

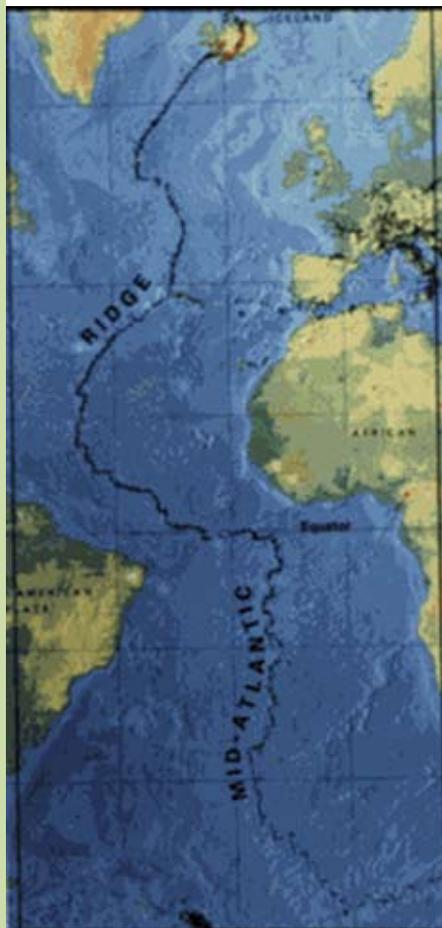
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The Mid-Atlantic Ridge

The Defining Feature of the Atlantic Ocean

MIKE BALDWIN: 06 JANUARY 2006: Almost 200 million years ago, the Americas, Africa and Europe were all part of one supercontinent. During the Jurassic period,



Mid-Atlantic Ridge
Photo courtesy of USGS

about 150 million years ago, a rift began to open up in this landmass, splitting it into three separate tectonic plates. The Atlantic Ocean basin began to form, and is still forming today. The tectonic plates are separating at a rate of about two and one-half centimeters per year, or 25 km in a million years. This may sound like slow movement, but because this process has been taking place for millions of years, plates have moved thousands of kilometers. Over the past 100 to 200 million years, the Atlantic Ocean has grown from a small inlet of water into the vast ocean it is today.

Spreading movement of the plates pulls the new ocean crust away from the rift like a conveyor belt, and the rift widens. Around this rift, Earth's crust stretches and thins. As the crust thins, it releases pressure on the mantle (rock below the crust). This drop in pressure causes the mantle rock to melt. Since the molten rock (magma) is lighter than the dense rock around it, the magma rises, producing volcanic activity along the rift. This volcanic rock becomes new ocean

crust, which accumulates on the ocean floor. Heat from the magma causes the crust on either side of the rifts to expand, forming ridges.. The undersea mountain range formed by this process in the Atlantic Ocean is called the Mid-Atlantic Ridge. This ridge extends north to south along a winding path midway between the continents. Approximately 1,500 km (930 mi) wide, the ridge features more rugged topography than any mountain range on land, and produces frequent earthquakes and volcanoes.

see The Mid-Atlantic Ridge on page nine

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President's Corner WC McDANIEL

February is a transition month as we move from the hustle and bustle of the holidays and the winter doldrums (not much to complain about so far) and look toward our plans for the rest of year.

Within the newsletter, the field trip schedule is published for 2006. Hopefully by having advance notice you can plan for some of the out of town trips. Please note the Memorial Day weekend trip as you may have four days of field trip opportunities.

MAGS has the established the Roger Van Cleef Education Program and Science Fair award. These were established to honor and recognize Roger's many contributions to MAGS, the Memphis community and the world of fossils. MAGS members will have the opportunity to participate by making a monetary donation and/or donating mineral and fossil specimens. Check out the details in the newsletter.

Over the next few months you will hear a lot about the show. This is our big annual event and for it to be successful, we need and request your help. Volunteer schedule needs, club tickets and promotional material will be available at the membership meeting. Also be sure to come and check out the show's grand door prize.

