduction or dulling of the iridescence over time. I have several specimens of what once was iridescent pyrite that are now dull gray specimens.

Mizuhiko Akizuki and others at Tokyo University in Japan have investigated the cause of iridescence in Grandite Garnet from the Adelaide mining district, Nevada. They found that the iridescence is caused by chemically distinct very fine growth lamellae of varying thickness (very similar to thin films) parallel to the (110) crystal growth surfaces. Unlike the purely surface effects in some minerals, this iridescent effect is a part of the garnet crystal itself.

M.R. Snow and others at the South Australian Museum in Adelaide, South Australia have described the cause of iridescence in abalone shells as arising from diffraction of light through multiple layers of transparent pearl-like coating or nacre. Unlike iridescence in some minerals, the colors change as the viewing angle is changed (very similar to the colors you see on a computer compact disc when viewed under a strong light.) Although not technically a mineral, Abalone shell is included here as the multiple layering of transparent nacre is similar to that found in minerals.

The iridescence in "rainbow" or iridescent hematite is caused by thin films of a unique aluminum phosphate supported by sub-micron microstructures on the surface below the layers of thin transparent aluminum phosphate film. George Rossman and Chi Ma at the California Institute of Technology have discovered that the thin coating of aluminum phosphate has an unusual aluminum-to-phosphorous ratio, unlike anything that is known. After imaging the iridescent hematite at 20,000 times magnification they found orderly lines of sub-micron sized crystals on the hematite like grids on a circuit board. At 85,000 times magnification the grids resolved into individual rods, sometimes arranged in orderly rows sometimes crisscrossing each other in star patterns. Because of the small size of these microstructures, their exact chemistry remains unknown. They have found the same nanocrystal growths in all samples of iridescent hematite they have tested from Georgia to Alaska to Brazil

. Of all the iridescent minerals, iridescent Hematite is perhaps the most fascinating, because of its brilliant colors and the lack of color shift with change in viewing angle.

Imaging the surface of iridescent Hematite or Turgite from Graves Mountain, Lincoln County, Georgia with a high power optical microscope yields some interesting observations. The thin iridescent surface coating is transparent and the curving botryoidal nature of the Turgite creates a lensing effect. Using a monocular optical microscope at 75X and slightly defocusing the image, the lensing effect of the curved transparent coating can be used to reveal a sparkling surface that is suggestive of underlying nano-structures beneath the transparent coating. I believe the that cause of the brilliant colors of Graves Mtn iridescent hematite are similar to the iridescence of the Morho butterfly wing, that is a combination of multiple layers of transparent thin films and associated nano-structures. Another observation with the monocular optical microscope is the layering of the transparent thin films of aluminum phosphate. By looking in just the right spot you can see several thin films arranged in a staggered formation. You can see the creation of specific colors where the thin films overlap.

A CALL FOR VOLUNTEERS

I would like to put out a call for volunteers to visit Graves Mountain and collect iridescent hematite using the Georgia Mineral Heritage Project collecting protocol.

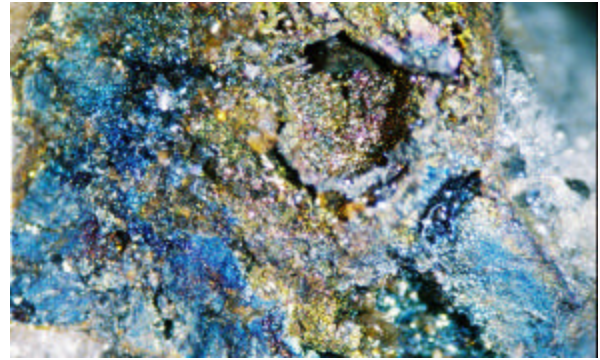
We need to photo document the iridescent hematite in place and carefully document its occurrence in relation to the host rocks and local geology to try and determine if the iridescent hematite is of recent formation or was it formed some geologic time ago at depth.

