

Tips *and* Trips



The Georgia Mineral Society

Atlanta, Georgia

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July 2005

President's Message



Warm weather has finally arrived. Thus starts another summer. Mine started out well, with two daughters graduating - one from college (Amber), one from high school (Brittany). And it just as quickly hit a low point, with the sudden loss of my father on the day my daughter, Brittany, graduated from high-school. It certainly makes one pause to think. We get wrapped up in the day to day stuff, and don't take the time to enjoy life. I heartily recommend all members spend some time this summer with their loved ones - you just never know what fate has around the corner.

As this is being written, our annual picnic and auction is less than a week away. Hopefully all tropical depressions, hurricanes, and "what-have-yous" are out of the area by then. This is also the time when we vote on the slate of officers for the upcoming year. Although we already have a slate for the elected officers, there are also several appointed positions available. Many members seem to be afraid to step up and fill a position. Hey, most of them are really no big deal - they take a little work, but not a whole lot. And, no, you don't have to be an expert rockhound... few of us are (we all are continuously learning). As a bonus, you get to read some interesting e-mails (assuming you have the capability) - some are bona fide questions for help, others . . . well, I don't want to step on anyone's toes (the Board members are aware of a recent one to which I'm referring). Please consider filling a position if asked, either as the new President takes over, or in the coming years.

Speaking of positions available, I am still looking for a volunteer to act as the Sunshine chair, as well as a volunteer to assist our Field Trip chair, George Libby, as he recuperates. Please consider these positions...and, if you think you don't know how to fulfill the position, don't worry - there are members who will gladly help you along the way.

Doug Daniels.
President

JULY GENERAL MEETING

**NOTE: THE MEETING IS ON THE THIRD MONDAY
AND AT A NEW LOCATION!!**

7:30 PM, Monday, July 18, 2005
Dunwoody Library
5339 Chamblee-Dunwoody Road
770-512-4640

Faceting Demonstration

Fellow GMS members, Jay Gorday and Olin Banks, will be giving a demonstration on faceting. Don't let the math involved and cost of equipment be an obstacle in getting involved with this "facet" of being a rockhound and/or the lapidary arts.

Directions:

The easiest way to find the Dunwoody Library is to take I-285 to the Ashford-Dunwoody Road Exit. Go north on Ashford-Dunwoody Road past Perimeter Mall and continue north. Go past a Rio Bravo restaurant on your right. Turn right onto Ashford Center Parkway. Follow Ashford Center Parkway to its intersection with Chamblee-Dunwoody Road. Turn left at the traffic light onto Chamblee-Dunwoody Road and then make a fast right hand turn into the library parking lot. If you miss Ashford Center Parkway, Ashford-Dunwoody Tees into Mount Vernon. Turn right (merge) onto Mount Vernon and take the next right on Chamblee-Dunwoody Road. The library will be on your left at the traffic light at Ashford Center Parkway.

Looking ahead:

August Meeting:

Speakers & Program: Doug Daniels - Colors of Minerals

Dylan Porter,
Vice President, Programs



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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Adopt-A-Highway	Robert Peard	770.936.0180
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Awards	Joan White	77.478.5734
Curator/Gem Box	Kim Cochran	770.979.8331
Facilities	Open to Volunteers	
Historian	Roxanne Lopez	770.436.0387
Hospitality	Margaret Ronan	404.636.0720
Librarian	Dick Anderson	770.888.9331
Parliamentarian	Kim Cochran	770.979.8331
Refreshments	Kim Prakash & Nancy Marden	770.879.0476 770.447.8542
Special Events	Bill Waggener	770.478.5734
Sunshine	Joan White Temporary	770.478.5734
Tips & Trips Labels	Joan White	770.478.5734
SFMS Rep.	Frank Decaminada	770.992.8309

The article submittal due date for the August 2005 newsletter is July 10, 2005.

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.gamineral.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@gamineral.org.

December Show Committee Chairs

Show Chair	Kim Cochran	770.979.8331
Dealer Chair	Anita Westlake	404.761.7849
Exhibits	Jay Gorday	770.986.0822
Demonstrations	Margaret Ronan	404.636.0720
Hospitality	Nancy Marden	770.447.8542
Treasurer	Teresa Curl	770.751.7313
Advertising	Perry & Teresa Curl	706.764.2291
Dealer Dinner	Open	
Database	Joan White	770.478.5734
Auction	Kim Cochran	770.979.8331
Set Up/Take Down	Open to Volunteers	

**June 18, 2005
GMS General Meeting Minutes**



The June General Meeting was the annual picnic and auction, which was held at Jones Bridge Park in Norcross. Approximately 50 people attended, including one visitor. Also present were 5 members of the Canine family. The picnic began at 11:40 AM when the lunch lines were formed and we all enjoyed a wonderful variety of side dishes and desserts that members provided. GMS provided drinks, ice, cups, plates, napkins, and plastic ware.