One last important note. 2006 dues are past due. If you want go on that Memorial Day trip to collect pink dolomite, amber colored calcite, druse quartz, barite and Washington County Lace agate you must renew your dues now. Thanks

WC McDaniel

2006 Dates to Remember

	Board Meeting	Membership Meeting	Due Date for Newsletter Articles
February	2	10	-
March	2	10	February 24
April	6	14	March 24
May	4	12	April 28
June	1	9	May 26
July	6	14	June 23

This Just In!

TWO OLD BULLETINS FIND A NEW HOME IN THE MAGS LIBRARY

NANCY FOLDEN: From the library of the late Dr. James Cole, Melba Cole has given two Tennessee Department of Conservation Bulletins to the MAGS library. The bulletins are available for you to browse and read on club meeting nights. Due to the age and fragile condition of the bulletins, they will not be available for month-long checkout like most other books in our library. The bulletins are:

[01] Richard W. Smith and George I. Whitlatch, Bulletin 48: The Phosphate Resources of Tennessee, State of Tennessee, Department of Conservation, Division of Geology, Nashville, Tennessee, 1940. This bulletin takes a look at the phosphate deposits of Middle Tennessee. Phosphates are raw materials for fertilizer to the agriculture of Tennessee and surrounding states.

[02] W.B. Jewell, Bulletin 51: Barite, Fluorite, Galena, Sphalerite Veins of Middle Tennessee, State of Tennessee, Department of Conservation, Division of Geology, Nashville, Tennessee, 1947. This bulletin discusses in detail the location, geologic occurrence and methods of mining barite, fluorite, sphalerite and galena in Middle Tennessee.

Thank you Melba!

Members, stop by the MAGS Library and check out the books, publications and video resources available to you. Summer is just around the corner. Let the library help you plan your vacation.

February Roadcut

WC McDANIEL: The MOHS Hardness scale, developed in 1840 by French mineralogist Friedrich Mohs, is one of the most widely known and used identification features in minerals. Geologists and mineralogists use the scale to identify minerals, rocks and rock formations. Lapidarists use the scale to determine which mineral, rock or gemstones are best for their work and scouts learn about the scale as a requirement of their geology badge.

Hardness of a mineral can be tested through scratching. A mineral can only be scratched by a harder substance. A hard mineral can scratch a softer mineral, but a soft mineral can not scratch a harder mineral.

Original (relative) Mohs Hardness Scale <i>The numbers represent a relative scale. Meaning that fluorite at 4 is not twice as hard as gypsum at 2; nor is difference between calcite and fluorite similar to the difference between corundum and diamond.</i>	Revised Mohs Hardness Scale <i>This scale provides a way to identify the hardness of some minerals by using everyday products to scratch</i>	Absolute Hardness Scale <i>The number in front of each mineral is the absolute hardness measure of the mineral. For the example #10 diamond is four times harder than a #9 Corundum.</i>
1. Talc	1. Talc	1. 1-Talc
2. Gypsum	2. Gypsum 2.5 Fingernail	2. 3-Gypsum
3. Calcite	3. Calcite 3.5 Copper (old penny)	3. 9-Calcite
4. Fluorite	4. Fluorite	4. 21-Fluorite
5. Apatite	5. Apatite 5.5 Window glass/ knife blade	5. 48-Apatite
6. Orthoclase	6. Orthoclase	6. 72-Orthoclase
7. Quartz	7. Quartz	7. 100-Quartz
8. Topaz	8. Topaz	8. 200-Topaz
9. Corundum	9. Corundum	9. 400-Corundum
10. Diamond	10. Diamond	10. 1600-Diamond

Source: mineral.galleries.com.

Behind the Scenes with Ron Brister

WC McDANIEL: Because of the overwhelming popularity of last fall's "Behind the Scenes" tours at the Pink Palace, Ron Brister has graciously agreed to host two more tours in February (Saturday, February 11, 1:00PM and Sunday, February 12, 1:00PM). Those members who were unable to attend one of the fall tours are given first opportunity to sign up. Check the list at the February meeting.