Specimen material is needed to determine if the transparent coating is purely aluminum phosphate or if there is other chemistry in the coating.

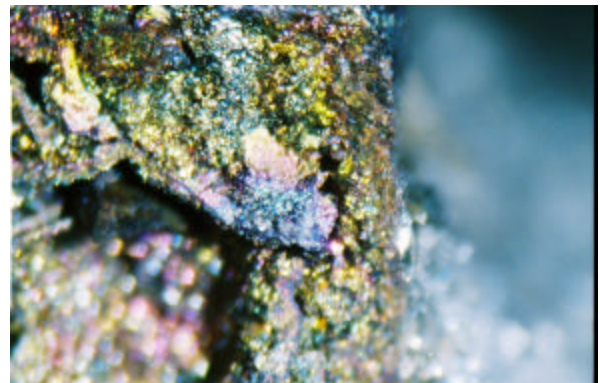
Specimen material is needed for additional imaging and chemical analysis. The iridescent hematite from Graves Mountain is unique because of its chemical complexity.

If you are interested in this Mineral Heritage Project, please contact me at: d.babulski@comcast.net or by telephone at: 678-580-2475.

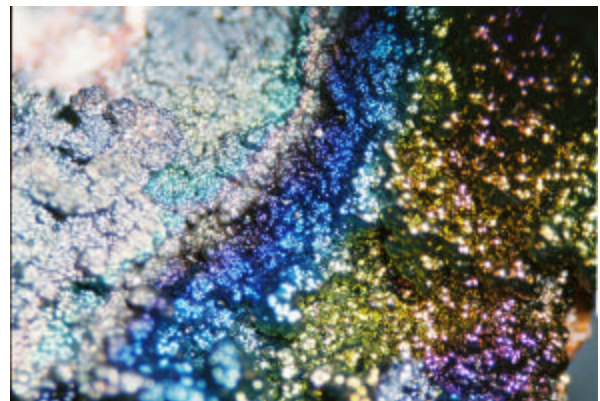
Shown below is an image gallery of iridescent minerals from my own micromount collection.



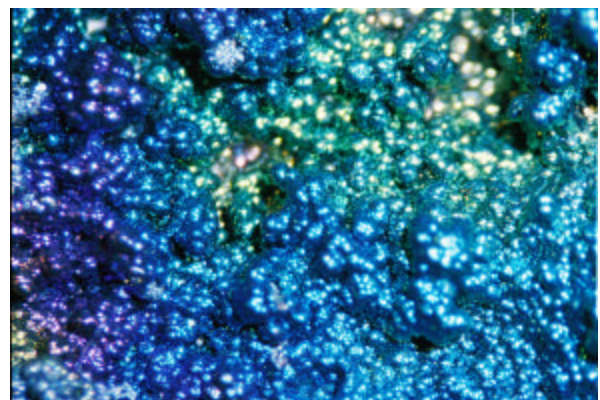
Chalcopyrite



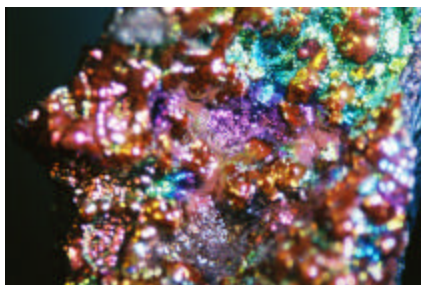
Chalcopyrite



Hematite



Hematite



Hematite

**Georgia Mineral Society
Special One Time Only
Field trip
Saturday September 1st. 2007
Staurolite Mountain (former Hackney Farm)
Blue Ridge GA. 8:45 AM.**

**GMS Field trip
Saturday September 8th. 2007
Clio, Alabama
Fee Site**

The developer of Staurolite Mountain Estates has graciously given us permission to collect staurolite in the road cuts. We will not be able to dig or seine the stream but they have uncovered many crystals just on the surface of what will become the paved streets of the development. This gives us a very short window that any collecting will be allowed.

