



Volume 64 ♦ Number 02 ♦ February 2018 ♦ A monthly newsletter for and by the members of MAGS

February Program and More

Treasure Hunting, Globetrotting, History, and the Show



Former MAGS President Lou White will present the February program, "Treasure Hunting." Lou has talked before about the things that can be found in the local area: rocks, minerals, fossils, antiques, old bottles, Civil War relics—things a prospector would look for.

This talk is based on quite a few years of collecting.

The March program will be the program that was originally scheduled for the January meeting, which was canceled because of the threat of dangerous winter weather. *Continued P. 3*

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BE INVOLVED—IT'S MORE FUN

Look for email invitations from SignUp Genius. Every Member with email has received an invitation to volunteer for the Memphis Mineral, Fossil, and Jewelry Show. We hope every Member will consider signing up.

We need volunteers for Friday, Saturday, Sunday, and Monday (April 27-30).



CAROL LYBANON

The shifts are set up in two-hour blocks; please sign up for more than one shift.

If you don't have email or are having a problem signing up, call Carol [(901) 757-2144]. **We need every Member to support the Show, so please volunteer.**

MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

MAGS Rockhound News ◊ A monthly newsletter for and by the members of MAGS

2017-2018 MAGS BOARD

President—Charles Hill

1070 Park Swain Road, Grand Junction, TN 38039
◊ (901) 626-4232 ◊ hunter3006@aol.com

1st VP (Field Trips)—James Butchko

4220 Dunn, Memphis, TN 38111 ◊ (901) 743-0058 ◊
butch513@yahoo.com

2nd VP (Adult Programs)—W. C. McDaniel

2038 Central Avenue, Memphis, TN 38104 ◊ (901)
274-7706 ◊ w.c.mcd@att.net

Secretary—Mike Baldwin

367 North Main Street, Collierville, TN 38017 ◊
(901) 853-3603 ◊ mbaldwin05@gmail.com

Treasurer—Bonnie Cooper

8695 Baylor Road, Arlington, TN 38002 ◊ (901) 444-
0967 ◊ rocks4us@hotmail.com

Director (Asst. Field Trips)—Kim Hill

4755 Royal Elm Cove, Memphis, TN 38128 ◊ (901)
388-7572 ◊ earthsis@aol.com

Director (Asst. Adult Programs)—Dave Clarke ◊

456 North White Station Road, Memphis TN 38117
◊ (901) 308-0334 ◊ dclarke@fieldmuseum.org

Director (Youth Programs)—Open

Director (Asst. Youth Programs)—Open

Director (Librarian)—Leah Gloyd

2151 Dogwood Creek Court, Apartment 202, Col-
lierville, TN 38017 ◊ (270) 847-3170 ◊
leahgloyd@outlook.com

Director (Asst. Librarian)—Jane Brandon

4384 Castle Avenue, Memphis, TN 38122 ◊ (901)
374-0366 ◊ jjbrandon@yahoo.com

Director (Membership Services)—Bob Cooper

8695 Baylor Road, Arlington, TN 38002 ◊ (901)
444-0967 ◊ rocks4us@hotmail.com

Director (Historian)—Carol Lybanon

2019 Littlemore Drive. Memphis, TN 38016 ◊ (901)
757-2144 ◊ sgcarol@earthlink.net

Newsletter Editor—Matthew Lybanon

2019 Littlemore Drive. Memphis, TN 38016 ◊ (901)
757-2144 ◊ lybanon@earthlink.net

Webmaster—Mike Baldwin

367 North Main Street, Collierville, TN 38017 ◊
(901) 853-3603 ◊ mbaldwin05@gmail.com

Show Chairman—James Butchko

4220 Dunn, Memphis, TN 38111 ◊ (901) 743-0058 ◊
butch513@yahoo.com

Past President—W. C. McDaniel

2038 Central Avenue, Memphis, TN 38104 ◊ (901)
274-7706 ◊ w.c.mcd@att.net

MAGS AND FEDERATION NOTES

Memphis Archaeological and Geological Society, Memphis, Tennessee