2006 MAGS Field Trips

LOU WHITE/DAVID McILWAIN:

[01] Most of the trips will be scheduled the weekend after the membership meeting.

[02] Those trips with an asterisk are subject to verification/permission from land-owners and local contacts.

[03] Specific trip details provided at membership meetings or email/phone.

[04] Unless specified, field trips are limited to MAGS members.

[05] Field trip participants must sign a MAGS' liability waiver form.

[06] Note: Black Rock, AR is not on the listed schedule. We will continue to contact the mine and if permission is granted for a trip we will immediately schedule it.

Month	Date(s)	Site	Material	Trip Leader(s)
Feb	18	Nonconnah Creek, Memphis, TN	Agates, wood, fossils	Lou White
Feb	25	Wells Station, Waverly, TN (3.5 hours)	Tour of meteorite impact site, possible collecting	Alan Parks
Mar	18 (17-19)	Cookeville, TN Dale Hollow Lake* (5 hours)	Geodes, fossils	Lou White/ David McIlwain
Apr	15	Sugar Creek, Millington, TN (.5 hours)	Agates, wood, fossils	Lou White
May	27 (26-29) Memorial Day Weekend	Farmington, MO (5 hours)	Multiple sites and trips each day: pink dolomite, amber colored calcite (new site), druze quartz, barite, Washington Co. agates	David McIlwain, WC McDaniel, White with Betty and Lloyd Marler
Jun	17	Crowley's Ridge, AR (1 hour)	Agates, wood, fossils, selenite	Lou White
Jul	22	20-Mile Creek, MS (2 hours)	Fossils	Lou White
Aug	19	open		
Sep	16	open		
Oct	21	Vulcan Quarry, Parsons, TN (2.5 hours)	Fossils	Lou White/ David McIlwain
Nov	18 (17-19)	Mt. Ida, AR (3.5 hours)	Quartz crystals	Lou White/ David McIlwain

MAGS 27th Annual Mid-America Mineral, Fossil, Jewelry Show

Saturday, April 22, 9:00 - 6:00

Sunday, April 23, 10:00 - 5:00

Pipkin Building, Mid-South Fairgrounds
Memphis, Tennessee

*Portion of admission benefits the
Ronald McDonald House of Memphis*

GRAND DOOR PRIZE:

Fossilized Turtle (Rare-Museum Quality)

MAGS Members, the show belongs to and is you, so help by:

- Distributing show announcements everywhere that is permissible
- Distributing club tickets
- Sending emails announcing the show to all your friends, family, coworkers
- Placing large posters in community areas
- Placing announcements/news article in your work/club newsletter, scout troops
- **Volunteering to help work during the show**
- Exhibiting in the club area
- Donating material for the gem dig and grab bags

Friday Night, Show Dinner

- Annual show dinner at 6:30
- YOU can help by committing to bring a dish or two
- Arrive early to help set up and stay late to cleanup and convert area to the ROCKZONE

The show needs YOUR help

- Thursday (20) - Building setup
- Friday (21) - Building setup for dealers and dinner
- Saturday (22) and Sunday (23) - Volunteer to help with the ROCK ZONE, front ticket desk/information and hospitality
- Sunday - Show breakdown and clean up

SIGN UP TODAY!

February Birthdays

CORNELIA McDANIEL: Birthstone for February is Amethyst.

- 7-Don Grubbs
- 7-Marcy Ouellette
- 10-Ryan Bridges
- 10-Dennis Sanders
- 11-Teresa Anderson
- 12-Don Richardson
- 12-Louis White
- 13-Rosemary Crawford
- 14-Joanne Olson
- 17-MAGS
- 18-Harold Idell
- 19-David Vaughn
- 20-Juanita Canada
- 21-Allie Van Cleef
- 22-Dean Griffin
- 22-Barbara Reed
- 22-Jane Roane
- 23-Julia Bailey
- 26-Kelsey Lyons
- 26-Marge Hall
- 26-Harrison Parks
- 27-Alexander Hurley
- 28-Maxine Fulghum

Bold type indicates lifetime members.

