



Volume 57 ◊ Number 02 ◊ February 2011 ◊ A monthly newsletter for and by the members of MAGS

Origin of decapod remains (crabs, lobsters, etc.) occurring in the “nodular layer” of the Upper Cretaceous Coon Creek beds at Blue Springs, Mississippi

George Phillips, george.phillips@mmns.state.ms.us

George Phillips is Paleontology Curator at the Mississippi Museum of Natural Science in Jackson.



Figure 1. Blue Springs Fossil Site Location

The remains of possibly two dozen species of decapod (lobsters, crabs, ghost shrimp, etc.) may be found at many levels of the outcropping sandy clay beds in John Young’s borrow pit at Blue Springs, Mississippi (Figures 1, 2). The entire sequence of sediments

exposed in the borrow pit belongs to the Coon Creek beds, or Coon Creek Formation (in Tennessee), also known as the Coon Creek Member of the Ripley Formation (in Mississippi). The richest layer, with respect to decapod remains and *Continued, P. 3*

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Have you paid your 2011 dues?

	Family	\$25
	Single	\$20
	Junior	\$10

AN INVITATION FROM GEORGE PHILLIPS

George Phillips, Paleontology Curator at the Mississippi Museum of Natural Science in Jackson, will present the adult program at the February 11 Membership Meeting. He has issued an invitation to the MAGS readership/membership to bring their Blue Springs fossils to the meeting if anyone has anything they



need identifying. This is an excellent opportunity to have those specimens identified by an expert. Blue Springs is a particularly rich site, and MAGSters can find (and have found) a variety of Upper Cretaceous fossils there. If you aren’t sure just what you’ve found, let George give you some authoritative information.

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GREETINGS FROM THE PREZ

Well, here I am sitting beside myself thinking that it is time to get serious about the Show. Of course not, we cannot have a Show without rocks. So let's get serious about collecting rocks. Just do as I have always done. Any extras can be dropped off in W. C.'s driveway. He doesn't have to be home. Also, sign up to help. Don't do as I do and just show up; W. C. is organized.

That is all I have to say.

The Prez

P. S.: Due to circumstances beyond Cornelia's control we are in need of a Treasurer. If anyone is interested please call 937-8522 or 491-9508 ASAP.



Meeting Programs

February: "The Upper Cretaceous Fossil History of Mississippi," presented by George Phillips, Paleontology Curator at the Mississippi Museum of Natural Science in Jackson.

March: "Geology of the Wells Creek Impact Structure," presented by Ron Clendenning, Geologist, Tennessee Department of Environment and Conservation, Division of Geology, Nashville.

Go Online

Mike Baldwin, MAGS Webmaster

Visit MAGS on the web at <http://www.memphisgeology.org> and while you're online, here are three additional resources you might find helpful.

Check out our closest club relative, the North Mississippi Gem and Mineral Society, at <http://nmgms.brighidsforge.com/>

For the latest news about Dixie Mineral Council trips and events visit <http://www.gamineral.org/dmc.htm>

And for news from the Georgia Mineral Society visit <http://www.gamineral.org>

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vertebrate fossils, is the “crab nodule layer,” or simply “nodular layer.” Figure 2 shows four points in the John Young borrow pit where my volunteer team took measurements in order to correlate the various layers across the pit, which resulted in the table

cally smaller objects are carried away by current, whether that current is in a stream or on the sea floor. Think of the Blue Springs “nodular layer” (aka “the crab zone”) as originally like the lower, thicker, softer, clayier beds, which contain the same types of deca-

ogy or ambient sediment chemistry.

Where net deposition of fine-grained sediment is occurring, the seafloor is typically loose and unconsolidated, so that when net erosion occurs, due to longshore currents, sea level rise/fall, tidal effects, fluctuating freshet, etc., and sediment is removed, the larger, denser objects remain while finer sediment—clay, silt, comminuted plants fragments, fine sand—is transported away, thus concentrating the denser and typically coarser fraction into a thinner layer, which at Blue Springs consists of shells, crab/lobster nodules, and bone fragments. The original decapod concretions have then become nodules as the latter term is defined as something that has moved from its original emplacement, or, in the case of an entombed crab carcasse, location of death. The concretions form from postmortem bacterial action in a clay matrix and in the absence of oxygen, a condition that creates a halo of hardening phosphate (fluorapatite), carbonate (siderite), sulfide (pyrite), oxides, and even sulfate (gypsum) around the decapod carcass. There are “softer,” poorly preserved crabs in the clay beds outside of (mainly below) the “nodular layer,” and they represent the original locations where crabs died, before the concretions were concentrated into nodular lags. Actually, the crabs in the nodular zone may not have travelled very far at all, at least horizontally, from their original place of death, it’s just that the finer, more easily mobilized sediment was removed from around the concretions, such