The objectives of this society shall be as set out in the Charter of Incorporation issued by the State of Tennessee on September 29, 1958, as follows: for the purpose of promoting an active interest in the geological finds and data by scientific methods; to offer possible assistance to any archaeologist or geologist in the general area covered by the work and purposes of this society; to discourage commercialization of archaeology and work to its elimination and to assist in the younger members of the society; to publicize and create further public interest in the archaeological and geological field in the general area of the Mid-South and conduct means of displaying, publishing and conducting public forums for scientific and educational purposes.

MAGS General Membership Meetings and MAGS Youth Meetings are held at 7:00 P. M. on the second Friday of every month, year round. The meetings are held in the Fellowship Hall of Shady Grove Presbyterian Church, 5530 Shady Grove Road, Memphis, Tennessee.

MAGS Website: memphisgeology.org

MAGS Show Website: www.theearthwideopen.com

We aren't kidding when we say this is a newsletter for and by the members of MAGS. An article with a byline was written by a MAGS Member, unless explicitly stated otherwise. If there is no byline, the article was written or compiled by the Editor. Please contribute articles or pictures on any subject of interest to rockhounds. If it interests you it probably interests others. The 15th of the month is the deadline for next month's issue. Send material to lybanon@earthlink.net.

February DMC Field Trip

WHERE: Patty Construction Quarry, Summerville, GA

WHEN: Sunday, February 11, 9:00 A. M.-2:00 P. M.

COLLECTING: Summerville Agate

INFORMATION: Larry Landry, (251) 591-5682

Links to Federation News

- ➔ AFMS: www.amfed.org/afms_news.htm
- ➔ SFMS: www.amfed.org/sfms/
- ➔ DMC: www.amfed.org/sfms/dmc/dmc.htm

MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

MAGS Rockhound News ◊ A monthly newsletter for and by the members of MAGS

February Program and More Continued from P. 1

Technically, the program will be made up of two travelogues, but they won't be the usual overview of tourist highlights. The travelers were MAGS Members, so you know what kinds of things they looked for. The locations are Iceland (presented by Debbie and Alan Schaeffer), one of the most active volcano regions on earth, and South America (presented by Carol and Matthew Lybanon), a continent of volcanos, glaciers, beaches, mountains, penguins, and the world's biggest dinosaurs.

The April program will have two parts. Historian Carol Lybanon will present a preview of the book she is preparing for the library, that will document recent MAGS history. "15 Days to the Show" will fill out the rest of the program.



♪ New Members

Denny J. Baker
Karen and John Doherty

♪ February Birthdays

2 Peggy Davis
3 Larry Armstrong
Lupe Suarez
4 Vic Young

Anne Pinkerton
Brooklyn Coulson
Vincent Mayer
Abby Parish
Louis White
Kiri McMann
Aaron Van Alstine
Mackenzie Reed
Gary Sherman
Ben Hodge
David Vaughn
Kim Hill
Manny Childress
Bella Hill
Barbara Reed
Tyler Gilmore
Nicole Phillippo-Schultz
Adin Marker
Cheryl Yarbrough
Anna Tully
Katie Waddell
Pam Chase
Dan Schultz
Cecilia Hemme
Harrison Parks
Leigh Scott

♪ Hospitality

Thanks to all who signed up to work hospitality at the Membership Meetings. You make that part of the meeting work better.

The duties are simple:

1. Before Meeting: Arrive around 6:30. Help set up and organize tables. All items are located in a rolling cabinet.
2. Monitor snacks, drinks, ice
3. After Meeting: Clean up, put all items back in cabinet.
4. Two Members per meeting.