Web Site Statistics for January 2006

MIKE BALDWIN: Here's a brief look at our web site [www.memphisgeology.org] 01.21.02 through 01.28.05:

Visits..... 127,431
Hits534,748 Hits
Average visits/day in past 30 days..... 332
Top pages in the past 30 days:
home page760 hits
Explorer0203.pdf..... 652 hits
argon2003.pdf.....557 hits
Explorer0403.pdf..... 428 hits
rocknews1005.pdf 403 hits

A visit is every time someone comes to our web site. A hit is every page viewed once a user enters our web site.

Roger Van Cleef Educational Program and Earth Science Award

WC McDANIEL: In recognition and honor of Roger Van Cleef the Memphis Archaeological and Geological Society has established the Roger Van Cleef Educational Program & Earth Science Award.

The primary purpose of the Roger Van Cleef Educational Program will be to provide MAGS members the resources and materials necessary to present educational programs and information to schools, scouts, and the general public and for MAGS' programs and events.

The primary purpose of the Roger Van Cleef Earth Science Award is to provide direct awards and prizes to students in the annual Memphis-Shelby County Science Fair. The program would continue as in the past; recognizing elementary students/classes and junior high students who present worthy projects in the Science Fair.

MAGS' members can help in two ways. First, you may make a direct donation in honor and/or memory of Roger. Donated funds would go specifically to the Educational Program to purchase charts, posters, books, display cases, printed material and specimen displays/collections.

The second way is for MAGS members to donate minerals, rock and/or fossils for a traveling exhibit/display to be used in the education program. A general description of the types of donations we need include:

- Good quality specimens that are suitable for display and demonstrations to general audiences. Need to look good, display ready and are durable.
- Mineral and rock specimens such as crystals, fluorite, pyrite, galena, colorful, minerals, calcite, Brazilian agate, amethyst, polished stones, polished slabs, geodes (opened and unopened)
- Fossil specimens including dinosaur (identifiable). Vertebrate and invertebrate fossils, petrified wood
- Good fist sizes samples of igneous, sedimentary and metaphoric rocks

February Program

IDAJEAN JORDAN: Adults, join us on Friday night, February 9, for an interesting program on the origins of earthquake activity off the coast of North Carolina, originating from the Mid-Atlantic Ridge, which divides the Atlantic Ocean floor into the North Atlantic Plate and the Eurasian Plate. The program will be presented by the Center for Earthquake Research, located on the campus of the University of Memphis.

February DMC Field Trip

DMC Program of the SFMS Field Trip Committee

An Official Field Trip of The Carroll County Gem and Mineral Society,
Carrollton, GA (Host)

An Official Field Trip of the Memphis Archaeological and Geological Society

9:00 AM – 4:30 PM EST • Saturday, February 11, 2006

The Famous Hogg Mine, outside of LaGrange, in Troup County, GA

COLLECTING: Rose quartz, tourmaline, beryl, moonstone, mica books, garnet & quartz crystal.

DIRECTIONS: From Atlanta, take I-85 south to LaGrange. Get off on Hwy. 219 and go south. Go past the intersection at Bartley Rd. and past an old chimney on the right. Just past the power lines, turn right at a gravel entrance and go thru the gate to the parking area. From Carrollton, take Hwy 27 S. (past Wal-Mart). Go thru Franklin to LaGrange. Just stay straight and Hwy 27 dumps into Hwy 219. Take Hwy 219 south and cross I-85. Go past the intersection at Bartley Rd., past the old chimney on the right. Turn right into Hogg Mine on a gravel entry with a gate. Parking is to the left. Allow 1 hour and 15 min.

FEE: Adults-\$17 & children under 18 are free. Upon arrival you will be required to sign a waiver of liability.

WHAT TO BRING: Pick, shovel, rock hammer, chisels, scratching tools, screen, buckets and of course plenty of water. Bring your lunch. Pack extra clothes and boots just in case we encounter muddy or wet conditions. There are roads and paths. Cliffs, ditches and new pits have been dug. There is loose material under the leaves that take little effort to recover. Using a rake to push back the leaves might be useful and a crack hammer will help to find tourmaline imbedded in quartz. Please follow the Code of Ethics to preserve our relationship with our host. For more directions and info on other collecting sites in the area, check out www.dixieuhedrals.net.