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Figure 2. The John Young borrow pit at Blue Springs, Mississippi. The numbers represent locations of measured sections diagrammed in Figure 3.

illustrated in Figure 3 (next page).

The nodular layer at the Blue Springs site was created by sedimentary winnowing of, or fine sediment removal from, the floor of an old estuary or possibly even back-barrier lagoon, leaving debris to “lag behind.” This debris, or lag, included shells, crab nodules, shark teeth, broken bones, etc. Lag is a general term for denser objects that remain, or resist transport, as less dense and typi-

pod, most simply not as well-preserved and thus more difficult to recover. The lags are derived from these thicker sedimentary layers, which contain hard decapod concretions disseminated throughout, though not as densely populated as in the resulting lag. In the lower beds at Blue Springs, the concretions are not as lithified as the nodules, most likely due to a greater susceptibility to leaching due to slightly different mineral-

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Club and Show Cards Available

Memphis Archaeological and Geological Society
Established 1951, chartered 1957
www.memphisgeology.org
(901) 274-7706
Meets at 7:30 P. M. on the second Friday of each month at Shady Grove Presbyterian Church, 5530 Shady Grove Road, Memphis

MAGS is a 501(c)(3) organization

MAGS MISSION
Promote an active interest in geology & archaeology
Resource to public for information in these fields
Cooperate with professional scientists

MEMBERSHIP & ACTIVITIES
Open to any family, individual adult, or youth
Monthly meetings with club business, separate adult and junior programs, displays, & more
Monthly field trips
Newsletter & website
Annual Memphis Mineral, Fossil, & Jewelry Show

COMMUNITY SERVICE
Part of Show proceeds donated to Ronald McDonald House Charities
Monetary support to educational institutions; presentations to schools
Cooperative efforts with Memphis Botanic Garden
Partner with Shelby County in developing Nonconnah Greenbelt Trail

Card Front

Colorful Two-Sided Cards

There are many occasions when MAGS members need a way to pass information about their club and Show to the community. We also need a way to get information easily to prospective members.

Carol and Matthew Lybanon designed the new club and Show cards shown on this page. We ordered a lot of them, so feel free to use them to promote our club, as well as the annual Memphis Mineral, Fossil, & Jewelry Show. You can pick up copies at any meeting,

or by contacting any Board Member.

The cards are two-sided with a glossy finish on both sides. Side 1 gives information about the club, and side 2 highlights all that the Show has to offer.

The long-awaited new MAGS business cards are here too, and you can get some in the same way you can get these cards. Help spread the word!

Memphis Mineral, Fossil, & Jewelry Show
MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY PRESENTS
The Earth Wide Open
www.theearthwideopen.com
4th weekend in April since 1980
Agricenter International
Memphis, Tennessee

MAGS donates a portion of the Show's proceeds each year to the Ronald McDonald House Charities of Memphis.

The Show has over 30 high-quality dealers, displays, demonstrations, lectures, and a popular kids area. It is an exhibition and forum for educational experiences that involve the earth sciences, lapidary arts, and archaeology.