Here is the schedule for the next three months:

February 9: **Charles and Emily**

Hill, Christine Lemons

March 9: **Sherri Baldwin** (need one more volunteer)

April 13: **Mary Kratz** and **Cornelia McDaniel**

♪ Show Committee Meetings

Show Committee Chair Jim Butchko has reserved the Agricenter board room for the following Mondays:

- ◆ February 26
- ◆ April 2

♪ Field Trip Rescheduled

The field trip to Vulcan Quarry in Parsons, Tennessee, originally scheduled for January 20, was rescheduled because of the weather. The new date is **February 3**.

Participants will search for marine invertebrate fossils such as corals, crinoids, brachiopods, sponges and trilobites. These specimens may be found in the limestone rock matrix.

For more information contact field trip chair Jim Butchko at j.butchko@yahoo.com or (901) 692-7518.

♪ Membership

Bob Cooper
Membership Director

Those of you who have already renewed or will renew by the end of the February Membership Meeting will have a chance to win a unique specimen of calcite and pyrite. The drawing for the specimen will be held at the end of the February Meeting. You do not need to be present to win.

Fabulous Tennessee Fossils

*Dr. Michael A. Gibson,
University of Tennessee at Martin*

FTF 37

Marine Evolutionary Faunas: Part 1



There are many ways to organize a fossil collection. Fossils can be identified taxonomically and organized according to their biological groups (e.g., brachiopods, crinoids, trilobites) or perhaps by the more basic “invertebrate”, “vertebrate”, or “plant”. They can be organized by the geologic time periods during which they lived and the age of the sediment or rock from which they were collected (e.g., Devonian, Cretaceous, Miocene). Collections can also be organized by location (e.g., county or state). In this FTF installment, I want to give you another possible way to organize your collection that will provide some additional meaning to your fossils and use the opportunity to introduce you to Sepkoski Marine Evolutionary Faunas. In part 1, I will explain the concept evolutionary faunas, and then in part 2, tie the concept to Tennessee fossils.

During the 1990s, I had the great privilege to serve on the Paleontological Society national council during the time when paleontologist Jack Sepkoski (1948-1999) served as the president of the society. Sepkoski had been a graduate student in the 1980s at the University of Chicago with a focus on the evolutionary diversity patterns of marine organisms through geologic time. He cataloged family-level originations and extinctions, looking for a way to

organize the diversity of marine fossil organisms through time so he could then look for common patterns. Sepkoski built an extensive database which could be statistically analyzed for trends at multiple taxonomic levels. Several important concepts resulted from Sepkoski’s datasets that were used to address questions about diversity of extinct organisms through time, extinction impacts, and much more. Perhaps one of the most important observations from his graphs (Figure 1) is that sets of higher taxa (classes and families) seem to have similar diversification histories and can be grouped into associations of global biota that dominated different parts of geologic time. Sepkoski identified three groupings: The Cambrian Evolutionary Fauna (EF), Paleozoic EF, and the Modern EF. Each fauna has some its own specific characteristics for an extended period of geologic time, but each is related to the other by evolutionary change.

The Cambrian EF had a low diversity of types of organisms, but also had the highest rate of biodiversity “turnover” (species originate and then go extinct quickly). It was dominated by relative simple marine invertebrates that were mainly deposit feeders (ate mud) or grazed of algae (snails and trilobites). Ecologically, most were “low epifaunal/infaunal tiers”,

which means they did not burrow very deep and did not extend above the seafloor very far. Trilobites were so prevalent that that the Cambrian Period is often called the “Age of Trilobites”. While many of these groups would continue on through the rest of the Paleozoic, their diversity decreased during a series of extinctions that occurred during the late Cambrian such that they became “minor players” from that point forward.