What we can find: In the past we have found many single and twinned crystals crossing at a 60 degree angle and some at 90 degrees forming Fairy Crosses. Staurolite is the official Georgia mineral.

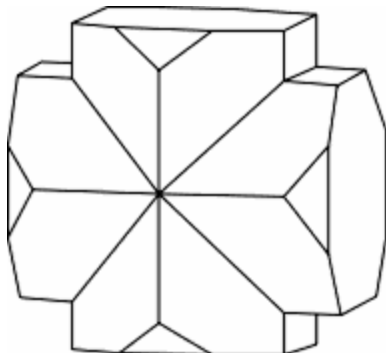
Bring: a bucket or sack to put your finds in. Bug spray and a hat are always good and I usually try to bring some water that I can wash up or cool off with.

Difficulty: No digging will be allowed and this is just surface collecting. As such it will be an easy trip for children.

Where to meet: The theater parking lot behind the McDonalds. Take I-75 north from Atlanta and continue on I-575 north. Continuing north on SR-5 all the way to Blue Ridge. At several places SR-5 may be called US-76 or SR-515 but it is one straight run past Ellijay to Blue Ridge. Make a left at the light (may be called First street or Blue Ridge drive or SR-2) As soon as you pass the McDonalds make a right into the theater parking lot on the right. We will be leaving at 8:45 to meet the developer at 9:00 am.

George Libby.
Field trip chair

Cell phones may not work in the area but mine does
Cell 678-910-7476
Home 770-978-2117



New Site for petrified wood. While these pieces may be too soft for a cabochon they do show great color. White with some red, blue and gray and even some druzy pieces. They may not be smoky or as large crystals as Brilliant but still make some beautiful display pieces..

Fee: There is no charge to visit this site and the only charge is a \$.25 (cent) per pound fee for the material you wish to take with you.

When: Saturday September 8th.2007. We meet at 12 Noon our time or 11AM Alabama time.

Where: We will meet just east of State Road 51 on the North side of State Road 10 at an open parking area on the side of an old brick building. You can not miss the building. It has wood headers between the rows of bricks on a couple of the lower layers.. From there we will caravan together to the site.

Collecting: Colorful pieces of petrified wood. They have been cleared from the horse farm and been dumped in a small area under some trees. Cars can be parked very close to the site so there is very little walking making this very easy for children. Keep in mind they will have to be in close proximity of their parents at all times. Pets were allowed the last time I visited the site so I'm sure they will be allowed if on a leash.

What to bring: the only thing you need is a bucket to put your finds in. Keep in mind that some of the pieces are very large. You will not be able to lift them and if that is your collecting plan you might want to bring a 12 or 16 lb. sledge hammer You might consider a crack hammer and a chisel if you just want small pieces but if that is the case don't forget the paper to wrap them. You shouldn't need a shovel but some pieces may be buried. You won't need boots unless it is muddy but bug spray and drinks are always a good idea.

Directions: Take I-85 to exit 60 in Alabama. Take State Route 51 South all the way to Clio. There are sections where Route 51 will join other roads and even a place near Union Springs that county road 47 becomes a short cut going straight south between a section of 51 that runs South West and then come back going South East. Map Quest said the trip would take 3 hours and 50 minuets. I may have just been lucky but I made it in 3 and 1/2 hours last time there.

Contact
George Libby
Field Trip Chair 770-978-2117
Or Onsiteatlanta@yahoo.com

The Southeast Federation of Mineralogical Societies, Inc
The Friendly Federation - Founded in 1976 to serve.

**DMC Program of the SFMS Field Trip Committee
An Official Field Trip of The Montgomery Gem &
Mineral Society - Montgomery, AL(HOST)
An Official Field Trip of the GEORGIA MINERAL
SOCIETY**

**10:00 CST, Saturday, September 15, 2007
Douglas Property, Dothan Alabama**

FEE COLLECTING SITE - \$0.25 per lb.