At 12:41 PM, President Doug Daniels called the brief business meeting to order, and the following committee reports were given.

Dylan Porter – VP Programs – unable to find Dylan, Doug announced the next general meeting would be held on the third Monday of July at the Dunwoody Library.

Mary Porter - Secretary – minutes from October meeting available. A motion was made to dispense with reading of minutes. It was seconded and passed.

Teresa Curl – Treasurer – provided an account balance of \$22,280.73.

Joan White – Tips & Trips – needs any remaining articles this weekend so she can finish Monday/Tuesday.

Roxanne Lopez – Junior Section – no meeting in July. August meeting will be announced in Tips & Trips. Doug announced that after this term, ending in October, Roxanne will not be able to act as Junior Section Chair – please let him know if you can volunteer. Roxanne then added that the maximum length of time needed would be 8 months; she will be out of the country.

Dave Babulski – Micromount Section – no June meeting, future dates to be announced.

Doug provided the following section meeting announcements:

Fossil Section – no June meeting

Mineral Section – no June meeting, July to be announced in Tips & Trips

Gem Section – next meeting June 27th, details are in June's Tips and Trips

OLD BUSINESS

Bill Waggener was given the floor to conduct the annual election of officers for the 2005/2006 term. He presented the following nominees, which were unanimously selected by the Nominations Committee: Kim Cochran – President, VP of Membership – Lizabeth McClain, VP of Programs – Dylan Porter, Treasurer – Teresa Curl, Secretary – Mary Porter, and Trustee (to 2008) – Joan White. Bill then asked for any nominations from the floor for the position of President. None was given, and a motion was made, seconded, and approved to close nominations for

President. The same procedure individually took place for each remaining position, with no dispute of those selected by the nomination committee, closing all nominations. Bill then motioned that all that have been unanimously nominated, be elected. The motion was seconded, and unanimously approved, electing the Nominations Committee slate of officers for 2005/2006 term. They will be sworn in as officers at the annual banquet in October.

Jay Gorday announced the May Show member door prize winner was Margaret Ronan and presented her with a lovely pendant.

NEW BUSINESS

None

At 12:53, Martha Brown motioned that we dispense with the business meeting and move on to the auction. Her motion was seconded and unanimously approved.

AUCTION

The announcement was made to obtain a number to participate in the auction, which was conducted by Kim Cochran. It consisted of just over 200 lots, lasting a little over 3 hours, including a break at lot 100. Some good bidding "wars" took place over a turquoise brooch, and an enormous amethyst geode. The highest bid on a "juniors only" item was \$2.50. Could this be a record? At 4:02 PM, the last lot was sold, and we all settled our debts, filled our vehicles with the items we bid the highest on, and called it a day.

*Mary Porter,
Secretary*



*GMS Members intently watch the bids increase on highly prized items at the June Picnic and Auction.
(Photo by Joan White)*

Election Results

Congratulations to the newly elected officers for the **2005-2006 GMS year:**

- President:** Kim Cochran
- Vice President of Membership:** Liz McClain
- Vice President of Programs:** Dylan Porter
- Treasurer:** Teresa Curl
- Secretary:** Mary Porter
- Trustee for 2005-2008:** Joan White

These officers will be installed and begin their term of office at the October Annual Banquet. Please offer to help your officers as they work to support the Society and follow the Society's objective and purpose "To Educate the Youth of the State and the Members of this Society in the Field of Earth Science"

Bill Waggener
Nominations Committee Chair



The youngest GMS member attending the picnic, elections and auction, Celesta Waggener (Bill's granddaughter), takes a break. (Photo courtesy of Bill Waggener)

Hackney Farm Lost

I regret to inform you that the Hackney Farm has or will be sold. Mrs. Williams can not be there. The farm is desolate and the children are not interested in keeping the farm. This was the site of the first GMS field trip in 1936. At that time the fee was \$ 1.00 per person. We have had seventy years of collecting there.

The Hackney Farm was the greatest staurolite collecting site in Georgia and one of the best in the world. It hurts to see our sites disappear one by one. The day may come where most of our collecting will be done with dollars at shows rather than with shovels and screens.

Kim Cochran

From the Atlanta Journal-Constitution

AJC Home Edition
Tuesday, 6/14/2005
Metro News, page B6
OBITUARIES: ATLANTA:

Ila Zuber, housewife turned rockhound

By: HOLLY CRENSHAW / Staff, hcrenshaw@ajc.com

A Christmas present given almost as a joke introduced Ila Zuber and her husband to what quickly became an all-consuming hobby.