There was an “explosion” of diversity in the Ordovician Period, called the Great Ordovician Biodiversity Event (GOBE) such that by the end of the Ordovician all phyla of marine organism that occurs today had evolved. Sepkoski erected a new evolutionary fauna to cover the rest of the Paleozoic Era—the Paleozoic Marine Evolutionary Fauna (Figure 1). The Paleozoic EF had an intermediate diversification rate (faster than Cambrian, slower than Modern) and was dominated by suspension feeding invertebrates that lived on top of the seafloor. Tiering (levels of organisms above and below the seafloor) was more complex, which provided better use of ecospace and partitioned resources, much like tall buildings in cities allow more people to live in the same space, only vertically. Many new “guilds” (ways of making a living) evolved; ecologies

Continued, P. 5

Fabulous Tennessee Fossils became much more detailed and complex. Included in this diversity are vertebrates, such as fish. In fact, the diversity of fish types was greater during the Paleozoic than today (the middle Paleozoic is called the “Age of Fish”)! The ability to make calcite hard shells evolved along with predation during this EF.

At the end of the Paleozoic Era, the “mother of all extinctions” occurred on Earth, extinguishing as much as 96% of all marine life. Sepkoski recognized that this major turnover event ended the Paleozoic EF and began

the Modern Evolutionary Fauna, so called because many of the new organisms appear “modern” to us today as they are still living. You live during this time frame. The Modern EF (Figure 1) had the slowest diversification rate, with the highest overall diversification level, and the lowest turnover rate (many of the groups trace back to the Cambrian). Many more guilds occur, including more “durophages” (organisms that can eat hard parts like shell and bone), and ecospace use is maximized (more tiering levels, more mobile fauna, deeper burrowing fauna, more ways to feed). This ocean was dominated by such familiar marine organisms as clams, snails,

cephalopods, coral, fish, sharks, whales and dolphins. But if you had been swimming during the Mesozoic, that diversity was even higher with mosasaurs, ichthyosaurs, and ammonites in the oceans.

Now look more closely at Figure 1. There are some other important “central tendencies” shared by all of Sepkoski’s EF which makes the concept a powerful tool for paleontologists to explain the biodiversity history of ancient oceans. First, notice that all of the marine groups tended to diversify together, as indicated by the smoothly increasing slope of the overall graph. Next notice