WHERE TO STAY: Days Inn has agreed to a group rate of \$55.00 + tax per room if you mention the DMC field trip. The address is 2606 Whitesville Road, LaGrange, GA 30240 (also Hwy 219). It's exit 13 off of I-85. Phone 706-882-8881 for reservations.

CHAIRMAN: Tim Billingsly ph 770-836-8832. If no answer, leave a message or you can e-mail: mistyhollow@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 Shows

February 4-5, 2006

Panama City, FL • Panama City Gem and Mineral Society • 15th Annual Show
• 15th Street and Sherman Avenue, Bay County Fairgrounds, American Legion Building • Hours: 4th, 9:00 A.M. - 5:00 P.M.; 5th, 9:00 A.M. - 4:00 P.M. •
Contact Al Zar, 850.763.0109 or email Aquezpie@aol.com.

Treasury Notes

CORNELIA McDANIEL: A big "THANK YOU" to the 70% of our membership who have renewed for 2006. The final deadline is only one month away so please bring your dues check to the February 10th Membership Meeting. In March we will proceed with the publication of this year's Membership and Library cards and Membership Directory/Handbook.

It is our hope that everyone has the intention of renewing their membership status for this calendar year. We look forward to your continued participation in the excitement that is being planned.

If you have recently joined the club, you may not have received your Membership cards and Library card in your New Member Packet. We are sorry for the delay, and the new ones will be distributed to you in the very near future.

The 2005 annual Treasurer report will be available for review at the February Membership Meeting. Anyone interested in seeing the past year's income and expenses, please stop by and have a look.

The increase of energy costs this year causes a challenge for us all and has resulted in a planned increase in the rental cost of our meeting room. The annual collection of dues in our primary source of income, so we hope to see you at the February meeting and don't forget that check!

YOUTH NOTE: What's On Your Mine?

RAYNEE RANDOLPH: We had a great time last month as we began to learn about mining by drilling for "minerals" in cupcakes. Join us again this month as we continue to explore the world of mining. Parents and kids, visit the Women in Mining web site, <http://www.womeninmining.org> for an abundance of information on mining and minerals. There will also be a special Youth Awards Ceremony at the Feb. meeting.

Opals

RHENA A.V. SOUTH: The opal is the modern birthstone for May. The National Association of Jewelers adopted it in 1912. In the Hindu religion it is the symbol for March and the zodiac sign of Libra. The Romans believed the opal was the symbol of hope and purity. The Romans also believe that it protected from illness. Opal took its name from the Latin word "upala" or precious stones.

Opal has no crystal like structure and is made up of hydrated silica. It has a high water content. Most opal dates back to the Cretaceous period and is between 50-65 million years old. It is a low temperature mineral and is found in cracks and cavities of decomposing rock. It also replaces skeletons sometimes in fossil marine animals and plant.

There are different types of opals. Precious opal has flashes of fire. Fire opal has flashes of yellow and red. Common opal or potch is the other type. Common opal is not transparent and may be white, gray, yellow, blue or green. There is also something called Boulder Opal. It is opal attached to a rock that is made up of a different material. There is also opal that becomes see-through or transparent when wet. It is called hydrophane opal. My Dad bought some opal was from Louisiana at the MAGS rock show last April.

One of most rare colors is black. My Mom saw black opal at the World's Fair when it was in New Orleans many years ago. Black opal comes from the region of Northern New South Wales in Australia.

Opal is 5.5 to 6.5 on the Mohs hardness scale. Opals require extra care because they are much softer than other gemstones. It is mined in Australia, the United States, China, Brazil, Japan, Hungary and Guatemala. I was looking at the opals in the jewelry store when I went shopping with Dad. Every opal stone in the rings looked different even though some were in the same type ring. I was told that no two opals look alike.

