

The RASA Project

November Program

Josh Anderson, MAGS Secretary



Josh Anderson sampling charcoal for radiocarbon dating 2004. Wadi Sana, Yemen.

The rugged highlands of southern Yemen are one of the less archaeologically explored regions of the Near East. Yemen is located along the southern end of the Arabian Peninsula and borders

Saudi Arabia to the north and Oman to the northeast. This article introduces a research expedition to Yemen I embarked on in 2004 as part of the Roots of Agriculture in Southern *Continued, P. 3*

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NICE FIND, DAVID

MAGS Member David New found this pristine early archaic (Early Holocene, ~9,500 B.P.) Kirk Corner Notch point while hunting in a creek in Marshall County, Mississippi. The Kirk Corner Notch point is a medium to large (1.5 to 4 inches) triangular corner notched point with a flattened to elliptical cross section. It's named for the Kirk family who owned the property of the type site, in Stanly County, North Carolina (near Charlotte).



MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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

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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 Membership Meetings are at 7:00 P. M. on the second Friday of each month May-October, and 10:00 A.M. on Saturday after the second Friday November-April. 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: <https://earthwideopen.wixsite.com/rocks>



Please contribute articles or pictures on any subject of interest to rockhounds. The 20th of the month is the deadline for next month's issue. Send material to lybanon@earthlink.net.

Go to <https://www.southeastfed.org/sfms-field-trips/dmc-field-trip-program> for the DMC field trip schedule and other information.

Links to Federation News

- ➔ AFMS: www.amfed.org/afms_news.htm
- ➔ SFMS: <https://www.southeastfed.org/>

The RASA Project Arabia (RASA) *Continued from P. 1* Project. The goals of this article and associated presentation are to briefly review the main objectives of the RASA Project, to summarize my geoarchaeological research contributions to this project, and to highlight my adventures as a young geologist in ancient southern Yemen. This trip was an amazing experience and I hope to convey to you some interesting stories intertwined with the experience of doing fieldwork halfway around the world in a land foreign to anything I had ever seen.

First, let me summarize the RASA Project main research objectives and then I'll discuss my contributions to the research. Headed by archaeologist Joy McCorrison and geologist Eric Oches, the RASA Project is a NSF-funded cooperative archaeological research project to explore interactions of humans with the environment and the origins of agriculture in southern Arabia. This multi-year project analyzed human activities in the context of changing environmental conditions during the early to middle Holocene, ~10ka to 5ka B.P. Climate models and proxy data indicate that climate along the southern Arabian Peninsula changed from a moist phase, spanning the early to middle Holocene, to an arid phase, which persisted for the last ca. 5,000 years. Abundant archaeological evidence suggests that agriculture was much more widespread and evolved alongside the development of irrigation technologies during the wetter early Holocene. The archaeologi-

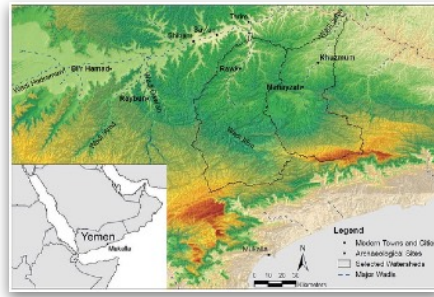


Figure 1: Map of Wadi Hadramawt system including Wadi Idim and Wadi Sana.

cal record is represented by numerous water management structures, possible ritualistic sites, housing structures, and a diversity of other archaeological remains throughout the study area.

What were the local and regional paleoenvironments of the time? My research focused specifically on this question. I was tasked with studying the local paleohydrologic and geomorphic response to regional climate change in a river valley system known as Wadi Hadramawt (Figure 1). The term, wadi, is an Arabic word that means a stream that is usually dry except during the rainy season. Satellite imagery and previous RASA fieldwork indicated to our team that an ca. 125km north-flowing tributary, Wadi Sana, of the Hadramawt system contained fluvial deposits suitable for analysis for our research. These fluvial deposits consist of remnant silt terraces, “wadi silts,” and active gravel channels (Figure 2). A smaller tributary, to Wadi Sana, Wadi Idim, was also analyzed due to the existence of springs and tufa deposits. Tufas are fossilized spring deposits. My field expedition aimed to discern how and when the wadi silts and active channel gravels deposited along the studied reach that holds the



Figure 2: Middle Wadi Sana research area containing active channel gravels and remnant wadi silt terraces.

archaeological record. My awesome colleagues sampled the tufa deposits.

In order to reconstruct the paleohydrologic and geomorphic response to Holocene climate change in the RASA study region, we carried out a survey of sedimentary sections exposed by wadi incision, measured geomorphic transects across wadi sections, sampled materials for radiocarbon and luminescence dating, and mapped lacustrine sediments and tufa deposits at representative localities in the upper and middle basin of Wadi Sana, at the confluence of Wadi Shumlya with Wadi Sana, and in the middle reach of Wadi Idim.