ROCK FOOD TABLE
EDUCATION & DEMOS
FOSSILS
JEWELRY
MINERALS
KIDS AREA
Free Show admission for Scouts in uniform

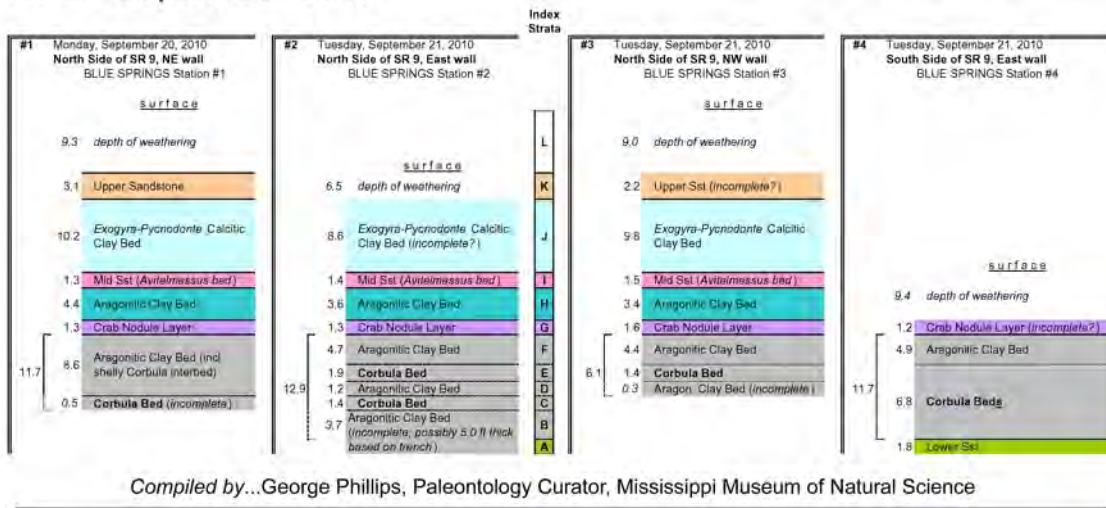
Card Back



Wouldn't you like to see pictures of your kids or grandkids in the newsletter? Did you find a cool specimen? Send pictures of anything that would be of interest to MAGS members to lybanon@earthlink.net. I can handle just about any image format. Of course, high-quality images will look better than pictures you took with your phone.

Blue Springs Measured Sections
20-21 September 2010

Measurements by George Phillips, Rosanne Horn,
Peter Kuchirka, Joy Rushing & Carol Baird



Compiled by...George Phillips, Paleontology Curator, Mississippi Museum of Natural Science

Figure 3. Measured sections at the John Young borrow pit corresponding to numbered stations in Figure 2.

ing the re-exposure period, and many exhibit erosion from transport (winnowing). Again, at this point we use the term nodule because the concretions have been transported, or concentrated into a lag. [Understandably, the lay community

that their vertical movement may be equally great. Clays are very sticky and not easily removed once they've been deposited, however, there is enough organic detritus (primarily comminuted plant fragments) and bacterial films in the clay to allow it to be easily remobilized (and thus less sticky), thus leaving a lag of larger, denser objects.

The progression in summary—from dead crab to concretion to nodule (in five steps):

(1) Crabs died and became entombed in a sea bottom experiencing a steady input of sediment.

(2) A microbial decomposition zone, or halo, formed around the carcasses in the absence of oxygen, and this "shell" hardens relatively quickly, forming a concretion, thus protecting the crab carcass from complete decomposition.

(3) The entombed crab carcass was uncovered because shoreline changes, whatever they may be, resulted in sediment removal from that part of the estuary. A possible scenario is a rip-tide occurring (or at least initially dominating at that location) during a net marine transgression, or sea level rise. [Note: Erosion occurring during a transgression, or sea level rise, seems almost counterintuitive, but the key word is "net" transgression.]

(4) Many shells, crabs/lobsters in concretions, bones, and other debris lie exposed briefly on the sea bottom. During this re-exposure period, any of these objects will be colonized by oysters, bryozoans, or other encrusting animals while exposed on the seafloor. At least 5% of the Blue Springs nodules we've recovered (all nodules, not just the ones containing crabs) have evidence of something attached to them dur-

ing the re-exposure period, and many exhibit erosion from transport (winnowing). Again, at this point we use the term nodule because the concretions have been transported, or concentrated into a lag. [Understandably, the lay community may use "concretion" and "nodule" interchangeably, but remember that scientists (or specialists in any field) use terms with specific definitions in mind.]

(5) However, net deposition resumed in this part of the Blue Springs estuary, with the ensuing transgression (sea level rise), which resulted in reburial of the fossil crab nodules, shells, bones, etc. into a lag, that is—the nodular layer.