Sources:

http://www.gemfix.com/gemstone_facts.html;
<http://www.bernardine.com/gemstones/boulder-opals.htm>;
<http://www.goldnuggetwebs.com/VVOPALS/OPALFACTS.HTM>

EDITOR'S NOTE: Rhena is a regular youth contributor to the newsletter. Put your thinking caps on and send me an article, a poem, a picture, or a drawing about our hobby. Tell us about your favorite field trip or mineral. Remember, each article earns you points toward Junior of the Year.

28th Annual Memphis Shelby County Elementary Science Fair

MIKE BALDWIN: It is that time of year again! The 28th Annual Memphis Shelby County Elementary Science Fair will be held February 27th through March 2nd, 2006 in the Charles Brakesfield Building at the Mid-South Fairgrounds. MAGS will be judging the Earth Science projects on Tuesday, February 28th. The fair is closed to the public on judging day. The fair is open for viewing on Wednesday, March 1st with an awards ceremony scheduled for Tuesday, March 7th in the Christian Brothers University Theatre. If you would like to represent MAGS as an Earth Science Project Judge on Tuesday, February 28th, please call me at 853-3603 or email rockclub@earthlink.net.

Special Field Trip in February

ALAN PARKS: Marvin Berwind of the TN Division of Geology has agreed to take us on a field trip to see the meteorite impact structure at Wells Creek near Waverly TN, which has been scheduled for February 25, 2006. We discussed a meeting time of 9:00 to 9:30 (we are talking about a 3.5 hour drive). The trip will focus on geology and will include several stops to observe the deformations caused by the impact. He feels optimistic that the land owner will allow us to collect specimens at ground zero of the impact. More details of this trip will be available at the February membership meeting. All MAGS members are invited to attend, but you must get your name on the list.

December 2005 Board Meeting Notes

SUSAN THOM: The MAGS board of directors met on December 1, 2005 at the Blue Plate Café, 5469 Poplar Avenue, presided by WC McDaniel, who opened the meeting at 6:30pm. In attendance were: Mike, Sherri and Kelly Baldwin, James Butchko, Nancy Folden, Sherida Helms, Idajeane Jordan, WC and Cornelia McDaniel, Park and Terri Noyes, Raynee Randolph, Susan Thom and Lou White.

- (01) **Treasurer's Report** presented by Cornelia McDaniel
- (02) **Old Business:** (a) Christmas party-club will provide meat, cutlery, cups, plates, decorations, etc. Nancy will decorate the "mantel". Idajeane will make punch. Park will bring "wood" for fireplace; (b) TV cart has been purchased. Needs to be assembled; (c) Waiver, Liability and Indemnity Agreement form will be added to new member packets. Effective 01.06 all members must sign waiver to attend field trips; (d) Auction proceeds to be distributed 60% to Don Green Fund, 20% General Fund, and 20% Library Fund.
- (03) **New Business:** (a) President must appoint, with approval of the board, a new director (Asst Programs). Roger Van Cleef passed away on Nov. 16; (b) \$250 donation from club/show funds to Harrison Co. Gem and

Mineral Society, Gulfport, MS, to help them rebuild lapidary workshop, following loss due to Hurricane Katrina. Challenge issued to other federation clubs to match our donation.

- (04) **Field Trip Report** presented by Lou White. No field trip in December.
- (05) **Sunshine Report** presented by Mike Baldwin: Our sympathy goes out to the family of Roger Van Cleef, who passed away on Nov. 16, 2005.
- (06) **Membership Report** presented by Cornelia McDaniel: Three family applications accepted: Jessie Bridges and Ryan, Kali and Wendy Winter, and John, Marcy and Alexa Kaitlyn Quелlette.
- (07) **Membership Report** presented by Cornelia McDaniel: Ed Underhill is returning from Iraq. One new membership application—Stan and Anne Laulederkind.
- (08) **Planning for 2006** presented by WC McDaniel: Board is open to suggestions for possible fieldtrip sites. More displays are encouraged. President or Asst Programs Director to pass out awards on meeting night for display winners. Display prizes could be purchased to the Rock Show.