After years as a quiet, reserved homemaker, Mrs. Zuber suddenly started dressing in chinos, work boots and a hard hat, climbing over rocks and lugging a pick ax, a shovel and a pail around in the hot sun in search of gemstones.

"Right after my father's retirement, my mother and I were sitting around in 1975 chewing the fat and wondering what she was going to do with Pop, besides watching him wearing a hole in the family room carpet, " said her daughter, Lowry Day of Stone Mountain.

"That Christmas I bought him a toy lapidary wheel out of the Sears catalog, and he played with that for about two weeks. Within three months there was a full, professional setup in the basement and they were going off on rock-hounding field trips together. Before long, their social life centered around the Georgia Mineral Society."

Ila Lowry Keen Zuber, 96, of Atlanta died Friday of renal failure at Northlake Medical Center. A private graveside service will be held. Lowndes & McLane Funeral Home is in charge of arrangements.

The California native met her late husband, Martin Zuber, a lifelong employee of Singer Sewing Co., while earning her bachelor's degree in languages from the University of California at Berkeley in 1931. The couple lived in Japan and New York before moving to Atlanta in 1964.

Before gemstones took over their life, Mrs. Zuber would relax mainly by polishing off several crossword puzzles a day. She even had a few of her own crossword creations published in puzzle magazines.

"She was amazingly good at puzzles, " said her son, Martin Zuber of Suwannee. "And if you were going to play Scrabble with her, you could just bank on losing, because she knew words that nobody would ever think about."

All her family members knew not to disturb her when she was watching Atlanta Braves baseball on television, and she was a voracious reader of anything she could get her hands on, from cheap romance novels to historical fiction, her son said.

As a member of the Georgia Mineral Society, she and her husband spent hours polishing and collecting gemstones, going on field trips, taking classes and attending meetings that were held in the basement of Emory University's geology department.

(continued on page 10)

THE MICROMOUNT CORNER

Those magnificent Copper Arsenates

The element arsenic (As) is located on the Periodic Table of elements in the same semi-metal band as the elements boron, silicon and tellurium. As such, the element arsenic exhibits similar characteristics to the other semi-metals. Silicon for example, when combined with the element oxygen forms the silicate (SiO₂) radical. This unique combination of the elements silicon and oxygen bonds with a bewildering array of other elements to form the large number of silicate minerals. Likewise when the element arsenic is combined with oxygen, it forms the arsenate (AsO₄) radical. Like the silicate radical, this unique combination of the elements arsenic and oxygen bonds with a large number of other elements (mostly metallic in nature) to form the large number of arsenate mineral species.

Interestingly enough, the metallic element copper (Cu) bonds readily with the arsenate combination and forms the bulk of the arsenate mineral species. For the micromounter this is a fortuitous situation as there are a number of well-known primary copper mineral deposits where arsenic bearing hydrothermal fluids have reacted with the primary copper minerals under oxidizing conditions forming the secondary copper arsenate minerals. Most of these unique mineral species only crystallize in micro form.

One of more well known of these mineral occurrences is the Tintic Mining District in Utah and the Antelope Mining District in Nevada. When more than one of the copper arsenates are present in one specimen, the color and variety of crystal form is just awesome. In the Gold Hill Mine in Tooele County, Utah, the copper arsenates conichalcite, strashimirite and mixite occur together in one specimen.

The photographs at right show these three minerals in one specimen. A careful analysis of this specimen shows that all three of these copper arsenate minerals did not crystallize at the same time, but most likely represent subtle changes in the chemistry of the hydrothermal mineralizing fluids. Strashimitite, which is a copper arsenate hydroxide penta-hydrate, appears to have been deposited first, followed by conichalcite and then mixite. Chemically speaking, conichalcite is a calcium copper arsenate hydroxide and mixite is a bismuth copper arsenate hydroxide tri-hydrate.

The mineralizing fluids appear to have become enriched in calcium and bismuth as the minerals were being deposited. What is really cool about these specimens is the conichalcite. This mineral occurs as bright green spherules. A very close examination under the microscope of these spherules shows them to be hollow spheres of conichalcite.

It is unknown at this point if the hollow spheres are actually filled with fluid. It is also interesting to speculate on how these hollow spherules formed.



In this image, ball like sprays of green acicular strashimirite and light blue mixite populate the matrix.



In this image, conichalcite, strashimirite and mixite are all present on the matrix.

(Both photographs above are courtesy of Dave Babulski from his collection. They were photographed with Kodak ASA 400 film at a magnification of 25X. The light source was a white light LED.)

So for some real interesting micromounting adventures you can't beat those magnificent copper arsenates. Most of the mineral dealers carry copper arsenates from a variety of localities. Those from the Tintic Mining District in Tooele County, Utah are among the finest.

Until next time, may all your skies be blue and all your vugs be crystal filled.