There is another crab-bearing layer called the "middle sandstone," or Avitelmessus bed (Figure 3). Like the crabs and crab-bearing concretions in the softer clays below the crab nodule layer, the large muffin crabs (*Avitelmessus grapsoides*) are both not as well-preserved (or not as mineralogically stable) as in the nodular layer and were buried where they died. Preservation is different in this zone, too, the

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Avitelmessus crabs still bearing a degraded form of their chitinous exoskeleton, even original coloration. Unfortunately, however, these crabs are best observed and recovered only during active quarrying, when the sediment is very freshly exposed.

So, when you're digging crabs out of the nodular zone at Blue Springs, or even picking them up loose in the scree*, remember, the crabs and lobsters and other fossils didn't actually die right there, but were transported by currents and concentrated by winnowing, along with other similarly dense objects, into a condensed layer called a lag. Most fossil beds in our area are formed in this manner, more or less. We tend to think of fossils occurring due to fortuitous burial; however, intervening or even simultaneous episodes of sediment subtraction (erosion) is required to concentrate fossils into thinner, fossil-rich beds, like lags.

*Scree – Loose, weathered, unconsolidated sediment on a slope that has moved down-slope from its original position.

Juniors Program

Carol Lybanon, Youth Director

The January program started our year off with a rubber stamp project. In February the University of Memphis Egyptology Graduate Student Association will present a program on "Hieroglyphs: More than just pictures." (Photos from February 2010.)



George Phillips will be the presenter for the adults in February. He asked that we bring in Blue Springs fossils to be identified, so Juniors, if you have any fossils you found at Blue Springs and you don't know what you found, here is your chance to talk with someone who can tell you what you have.

In March Herb Nicholson will talk to us about "Rocks." Juniors, if you bring in a written definition for Plutonic Rocks you may win a prize! Who will be the winner?

Our April program will be part of our Mineral, Fossil, & Jewelry Show. Look forward to programs on magnetism, arrowheads, dinosaurs, and fern fossils.



Looking for volunteers

Use your knowledge and experience to help make the Junior program a success. Offer to present a program for MAGS Juniors. Your choice of subject. Call Carol Lybanon at (901) 757-2144, or email sgcarol@earthlink.net.

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Memphis Mineral, Fossil, & Jewelry Show

April 23-24, 2011

Memphis Archaeological and Geological Society presents the 32nd Annual Memphis Mineral, Fossil, & Jewelry Show

For one weekend a year we invite you to experience

THE EARTH WIDE OPEN

Agricenter International, 7777 Walnut Grove Road, Memphis

Sat. April 23, 9—6 Sun. April 24, 10—5

Adults \$5, 12 & under \$2, scouts in uniform free

Portion of admission benefits the Ronald McDonald House Charities® of Memphis

- 30 Dealers from Across the U.S.
- High Quality Minerals and Fossils, Lapidary Arts, Gems, Hand-crafted Jewelry, Beads, Petrified Wood, Geodes, Crystals, Rock Art, Carvings!
- Earth Science & Archaeology Educational Exhibits & Live How-to Demonstrations.
- Professional Speaker series featuring geological, archeological, and paleontological topics.
- A Grand Prize and Several Door Prize.
- Featuring the RockZone Family Entertainment Area with Gem Dig, "Rocks Around the Clock", Panning for Gems, Paint a Pet-Rock by our partners at the Memphis Botanic Garden, Scouts' Geology Merit Badge info and More!

www.TheEarthWideOpen.com • 901-274-7706

Many volunteers are needed to make our Show successful. MAGS Members, please plan to volunteer.

Scenes From Recent MAGS Meetings



Lots of good food at the December holiday party.

Guy Weaver presented the adult program in January.



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	<p>Dixie Mineral Council Field Trips The Southeast Federation of Mineralogical Societies, Inc</p> <p>DMC Program of the SFMS Field Trip Committee - Copyright © All rights reserved.</p>	
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An Official Field Trip of The Rome Georgia Mineral Society, Rome GA (HOST)
An Official Field Trip of the (enter your associated club's name here!)