Meeting adjourned at 7:50pm.

December 2005 Membership Meeting Notes

SUSAN THOM: The MAGS membership meeting was held at Shady Grove Presbyterian Church on December 9, 2005, presided by president WC McDaniel.

There were 59 members and 2 visitors—Jerry Burchfield and Mary Enders.

- (01) Gift swap participants need to sign gift swap sheet to participate.
- (02) Membership dues are now due.
- (03) Information and Entry forms for Wild Acres and William Holland are available in library, non-refundable deposit is higher this year.
- (04) Field trip waivers to sign were introduced.
- (05) DMC field trip to collect fossil leaves on January 28—details at Jan. meeting
- (06) Harrison Co. Gem and Mineral Society lost everything. Our club donated \$250 to them.
- (07) SFMS Junior of the Year winners announced. Karen Schaeffer awarded Certificate of Participation and a mineral specimen; Rhena South awarded Junior of the Year for 2nd year, received a certificate and a crystal specimen.
- (08) Kelly Baldwin sang O Holy Night for our entertainment.
- (09) 2005 Display Winners announced and gifts awarded.
- (10) Door Prizes awarded to Lauren Schaeffer and David Helms.
- (11) Everyone got to enjoy the delicious food, fellowship and gift exchange.

Meeting adjourned at 9:30 pm.

Welcome New Members

- [01] Jennifer Baldwin • 367 North Main Street • Collierville, TN 38017
jbaldwin@memphis.edu • 901-853-3603
- [02] Richard, Lorraine, Parker and Nathan Bradford • 290 Quinn Road •
Collierville, TN 38017 • lb1@netzero.com • 901.861.2294
- [03] Gary and Leisa Law • 90 Brewer Lane • Counce, TN 38326 •
cte98087@centurytel.net • 731.689.3684
- [04] Tom and Kathryn Miller • 2041 St. Paul Road • Millington, TN 38053 •
chance@bigriver.net • 901.876.3355
- [05] Dan and Barbara Reed • 4728 Dillon Road • Walls, MS 38680 •
DREED1009@midsouth.rr.com • 662.781.9299

The Mid-Atlantic Ridge from page one

The ridge ranges from one to three km (0.6 to 2 mi) above the ocean bottom. Discovery of this ridge in the 1950s led to the theory of seafloor spreading and acceptance of the theory of continental drift.

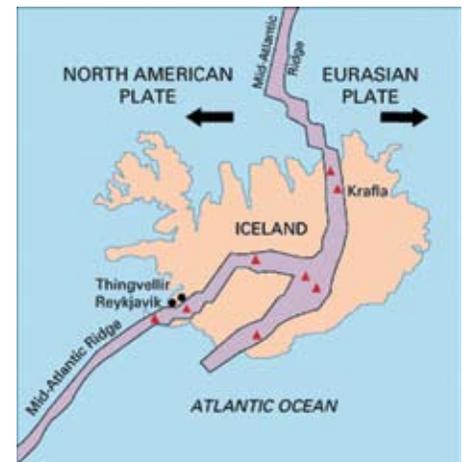
Seafloor spreading is an integral part of the theory of plate tectonics, and is the process by which continental drift occurs. Seafloor spreading starts as a rift in a continental landmass. The process starts with heating at the base of the continental crust, which causes the crust to become more elastic and less dense. Because less dense objects rise in relation to more dense ones, the area being heated becomes a broad dome. As the crust bows upward, fractures occur that gradually grow into rifts. A typical rift system consists of three rift arms at approximately 120 degree angles. Ridges form along the arms of the rift system and as a continental break-up develops, one of the three spreading ridges typically fails or stops spreading. The Mississippi embayment (which includes the New Madrid Seismic Zone) is an example of an ancient breakup.