COLLECTING: We will be collecting intercostal plains flint and chert. This material ranges in size from small chips to massive boulders. There is a wide variety of colors; brown, creams, yellows, red, and purples. Some of the smaller pieces are solid and jasper-like and will cab or tumble nicely. The larger boulders contain vugs with a drusy quartz covering sea shells. Some also have a thin layer of a purple chalcedony that may be cabbed if cut and polished with care.

FEE: There will be a 25 cent per lb fee for the material collected.

SPECIAL CONDITIONS: The site is on the Douglas property (fish ponds and farm land) near Dothan Alabama. The area covers several acres and there are no facilities.

BRING: Sledge hammers, rock hammers, and chisels will be needed to breakdown the larger pieces. A garden rake will be useful to search the hillside for the smaller pieces. Five gallon buckets are also a good idea. It will be hot., bring plenty of fluids, sunscreen, hats and food or snack items.

DIRECTIONS AND WHERE TO MEET: We will meet at the Kmart (Big K) parking lot at the intersection of Ross Clark Circle(US 84) and Hwy 431 North(also called Headland Hwy or Reeves St.) in Dothan AL.. We will leave at 10:00 CST for the 10 minute drive to the site.

When: 10:00 CST, Saturday, September 15, 2007

Contact:

David Sherrod, MGMS Field Trip Chair
cell 334-201-4460
email dsher355@bellsouth.net

"Field trips are open to all members of associated clubs of the DMC program of the SFMS Field Trip Committee and to all members of SFMS member clubs who have provided their membership with SFMS liability insurance. Because of insurance requirements, members of the GENERAL PUBLIC are NOT invited on this or any DMC program field trips!"

DMC Program / SFMS Field Trip committee's purpose:
To collect field trip information from it's member societies; schedule and coordinate field trip dates; disseminate field trip information to all member clubs so that each member society may publish this information as one of their "official" scheduled field trips.

SFMS Field Trip Committee

Graves Mountain "Rock Swap and Dig"

8 am to 6 pm, Friday, October 5, 2007

8 am to 6 pm, Saturday, October 6, 2007

8 am to 6 pm, Sunday, October 7, 2007

"Your society is invited to field collect minerals at Georgia's premiere mineral location!"

The SFMS Field Trip Committee has been in contact with the caretaker in charge of Graves Mountain, Clarence Norman Jr., in regard to his plans to hold two separate three day digs and rock swaps on the Mountain during April 27, 28, & 29, 2007 and during October 5, 6, & 7, 2007. He will have the mountain open for collecting from 8 am to 6 pm each day. All participants must stop at the welcome table in the Hospitality tent to sign a liability release and make a small contribution to defray the cost of opening the mountain and providing port-o-lets. There will be several golf cart type, four wheeled vehicles available to transport those participants who have trouble walking long distances. The dig will cease and everyone is expected to be off the mountain by around 6 pm each day. Participants will be allowed to park in a designated area on the mountain.

Rock Swap and Hot Food/Drinks:

Junior will set aside an area in the upper parking lot for tables to be setup for daily rock swaps. Anyone who would like to setup a table(s), please contact Junior at the phone numbers listed below. Hot food cooked on the grill, cold drinks and chips will be available for purchase on the mountain during all three days of these events. Don't forget to bring some extra money to buy the special "Graves Mountain Rock Swap and Dig" T-shirt!
THESE DIGS ARE OPEN TO ALL SFMS CLUBS and the GENERAL PUBLIC!