9:00 AM EST

Saturday, February 26, 2011

Durham Mines, Walker County, Georgia

**Pennsylvanian Age Plant Fossils
Rockcastle Formation**

The Durham Mines are Georgia's best locality for beautifully preserved Paleozoic plant fossils. Commonly referred to as 'Fern Fossils', but more accurately described as "Coal Fossils", the site offers a wide variety of species: Lycopods such as *Lepidodendron*; giant horsetails such as *Calamites* (and its leaves known as *Annularia*); and seed ferns such as *Pecopteris* and *Alethopteris*. You can occasionally find fossilized seeds. For identification purposes, we will provide a sheet to get you started, but any good fossil book will be useful as well when you get home.

The fossils are found by splitting the abundant shale at the site. Most will yield twigs and bark, but with persistence you will find good leaves.

Date: February 26, 2011

Time: 9:00 AM EST – 4:00 PM EST

Meet: At the site, on Durham Rd. in Walker Co., Ga. This is in the NW corner of the state of Georgia.

430 Durham Rd, Rising Fawn, GA 30738

Directions: From Lafayette, Ga. follow GA Hwy. 136 West for 20 miles, to GA. Hwy 157. Turn right, going North on GA Hwy. 157 for 6.0 miles. Durham Rd. will be on the left. Turn left on Durham Rd. The mines and the parking area are .50 (1/2) mile on the right. Drive time from the intersection of US27 and GA 136 West in Lafayette, is approximately 30 minutes. If you are getting to Lafayette from I-75 at Exit # 320, Hwy 136, allow 1 hour and 10 minutes to the site from that exit. From Atlanta, at the intersection of I-285 and I-75 North, allow 2.50 hours total, using GA 136 Exit #320.

Tools: Bring digging tools. A flat chisel and hammer are essential. A small cart or hand truck may be useful for hauling larger pieces of take home material.

Other: Also, bring lunch and fluids. This is a good site for children. Any pets **MUST** be on a leash at all times.

This field trip will be postponed if there are any winter weather advisories; watches, or warnings, issued for Walker Co., GA, 24 hours in advance of the trip. Make up date would be the following Saturday.

Lodging: There are many hotels located in Chattanooga, TN, or off many of the exits on I-75 in Georgia. The following are names and numbers for a few, located in Dalton, GA.

Hampton Inn - (706) 226-4333 Jameson Inn - (706) 281-1880

Courtyard Marriott - (706) 275-7215

Contact: Jeff Deere, Rome Ga. Mineral Society Field Chair - H (770) 386-5447, C (770) 655-2298
wjdeere@comcast.net or jeff.deere@brownind.com

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December 2010 Board Meeting Minutes, Carol and Matthew Lybanon.

The MAGS Board of Directors met December 2 at Old Timers Restaurant, 7918 C Street, Millington. The meeting was called to order at 6:40 P. M. Present were: Mike Baldwin, Robert Duncan, Doris Jones, Carol Lybanon, Matthew Lybanon, Neville Mayfield, W. C. McDaniel, Marc Mueller, Nannett McDougal-Dykes, and Lou White. Excused: Ron Brister, Alan Schaeffer, and Paul Sides.

Secretary: The November minutes were approved as submitted.

Treasurer: The November Treasurer's Report was approved, subject to audit.

Membership: Neville Mayfield reported there was one new membership. W. C. McDaniel gave Neville another application and one membership renewal. Neville gave his new address and telephone number to Mike Baldwin, to put into the newsletter.

Field Trips: Marc Mueller reminded the Board that the December field trip will go to Richardson Landing, Drummonds, Tennessee, if the river level is low enough. There is a possibility of an alternate site, the defunct town of Randolph. Participants will meet at the Popeye's in Millington. Marc suggested scheduling a later trip to the Randolph site.

Adult Programs: No report.

Junior Programs: No report.

Show: W. C. McDaniel said there will be no Show Committee meeting in December. Signed contracts are coming in. The rate seems to be a little slower this year. C&N Rocks is replacing a dealer that opted out.

Library: No report.

Newsletter: Mike Baldwin needs more material for the December newsletter. He is composing an editor's message. Also, he would like details of the holiday party to include in the newsletter.

Webmaster: No report.

Historian/Rock Swap: No report.

Plans for the holiday party were discussed. Nannett McDougal-Dykes will purchase the turkey and ham. W. C. McDaniel already bought plates and napkins. Pam Gurley will get tablecloths. Board Members should bring cold canned drinks. Carol Lybanon recommended there should be information about the gift exchange in the newsletter article about the party. We always need help setting up and tearing down. The table decorations (stained glass ornaments) will be given away as door prizes.