Continued, P. 7

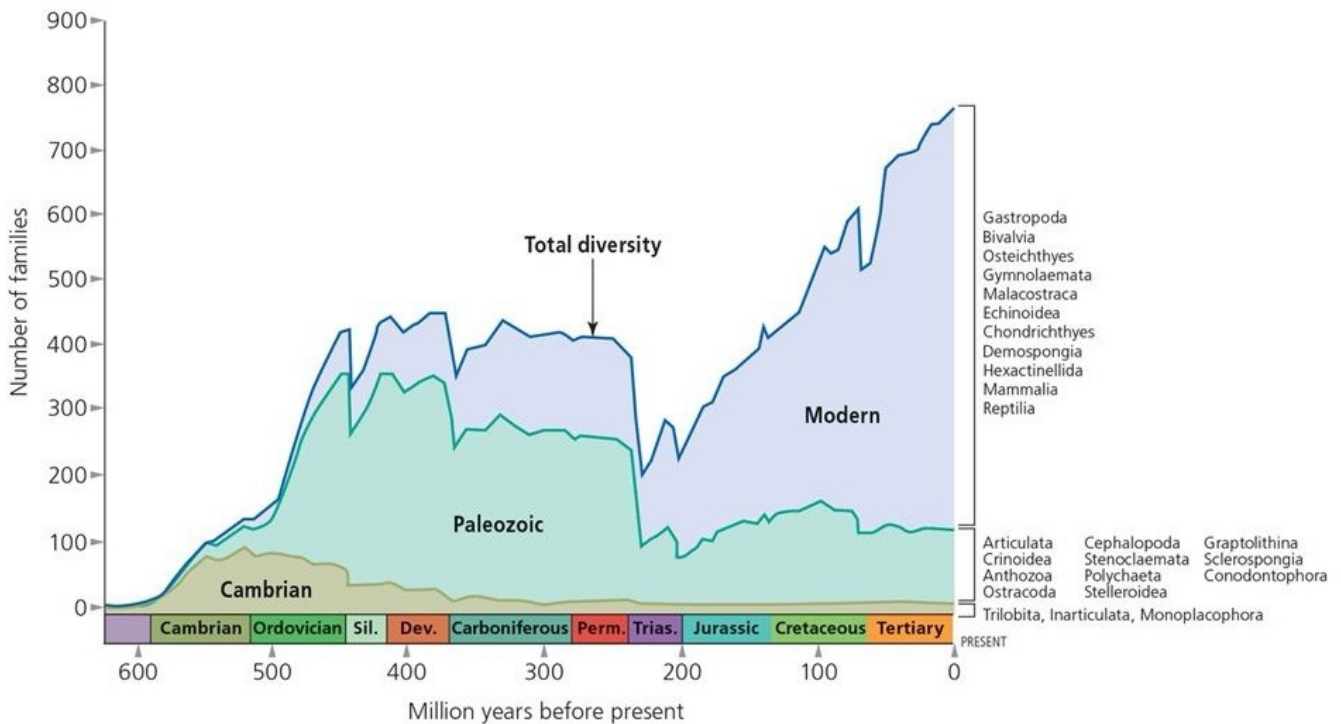


Figure 1. One of many Sepkoski Marine Evolutionary Fauna diagrams (<http://slideplayer.com/slide/9332756/28/images/6/Three+evolutionary+faunas.jpg>). The geologic time scale is shown along the bottom margin. Note all three EF begin at about the same time geologically and replace each other successively with extinction that allow some part of the EF to continue on at a reduced diversity. Note that each EF replaces the previous at a higher diversity.

Fabulous Tennessee Fossils that nearly all three
Continued from P. 5 EF begin

at the junction of the Ediacaran-Cambrian-Ordovician periods, meaning much of the diversity change is due to one EF succeeding the other (kind of like playing “King of the Hill”) and have their own “heyday” punctuated by a global extinction event. Each EF also diversified at a slower rate than previous EF (thus dominate later in time), but displaces the previous fauna with a higher level of diversity. In the next article, I will explain how we can use Sepkoski’s EF concept to organize our own fossil collections so that they are not only aesthetically pleasing, but also reflect the three grand divisions of Tennessee visible in our flag.

The Weight of Climate Change

Matthew Lybanon, Editor

All the water on the Earth today is all the water that has ever existed on the planet, but not all water is in its liquid form. Some of it is ice. Many of the world’s glaciers are shrinking because of climate change, and the water level in the global ocean is rising as a result. But there is another effect that was recently recognized.

Melting ice increases the total ocean mass and, on average, causes the ocean bottom to subside elastically. In other words, so much extra water is being added into the world’s oceans from melting glaciers that the ocean floor is sinking underneath its increasing weight. This ocean floor deformation also means we have miscalculated just

how much ocean levels are rising and the problem could be far worse than previously believed.

This is both good news and bad news. The actual sea level rise may be greater than previously thought (the bad news), but the threat of coastal zone flooding may be less because the ocean floor is lowering (the good news). Or is it good news? It may not be so good because the sea floor lowering also leads to some lowering of the Earth’s crust in coastal areas; the ocean bottom and the land are connected. So the flooding in coastal areas could be greater than expected—not less—due to the net sea level rise.

Scientists know that Earth’s crust is elastic. Earlier research revealed how Earth’s surface warps in response to tidal movements that redistribute masses of water, and Hurricane Harvey dumped so much water on Texas that the ground dropped 2 cm.

In the new investigation, a team led by geoscientist Thomas Frederikse from the Delft University of Technology in the Netherlands evaluated how much the shape of the ocean bottom may have changed between 1993 and 2014, taking into account the amount of water added to the ocean from liquid formerly locked up on land as ice. Previous research into seafloor stretching had omitted that extra water. They reviewed approximations of mass loss on land, as ice melted and drained into the oceans, and compared that to estimates of sea volume changes. They found that around the world for two decades, ocean basins deformed an average

of 0.1 mm per year, with a total deformation of 2 mm.