Scientists have a fairly good understanding of how plates move and how such movements relate to earthquake activity. Most movement occurs along narrow zones between plates where the forces are most evident. Divergent boundaries occur along spreading centers where plates are moving apart and new crust is being formed by the upward push of magma. The Mid-Atlantic Ridge is perhaps the best-known and most-researched divergent boundary. From the Arctic Ocean, the Mid-Atlantic Ridge continues south to Bouvet Island, beyond the southern tip of Africa. The highest peaks of the ridge

extend above the watermark to form islands. The Atlantic has relatively few islands, with the greatest concentration found in the Caribbean region. Most of the islands are structurally part of the continents, such as the British Isles, Falkland Islands, Canary Islands, and Newfoundland. Exposed tops of the Mid-Atlantic Ridge account for Iceland, the Azores, the islands of Cape Verde, Ascension, the South Sandwich Islands, the West Indies, and Bermuda. The Bahamas are low coral islands that sit on the Blake Plateau, while the Madeiras are high volcanic islands.

The Mid-Atlantic Ridge separates the North American Plate from the Eurasian Plate in the North Atlantic, and the South American plate from the African Plate in the South Atlantic. The ridge actually sits on top of a progressive bulge, the mid-Atlantic rise, which runs the entire length of the Atlantic Ocean. The ridge rests on the highest point of the linear bulge. This bulge was most likely caused by upward convective forces in the asthenosphere pushing the oceanic crust and lithosphere. The asthenosphere is a zone of the Earth's mantle composed of several hundred kilometers of rock which lies beneath the lithosphere. The lithosphere is defined as the outer part of the Earth, consisting of the crust and upper mantle, approximately 100 km (62 miles) thick.

Consequences of plate movement along the Mid-Atlantic Ridge are easy to see around Krafla Volcano, in northeastern Iceland. In this area, ground cracks widen and new ones appear every few months. Many of these rifting (surface cracking) events are accompanied by volcanic activity. The map pictured here shows the Mid-Atlantic Ridge splitting Iceland and



The Mid-Atlantic Ridge splits Iceland
Photo courtesy of USGS

separating the North American and Eurasian Plates. The map also shows Reykjavik, the capital of Iceland, the Thingvellir area, and the locations of some of Iceland's active volcanoes (represented by triangles), including Krafla.

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The main purpose of Memphis Archaeological and Geological Society is to promote and advance the knowledge of the Lapidary Sciences in the mining, identification, cutting, polishing and mounting of gems, minerals and fossils to the utmost of our geological and lapidary capabilities.

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AFMS NEWSLETTER AWARDS:

New Editor 7th-95 • Small Bulletin Honorable Mention-04 • Adult Article 10th-04 • Junior Article 3rd-98; 8th-03 • Special Pub 4th-03

SFMS NEWSLETTER AWARDS:

New Editor 1st-86; 2nd-88, 97 • New Editor (Explorer) 4th-03 • Certificate of Excellence-89, 90, 91, 92, 93 • Large Bulletin 1st-87 • Small Bulletin 1st-04, 4th-03 • Special Publication 2nd-03 • Art 77, 80, 81, 82, 86 • Junior Article 1st-03 • Adult Article 2nd- 89, 90, 04; 3rd-92; 4th-85, 04; 5th-91, 03; 6th-87; 8th-04; Honorable Mention-03, 04

DUES: \$20 (Family); \$16 (Single); \$8 (Junior)

FEBRUARY 2006

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

- Feb 02 6:30P MAGS Board Meeting - Blue Plate Café, 5469 Poplar Avenue
- Feb 10 7:30P MAGS Membership Meeting - Shady Grove Presbyterian Church, 5535 Shady Grove Road • Bring displays and refreshments • Adult Program: Center for Earthquake Research • see page 5 Youth Program: Mine Games and Activities • see page 7
- Feb 11 9:00A DMC Field Trip - Hogg Mine, Troup Co., GA • see page 6
- Feb 11-12 1:00P "Behind the Scenes at the Pink Palace" with Ron Brister • see page 3
- Feb 18 TBA MAGS Field Trip - Nonconnah Creek, Memphis, TN • see page 4
- Feb 25 9:00A MAGS Field Trip - Wells Station, Waverly, TN • see pages 4 and 7



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