Contact Information:

Clarence Norman Jr. - 706.359.3862 (his business) or 706.359.2381 (his home)

DIRECTIONS: From Atlanta's I-285, take I-20 east to the exit for Washington, GA SR 78 (SR 10, SR 17) and turn left. Travel north to Washington, turn right onto SR 378 and drive 11 miles to the Graves Mountain area. The entrance to Graves Mountain is on your right about 8/10 mile past the Lincoln county line sign. The entrance is a paved road that goes through a gate and up a hill. Please park along the access road and then proceed to the "Welcome Tent" at the end of the pavement to obtain a liability release form and to make a donation for the portable bathrooms, etc.

SFMS Field Trip Committee:

Please reply by e-mail to: dmc@gamineral.org
Jim Flora - SFMS Field Trip Committee Chair

Continued next page

Graves Mountain code of conduct!

- Park your vehicle in the designated area(s) only.
 - CHILDREN WILL BE ALLOWED DURING THE "Rock Swap and Dig", IF EACH CHILD IS UNDER CONTINUOUS ADULT SUPERVISION!
 - ALL pets must be kept under control and on a leash.
 - The Graves Mountain caretaker, Clarence Norman Jr., has final and absolute say as to where you may safely work.
 - Ladders or power tools of any kind will not be allowed. (HAND TOOLS ONLY!)
 - STAY AWAY FROM ALL HIGH WALLS!!
 - NO REPELLING OFF OF ANYTHING!
 - NO ONE IS ALLOWED TO DRIVE THEIR VEHICLE ON ANY PART OF GRAVES MOUNTAIN BEYOND THE PARKING AREA! (The caretaker must accompany anyone driving beyond the parking area!)
- EVERYONE NEEDS TO BE OFF THE MOUNTAIN BY DUSK. (Absolutely no one is allowed on Graves Mountain after dark.) Please protect our ability to field collect at Graves Mountain! Report Violations to: Clarence Norman Jr. 706.359.3862 (his business) or 706.359.2381 (his home) All reported violations will be held in strict confidence.



Sand as a Hobby, Play and Work: Collecting, Art, Science and, Science Applications

At the International Sand Collectors' Society biannual SandFest, July 27-29, 2007, I presented this paper, touching on my start with still un-labeled samples from Barbados on through trading samples at the Fest and collecting new ones at the Fest site at National Indiana Dunes Lakeshore on Lake Michigan. Then I discussed using sand to make small paintings and use with university student teachers to show how simple materials can be used to enhance science "hunger" in children. My interest began with sand castle making, as a child. More recently, it became more sophisticated with trips to beaches, lakes, rivers, and volcanoes in Georgia, Costa Rica, Hawaii, and Indiana. Also, people have begun bringing samples from their travels and research; including members of GMS, for which I'm very grateful. A trip with the Georgia Geological Society in 2006 to Jekyll Island and inland dune sites was an eye-opener to the amount of information one can glean from analysis of sand shape, size, location and content.

ISCS members come from many fields including: the curious and intrigued, professional and amateur artists, geologists, educators, and, most importantly, students. ISCS, an intimate group of 198 members worldwide, can be joined for \$12/yr. and can be found at www.SandCollectors.org, or The International Sand Collectors Society, P.O. Box 117, New Haven, Connecticut, or TEL/FAX(203) 209-5488. ISCS is a fun group that also has its serious side of responding to research questions and helping people find sands they need for a variety of purposes. The quarterly Sand Paper newsletter is included in the dues. The next SandFest will be in 2009.

Mr. Nicholas D'Errico, current Director, also leads the Psammology Group, a group of professionals, who undertake small research projects related to sands and reply to the tougher questions from the public and ISCS members. From the Greek, psammo = sand, and ology = study.

Olga Jarrett, 7 Aug 07

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**Junior Outing Report for August
Smithgall's Gold Fever**

For last month's junior outing we went to the Smithgall State Park near Helen, GA. They were presenting a Gold Fever morning at the Martin Mine area. The Rangers and a local resident provided slides of the local area in the 1800's and discussed the methods of gold mining that was done in the time. Then we all piled into one of their vans and they took us to the Martin Mine. It is very nice that the state park system provides these type of activities free to visitors. We only had to pay \$3 for parking. I do commend checking out the park website for further activities.