2 mm may seem trivial, but ocean covers 70% of the Earth’s surface, so that corresponds to a very large quantity of additional water. The amount of sag in certain parts of the ocean bottom could be significantly higher, as much as 1 mm per year in the Arctic Ocean, for a total of 20 mm, the study authors reported.

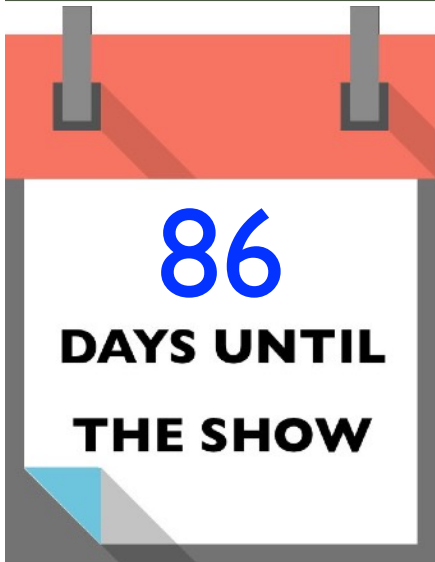
Satellite-borne altimeters can measure changes in sea level (Lybanon, M., C.H. Johnson, P. Pistek, and R.L. Crout, 1990: Operational Altimeter-Derived Oceanographic Information: The NOR-DA GEOSAT Ocean Applications Program. *J. Atmos. Oceanic Technol.*, 7, 357–376, [https://doi.org/10.1175/1520-0426\(1990\)007<0357:OADOIT>2.0.CO;2](https://doi.org/10.1175/1520-0426(1990)007<0357:OADOIT>2.0.CO;2)), but can’t see that the bottom is sinking. So satellite assessments of sea-level change could be underestimating the amount that seas are rising by 8 percent, according to the study. We can expect future evaluations of the effect of glacier melt to take elastic seafloor deformation into account.

This YouTube video has more details: <https://www.youtube.com/watch?v=v2AAYZG7dqu>.

Ref: Frederikse, T., Riva, R. E. M., & King, M. A. (2017). *Ocean bottom deformation due to present-day mass redistribution and its impact on sea level observations*. *Geophysical Research Letters*, 44. <https://doi.org/10.1002/2017GL075419>

We need you to sign up for the Show. See P. I for details.





Letter From Florida
Nannett McDougal-Dykes



It was a wonderful DMC trip in Florida at the Vulcan Limestone Mine in Brooksville. Fifty people showed up to dig, from all over. I found amazing items: sand dollars, sea urchins, and assorted shells. I cannot wait to get back home and start slowly picking through the pieces I brought back.



December Board Minutes

Mike Baldwin

Called to order 6:30. Present: Charles Hill, Bob Cooper, Bonnie Cooper, Mike Baldwin, Carol Lybanon, Matthew Lybanon, Kim Hill, James Butchko, W. C. McDaniel, David Clarke.

Secretary: Minutes were delivered to Board Members via email and hard copies were distributed and reviewed tonight. November minutes approved with corrections.

Treasurer: Financial summaries were delivered to Board Members electronically. Bonnie informed Members that we still need to go the bank and take care of signature responsibilities. She passed the list of Board Members to be sent to SFMS around for review and approval. SFMS has MAGS listed as having 236 members, including 117 junior members. Bonnie passed the Certificate of Insurance form around for review. Six months of rent will be paid to the church in the next few weeks. Charles will deliver a donation check to the Ronald McDonald House tomorrow.

Membership: No new Members since the last Board Meeting. Bonnie sent out a renewal email to the membership. Another will be sent out this month. Bob will collect dues at the holiday party next week. All who have renewed their membership prior to the end of the January membership meeting will be entered in a drawing for a calcite specimen.

Historian: We are finished with rock swaps for this year. Carol is working on a pictorial history of MAGS, and will be making a historical video of MAGS events to show at the April meeting.