Old Business: There has been no further action on the club/Show postcards.

New Business: W. C. McDaniel said he wants to make sure the transition to the new Board and officers goes smoothly. Carol Lybanon mentioned that one of the new Secretary's (Marc Mueller) first jobs will be to fill out the SFMS information form.

Also, the new Secretary needs to get copies of the Constitution & Bylaws

and the Standing Rules. Carol will send Marc a list of what needs to be done. W. C. thanked Board Members for serving for the past two years. Robert Duncan, who is leaving the Board, said a goodbye to the Board.

The meeting was adjourned at 7:15 P. M.

December 2010 Membership Meeting Minutes, Carol and Matthew Lybanon.

The MAGS Membership Meeting was held at Shady Grove Presbyterian Church on December 10. The meeting was called to order at 7:30 P. M. 60 Members and 4 visitors were present. The visitors are Darlene & Rachel Reese. Patricia Allen, and Tyranny Smith.

W. C. McDaniel mentioned that Membership Chair Neville Mayfield is collecting 2011 dues tonight. Neville recognized the visitors. Nannett McDougal-Dykes presented the Nominating Committee's nomination of Lou White to be President starting in 2011. The membership elected Lou to the position. W. C. outlined the adult gift exchange. The club is providing gifts for juniors. He said that the table decorations would be given away as door prizes, and thanked Carol Lybanon for making the decorations.

The business meeting was adjourned at 7:40 P. M., and Members and guests went on to the holiday party.

February Field Trip

February 12, Luxapallila Creek Site Columbus, Mississippi (1 hour south of Tupelo, 3 hour drive from Memphis). Meet 10:00 A. M. at Palmer Home Thrift Store at 2608 East Main Street, Columbus, MS (the Thrift Store is open 8-5).

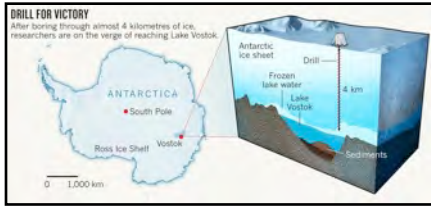
Cretaceous deposit: Full of shark teeth, shark vertebrae, ray teeth, coprolite, bony fish teeth and vertebrae, gar scales. Hadrosaur teeth have been found there as well.

Bring lunch, water and hat. Tools: Screwdriver, trowel, buckets, screen box (carpenter cloth size mesh).

Trip Leader: George Phillips, Paleontology Curator, Mississippi Museum of Natural Science, mobile (601) 672-9606. MAGS Trip Leader: Marc Mueller, (615) 491-5110.

Breaking News: Lake Vostok

A Russian drilling team is



working to drill through the Antarctic ice sheet to reach a lake that has been sealed off from the world for 14 million years. Lake Vostok, which is 4 km below the surface, is unique in that it's been completely isolated from 150 other subglacial lakes on the continent. The chance of sampling one of the last uncharted environments on Earth excites researchers. Many are

thrilled by the possibility of discovering evidence of unique life forms. The ambitious project, launched more than 20 years ago, has been repeatedly delayed by technical glitches and funding problems. But in January the team resumed drilling at a depth of 3,650 m, probably just 20-40 m from the lake's surface. If they reach their goal, lake water samples will be analyzed for genetic material. But time is short. If the team can't reach the lake by February 6, when the last aircraft of the summer research season is due to leave the Vostok research station, they will have to wait until December to continue.

Calendar

February 3

Board Meeting, St. Clare Room, St. Francis Hospital, 6:30 P.M.

February 11

Membership Meeting, Shady Grove Presbyterian Church, 7:30 P.M.

Adult Program: "The Upper Cretaceous Fossil History of Mississippi"

Junior Program: "Hieroglyphs: More than just pictures"

February 12

Field trip, Luxapallila Creek Site, Columbus, Mississippi, 10:00 A.M.

April 23-24

2011 Memphis Mineral, Fossil, & Jewelry Show, Agricenter International

Memphis Archaeological and Geological Society
2019 Littlemore Drive
Memphis, TN 38016