Roxanne Lopez
Junior Chair



Falls Fossil Festival - Falls of Ohio State Park

Falls of the Ohio State Park and the Falls of the Ohio Foundation announce the 2007 Falls Fossil Festival! This, our 13th event, will be held September 15 - 16 at one of the world's most spectacular naturally exposed fossil beds! Visitors can explore our rich Middle Devonian patch reef packed with fossils on the riverbed at the Falls of the Ohio.

This show, held rain or shine, features outdoor vendors selling fossils, minerals, books, related items and food. There are fossil bed tours and special workshops and programs from renowned paleontologists and geologists in the Interpretive Center. Programs this year include:

Sept. 15

9:30 -12:15 The IGS and KGS Web Sites as educational resources. (Pre-registration is recommended, but if room is available, drop ins are welcome.) Dr. Steve Greb, Kentucky Geological Survey, Lexington; Nathan Eaton, Indiana Geological Survey, Bloomington.

1:00 Tentacled fossils of the Ohio Valley, Todd Hendricks, Bardstown, Kentucky

2:00 Preserving our Fossil Heritage, Peggy Fisherkeller, Curator of Geology, Indiana State Museum, Indianapolis

3:00 Climate Change Through Time: Evidence at the Falls, Dr. Keith Mountain, Professor of Geosciences, University of Louisville

4:00 Crinoids through the Ages, Bradley Deline, University of Cincinnati, PhD Student

5:00 Keynote Presentation - The History of Corals, Dr. Claudia Johnson, Indiana University, Bloomington.

Sept. 16 (Both at the tent by the Fossil Pile.)

1:30 Fossil Collecting Tips, Rick Schrantz, Kentucky Paleontological Society, Lexington, Kentucky.

2:30 Identifying your fossils, Dan Phelps, Kentucky Paleontological Society, Lexington, Kentucky.

There is an activity area for children with scheduled and on-going programs. We have a special fossil exhibit - Tentacles! Creatures with tentacles are highlighted in this exhibit. A variety of fossils of "tentacled" organisms for the last 700 million years will be displayed. Collecting is prohibited at the Falls of the Ohio; however, a local quarry donates 30 tons each of fossil-bearing Silurian Waldron shale and Devonian Jeffersonville Limestone residuum. Dig for brachiopods, bryozoans, corals, crinoids, cystoids, snails, clams, and trilobites in Hanson's Fossil Collecting Piles. New this year - a mineral collecting pile from the Hastie's mill dump in Rosiclare, Illinois! We can direct your club to other localities to collect fossils. This would be an ideal weekend field trip. (The park's web site lists more than a dozen collecting locations in the area.) We hope members of your group will be able to attend!

Details of this event can be found at www.fallsoftheohio.org/fossil_festival.shtml or

Contact me at agoldstein@dnr.in.gov if you have any questions.

Sincerely yours,

Alan Goldstein, Certified Interpretive Planner
 Interpretive Naturalist, Falls Fossil Festival Coordinator
 Falls of the Ohio State Park
 201 West Riverside Dr.
 Clarksville, IN 47129
 812-280-9970 x 403

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Fernbank Museum of Natural History

76 Clifton Rd. NE
 Atlanta, GA
 404.929.6300

For details on these exhibits, films, and events, please visit our website at <http://www.fernbank.edu/museum/>

Special Exhibition:

Frogs: A Chorus of Colors
 Opens September 19, 2007
 Featuring over 100 live frog specimens from around the world in life-like habitats.