Newsletter: Please send Matthew material for the newsletter.

Web: The website home page, calendar and newsletter pages have been updated with December news and event information.

Programs: This month's program will be the Holiday Party. January program will be a trip around the world with the Lybanons and the Schaeffers. March program will be all about amber. The April program will be preparations for the Show.

Field Trips: The December 9 trip will be to Crow Creek. January 20 will be to Parsons. James is considering a trip to Missouri in late March or early April. W. C. will confirm the details. Carol needs more little pieces of druse quartz for gem trees. Kim Hill warned Board Members to be careful at Richardson's Landing during this time of year. It is hunting season.

Show: Show notecards have arrived. Mike will take 50 or so to pass out at the Montgomery Gem and Mineral Show tomorrow. He took some photos of the door prize. There will be new security at the Show this year. We cannot get into the Agricenter on Thursday this year, so set-up will all be done on Friday. Break-down will be on Monday, as usual.

Old Business:

- Holiday party: Information will go out in the newsletter tomorrow. We will set up 12 tables and 90+ chairs. W. C. has the holiday gifts and will bag them up this week. He also has the door prizes and the bingo game. We may need a few more bingo prizes. It would be nice to have the microphone for announcements, prize distribution and bingo directions. Charles will bring a couple of cases of drinks. Debbie Schaeffer will bring a couple of coolers.
- Safety vests: Discussion followed about the style and cost of vests. They will be checked out by Members on field trips. We need a tote or backpack to store and carry them.
- T-shirt check-in: Still looking for art to use on the shirts.

New Business: Our contract with the Agricenter runs out after next year's *Continued, P. 8*

December Board Minutes Show. Carol mentioned that the core group of Members that put the show together is getting older and there aren't that many younger people involved in the lifting and putting the show together. We could adjust the Show according to the number of laborers we have. The gem dig is a labor-intensive part of the Show. A motion was passed to lock in a 3-year contract with the Agricenter. Adjourned 7:30.

December Meeting Minutes
Mike Baldwin

All the preparations for the Holiday Party were in place well before the starting time of 7:00. Thank you to all the people who helped make the party a success: those who helped set up, those who helped clean up afterwards, those who coordinated the party and those who helped with all the decorations, the tables and table-top trees, the door prizes, the display winner prizes, the games and entertainment, the Member gifts, the entrees and drinks, all the Members who brought food to share, the four visitors, and a special thank you to all the attendees for the fellowship and good time. Over 100 people attended this year's party [the best attendance in several years]. 103 Holiday Gifts were given out. 39 door prize winner names were drawn.

Jewelry Bench Tips by
Brad Smith

MOBILE FLEXSHAFT STAND

A handy mobile stand for your flexshaft can be made easily and quickly from the base of an old

swivel office chair. You can find these chairs being thrown out at office buildings and schools. I just asked the custodian in my building to set one aside for me.

To separate the chair from the wheeled base, simply remove the spring clip from the center bottom. I use a small screwdriver or a pair of pliers.

To make the stand, you'll need two pieces of threaded galvanized steel pipe and a pipe fitting from a hardware store. The first length of pipe is 3/4 inch diameter to fit the hole in most chair bases. The second piece is a length of less expensive 1/2 inch pipe.

The total length of the two pipes should be five feet. I used a two foot length of 3/4 pipe and a three foot length of 1/2 pipe. They are joined together by a pipe fitting called a 3/4 to 1/2 reducing coupler.



LOCAL METALS SOURCE

Local companies that use sheet metal typically have barrels of scrap copper, brass and aluminum sheet that they save for recycling. The shop owner/manager will usually let you go through it to select the shapes and thicknesses you want. Prices vary but will generally be close to the wholesale per-pound scrap value. For me at this time, that's \$3 per pound for copper.

I've found it's much cheaper to buy metal this way than ordering from a catalog. There are no shipping charges, and you'll be supporting a local small business in your community.