Dave Babulski

Diamond (C)



Compiled by Julian C. Gray

Name:

Known from antiquity. The name is a corruption of the Greek word, *adamas*, which means invincible; probably due to its hardness (Blackburn and Dennen, 1997).

Varieties:

Ballas, bort, carbonados

Mineral Class:

Native element. Diamond is a polymorph of chaoite, graphite, and lonsdaleite.

Crystallography:

Isometric, commonly octahedral {111}, but also may be found as cubes {001}, or dodecahedra {110}. The faces are commonly curved. Twins on the {111} (spinel law) are common. The radial or cryptocrystalline aggregates of bort, a variety of diamond, cause it to have rounded forms or a rough exterior. Bort is also used to describe diamonds that are flawed or badly colored (Klein, 2002).

Diamond has perhaps the most fascinating crystal morphology of any mineral. Diamonds crystallize as octahedrons, cubes, or dodecahedrons and commonly exhibit habits that contain two or more of these forms. Although we find diamonds at the Earth's surface, they form deep within the Earth. They have a rapid and violent journey from their birthplace in the mantle to the volcanoes in which they occur. Along the way the pressure that allowed them to form is rapidly removed (Kirkley, 1998). They then become unstable and begin to dissolve, leaving the surface of many diamonds etched or pitted and their overall shape occasionally rounded. Etched diamonds can also exhibit a cross figure on its faces. Whether through growth or etching, another crystal form is sometimes observed: the hexoctahedron (six faces on each of the octahedral faces). Other interesting features are the etched pits found on the faces of diamonds. Since these are frequently triangular, these etched pits are called trigons. The face of an octahedron is a triangle. Trigons found on octahedrons are oriented such that the point of its triangle is pointed in the opposite direction of point of the triangle of the octahedral face. Figure 1 shows an octahedral diamond crystal modified by a hexoctahedron (evidenced by the fact that the triangular octahedron face really has six sides). Furthermore, this drawing shows etched trigons. Notice that trigon and octahedron triangles point in opposite directions (Sunagawa, 2005).

Physical properties:

Diamond is the hardest known mineral, H=10, and a specific gravity of 3.51. Diamonds luster is adamantine

and uncut crystals have a greasy appearance. High refractive index (2.42) and dispersion. Color is pale yellow or colorless, but may be found in many other colors. Diamond has perfect octahedral cleavage {111}.

Chemistry:

Diamond is pure carbon. General Electric first synthesized diamond in 1955 at pressures of 600,000 to 1,500,000 psi and temperatures of 750 to 2,750 degrees C. In 1967, GE also produced a hexagonal polymorph of diamond that was later discovered in the Canyon Diablo meteorite in Arizona. This hexagonal polymorph is lonsdaleite, which has also been found in the Goalpara meteorite and in sands in various parts of Russia (Bernard and Hyršl, 2004).

Occurrence:

The most common geologic setting of diamonds is in diamond pipes, small diameter volcanic features. The volcanic host rock is kimberlite, whose magma type is generated deep within the earth's mantle. This rock weathers to a yellow rock near the surface (yellow ground), which gives way to a darker fresh rock at depth (blue ground). Diamonds liberated by weathering also accumulate in alluvial deposits (Klein, 2002).

Diamonds are found, but not formed, in kimberlite. In nature, diamond forms at temperatures in excess of 1200 C (2200 F) and at pressures 44,000 times that of atmospheric pressure. These conditions are found only at depths of 100 miles below the surface of the Earth. The two main rock types in which diamond is formed are harzburgite and eclogite, both quite rare igneous rock types. Harzburgite is composed of olivine, bronzite (an orthopyroxene), and some pyrope (chrome- and magnesium-rich varieties). Harzburgitic diamonds contain inclusions of olivine, bronzite, and pyrope. Harzburgitic diamonds are more than 3 billion years old. Eclogite is a high pressure metamorphic rock composed of garnet (almandine-pyrope variety) and omphacite (a sodium-rich clinopyroxene). Diamond is so abundant in some of these eclogites that it may comprise ten percent of the rock! An extremely fascinating mineral inclusion that occurs in eclogite is diamond inclusions in garnet. They are microscopic, but very unusual when you consider how they came to be. Kimberlite is then derived from melt of eclogite or harzburgite and will occasionally contain inclusions (xenoliths) of these diamond source rocks (Kirkley, 1998).

The most productive diamond producing regions are southern Africa, Siberia, India, and Brazil. There are other minor occurrences in the United States: Murfreesboro, Arkansas; and Colorado and Wyoming (Klein, 2002).

Uses:

Diamonds extreme hardness, luster, and dispersion together with its rarity make it one of the most sought after gemstones. Its hardness also makes diamond useful in industry for abrasives and for saws and drills (Klein, 2002).