Photography Exhibition:

Nature's Jewels: Butterflies and Other Insects
 (closes September 2)

IMAX Theater

Coral Reef Adventure
 The Alps: Giants of Nature
 Everest



Special Dates:

- Sept 08 - Storytelling
- Sept 09 - Art-In-Nature Workshop for Adults
- Sept 12 - In My World —Dinosaur Explorer
- Sept 19 - In My World —Dinosaur Explorer
- Sept 20 - Lecture and Gallery Tour: Frogs: A Chorus Of Colors
- Sept 22 - Frogs: A Chorus of Colors Family Fun Day
- Sept 26 - In My World —Dinosaur Explorer
- Sept 29 - Regions of Georgia Excursion:
 Cumberland Plateau
 Cloudland Canyon State Park
- Sept 30 Private Tour of Frogs: A Chorus of Colors for Museum members

SEPTEMBER 2007
Southeastern Rock and Gem Shows

31-3--HENDERSONVILLE, NORTH CAROLINA: 26th annual show and sale; Henderson County Gem & Mineral Society; Whitmire Activity Bldg., Lily Pond Rd.; Fri. 10-6, Sat. 10-6, Sun. 10-6, Mon. 10-5; part of the North Carolina Apple Festival, dealers, demonstrations, exhibits, programs, micromount symposium; contact Margaret L. Johnson. 414 E. Pine Hill Ln., Hendersonville, NC 28792, (828) 692-1249

7-9--WINSTON-SALEM, NORTH CAROLINA: 36th annual show; Forsyth Gem & Mineral Club; Education Bldg., Dixie Classic Fairgrounds, Gate 9 off 27th St.; Fri. 10-7, Sat. 10-7, Sun. 12-5; contact W.A. Marion, 1163 Bear Creek Church Rd., Mocksville, NC 27028; e-mail: MarionA1@yadtel.net.

21-23--JACKSONVILLE, FLORIDA: 19th annual show; Jacksonville Gem & Mineral Society; Morocco Temple, 3800 St. Johns Bluff Rd.; Fri. 1-6, Sat. 10-6, Sun. 10-6; adults \$3 one day, \$5 weekend; gems, minerals, fossils, beads, 30-plus dealers; contact Mary Chambliss, 2452 Holly Point Rd., Orange Park, FL 32073, (904) 269-4046; e-mail: IvoryTowers@msn.com.

22-23--HIDDENITE, NORTH CAROLINA: 19th annual show; Western Piedmont Mineral & Gem Society; Hiddenite Center, Sulpher Springs Rd.; Sat. 9-6, Sun. 12:30-6; adults \$2, children under 13 free with adult; rock swap Sun.; contact Patty Arnold, (828) 465-2769, or Linda Moser, (828) 459-7488.

29-30--LEXINGTON, KENTUCKY: Show and sale; Rockhounds of Central Kentucky; Kentucky National Guard Armory, 4301 Airport Rd.; Sat. 10-6, Sun. 12-5; adults \$1, children 6-12 50 cents; dealers, minerals, jewelry, equipment, club sales, demonstrations, exhibits, hourly door prizes, kids' quarry, blacklight display, silent auctions; contact Kay Fisher, 1905 Port Royal Ct., Lexington, KY 40504, (859) 537-1776; e-mail: kkay19@aol.com.

May Show

There is not much going on for the May Show yet. Things pick up about December.

Do keep GMS in mind as you are collecting thru the year. It takes a lot of rocks, minerals, and fossils to stuff 1000 grab bags, so when possible collect some material for GMS as well as yourself when you go out on field trips.

Thanks,

Jay Gorday
GMS May Show Chair

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Macon Museum of Arts and Science
Phone: (478) 477-3232 | <http://www.masmacon.com/>



The Dinosaur Exhibit ends in September

Feature Exhibit:
Destination Dinosaurs
May 25 – September 3
Experience the STOMP, ROMP, and ROAR of robotic dinosaurs in realistic habitats. See a life-sized Stegosaurus, Pteranodon, Apatosarus, Chasmosaurus, Protoceratops, and Tyrannosaurus Rex. Dig for fossils, control a robotic dinosaur, and more!