Remember to bring your work gloves if you try this. Also useful is a thickness gauge. When I asked if they had any 14 gauge, they didn't know. Turns out they measure the thickness of copper by its weight per square foot.

Learn New Jewelry Skills With Brad's How-To-Do-It Books
amazon.com/author/bradfordsmith.

Show Update
February 2014
W. C. McDaniel

- All dealer spaces for the Show have been sold. We will have only one new dealer this year, Johnbe Crystals of Mount Ida, Arkansas.
- Members are requested and encouraged to mark off the dates of April 27-29. We need lots of help, volunteers and work. Support your club. Please note we will not be able *Continued, P. 9*

Show Update February 2014
Continued from P. 8

to move in and set up on Thursday. WE DO IT ALL ON FRIDAY April 27, PLUS EAT.

- Exhibits and demonstrators invitations have been issued. If you would like to exhibit/demonstrate at the Show please let us know.
- Donations for the Rockzone and Grab Bags are encouraged and really needed. Please note these activities are very popular with our attendees and produce good and necessary income.
- Sometime in the few weeks will have a grab bag packing event at the shed. Get ready.
- 5000 postcards have been printed and available for distribution; they will be available at all Membership Meetings. Promote the Show by distributing them all over town and out of town.

Robert Connolly Update

Matthew Lybanon, Editor

Former MAGS Member Dr. Robert Connolly may have retired from his position of Director of the C. H. Nash Museum at Chalissa and moved to New Orleans, but he's keeping busy. He and his student Elizabeth Cruzado Carranza (now in a Ph. D. program at Louisiana State University) are actively involved in archaeology. Their work centers in the Casma Valley of Peru.

MAGS is familiar with Elie (as



Elizabeth Cruzado is called). "You Only Love What You Know" was the title of the program she presented at the February 2015 MAGS Membership Meeting.

Participate In The Casma 2018 Field Season: Two types of projects will be available based on individual student interest—Archaeological Fieldwork and Museum Studies. In addition to the regular curriculum of archaeological field and museum study activities, highlights for the field season include:

- Visits to archaeological sites and museums in both the Casma Valley and in the Peruvian capital of Lima.
- Launching of a cultural heritage preservation/anti-looting campaign in Casma.
- The historic signing of a five-year strategic plan between Culture and Community in Casma and the Nivín community leaders and educators that will guide future research.

The projects are co-directed by Elizabeth Cruzado Carranza

and Robert Connolly through Louisiana State University, Baton Rouge. Course credit may be arranged at a student's home institution under the supervision of Dr. Connolly. The content and timeframe of each session is ideal for internship, independent study, or field school credit hours.

Reporting on Casma Valley




Research: Robert and Elie presented an invited paper at the Society for Historical Archaeology Conference, which was held in New Orleans January 3-6, 2018. The paper, "Evaluating Co-Creative Cultural Heritage Projects in Rural Communities Ancash, Peru," is available online: <https://www.academia.edu/35610550/Evaluating-Co-Creative-Cultural-Heritage-Projects-in-Rural-Communities-Ancash-Peru>. Robert and Elizabeth will report on co-creation as a tool for community engagement in Nivín at an invited session of the April 2018 Society for American Archaeology meeting. Elizabeth will be a plenary speaker at the Oklahoma Archaeology Conference in March of 2018, and she and Robert continue international publishing projects on work in the Casma Valley.

For more information, or to subscribe to their newsletter, email cccasmaperu@gmail.com.



MAGS At A Glance

February 2018

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
28	29	30	31	1 Board Meeting, 6:30 pm, St. Francis Hospital	2	3 MAGS Field Trip, Vulcan Quarry, Parsons, TN
4	5	6	7	8	9 Membership Meeting, 7:00 pm, prize drawing, "Treasure Hunting"	10
11 DMC Field Trip, Patty Construction Quarry, Summerville, GA	12	13 	14 	15	16	17
18	19 	20	21	22	23	24
25	26	27	28	1	2	3

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