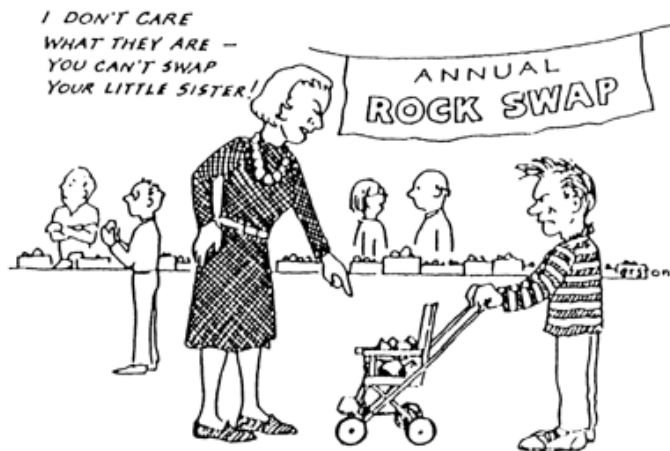
Hidden Remains
May 4 – September 30
Not all fossils are dinosaurs. Learn how living things are transformed into fossils over time. Explore fossils from past plants and animals. Learn about baby dinosaurs through dinosaur eggs, the size of a dinosaur leg bone, and the different creatures that once lived on our Coastal Plain.

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Rock and Mineral Day

Stone Mountain Park
Monday, September 3, 2007
12:00 PM - 4:00 PM
Location: Confederate Hall

Reminder: Volunteers arrive by 11:00 AM and lunch will be served at 11:30. Contact Bill Waggener, education chair, for details.



Cartoon from Rockbuster News 6/89
via T-Town Rockhound 9/97
via The Burro Express 10/97

September 2007

Sun	Mbn	Tue	Wed	Thu	Fri	Sat
						1 GMS Field Trip
2	3 Rock and Mineral Day Stone Mtn	4	5	6	7	8 GMS Field Trip
9	10	11	12	13	14	15 Southeast Federation Field Trip
16	17 GMS General Meeting	18 Mineral Section Meeting	19	20	21	22
23	24 Gem Section Meeting	25	26	27	28	29
30						

THE GEORGIA MINERAL SOCIETY, INC.

P.O. Box 15011

Atlanta, Georgia 30333-5011

www.gamineral.org

MEMBERSHIP APPLICATION

Name: _____ Birthday: month/day _____

Email: _____

Spouse: _____ Birthday: month/day _____

Spouse's email: _____

Children's Names & Birthdays: mo/day/yr (residing at home): _____

Address: _____

City: _____ State: _____ Zip+4: _____

Home Phone(s): _____ Cell Phone(s): _____ Office Phone(s): _____

Occupations: _____

Hobbies, Interests : _____

SPECIAL INTEREST GROUPS AT GMS: (Check all that apply)

Mineral Section

Micromount Section

Fossil Section

Junior Section

Gem Section

Electronic Newsletter

Dues for New Members (Single, Couple, Family) are \$25.00 per Society year. (\$20.00 + \$5.00 Initial Processing Fee)
Renewal Dues are \$20.00 per Society year. (due 12 months from the date of joining and every 12 months thereafter)
Reinstatement Dues (For Expired Membership) are \$25.00 (\$20.00 + \$5.00 Reinstatement Fee).

FAMILY MEMBERSHIPS ARE FOR THE IMMEDIATE FAMILY INCLUDING CHILDREN RESIDING WITH PARENTS.
CHILDREN UNDER 18 YEARS OF AGE ARE CONSIDERED JUNIOR MEMBERS.

PLEASE MAKE CHECKS PAYABLE TO THE GEORGIA MINERAL SOCIETY, INC.

THE GEORGIA MINERAL SOCIETY, INC.

P.O. BOX 15011

ATLANTA, GEORGIA 30333 - 5011

ADDRESS CORRECTION REQUESTED

PLEASE FORWARD

FIRST CLASS