What were our findings? Using differential-corrected GPS-based survey, combined with analysis of the sedimentary record, we developed a paleohydrologic reconstruction of Wadi Sana in order to provide a context for understanding how fluvial landscapes, hydrologic regime, and human activity reacted to changing middle Holocene climate. Radiocarbon and luminescence dating of remnant silt terraces suggests that fine-grained sediment in the wadis began accumulating on an older (late-Pleistocene)

Continued, P. 4

The RASA Project coarse cobble surface between 12,000 and 7,000 years ago and continued aggrading until about 5,000 years ago (Figure 3). Paralleling the climate shift, Wadi Sana began incising and eroding the thick sediment infilling about 5000 years ago, which has continued to the present time. In addition to the geochronological reconstruction of the wadi silt deposits, field reconnaissance and map analysis reveals structural and lithologic controls on the source and availability of these fluvial sediments for downstream deposition during the late Pleistocene and Holocene. A conceptual model was developed to describe the mechanism of wadi silt fluvial deposition during the wetter phase of the early Holocene.

In summary, we propose that a change in hydrologic regime, driven by regional climate shift, is the cause of the middle Holocene channel adjustment from an aggradational to incising mode in Wadi Sana. The changing conditions decreased groundwater recharge, decreased water table elevation, and caused a rapid drying of spring-fed wetlands and shallow lakes in Wadi Sana and Wadi Idim. Only small, isolated remnants of once expansive springs provide water for irrigated agriculture and settlements in a few discrete locations in upper Wadi Sana and Wadi Idim today. Archaeological records indicate that once the highland wadis dried, human population and associated agricultural processes decreased.



Figure 3: Natural exposure in Wadi Sana showing Holocene wadi silts overlying late Pleistocene gravel terrace sediments.

A final report was compiled on RASA's research and is being donated to the Memphis Archaeological and Geological Society for those who may like to further their understanding of this research. *Landscape History of Hadramawt: The Roots of Agriculture in Southern Arabia (RASA) Project 1998-2008*, published in 2020 by the Cotsen Institute of Archaeology Press at UCLA, was awarded the 2022 Anna Marguerite McCann Award for Fieldwork Reports.

President's Message

2024 MAGS DUES

Before baking your turkey or opening your holiday gifts, the most important thing you need to do is to renew your 2024 MAGS dues. It is as simple as the following steps:

1. Pay your dues at the November 11 or December 9 Membership Meeting.
2. Mail your membership dues to:

Bonnie Cooper
8695 Baylor Rd.
Arlington, TN 38002

3. 2024 Dues
 - Family \$25.00
 - Single \$15.00
 - Junior \$8.00 (requires MAGS adult member to sponsor)
- ◆ **When paying be sure you update all current information.**

YOUR DUES PAY

1. Rent for Membership Meetings.
2. Rent for storage for the library carts.
3. Federation insurance and dues.
4. Holiday Party.
5. Holiday gifts.
6. Door Prizes.
7. Meeting and miscellaneous expenses.
8. Special events such as rock swaps, field trips, and special trips.

W. C.

NOT From The MAGS Cookbook

W.C. McDaniel



Amethyst Pie

Ingredients include quartz, iron, and trace elements. Cooked at around 900° for

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*NOT From The MAGS Cookbook
Continued from P. 4*

about 135 million years. Cool before cracking. Overcooking may result in yellow/reddish color sometimes referred to as citrine.

A Really Good Book

Matthew Lybanon

The Columbia Engineering Alumni Association awards the Thomas Egleston Medal for distinguished engineering achievement annually. Thomas Egleston was a scientist who moved from chemistry to geology and mining engineering. He founded the School of Mines of Columbia College in 1864, the first of its kind in the United States. Subsequently, the School of Mines became the Columbia University School of Engineering and Applied Science. Thomas Egleston continued his association with the School of Mines as its dean and a professor until 1900. Egleston published numerous lectures and books on metallurgy.

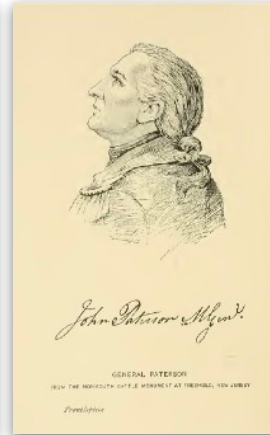
Egleston seems like someone who would interest rockhounds, but this article isn't about him. Thomas Egleston was the great-grandson of a man who was important in founding the United States of America: John Paterson, a general in the (U.S.) revolutionary army. Among other things, General Paterson was Commander of West Point 1778-1781, and his army fought many battles with the British. But this article isn't about Paterson either—not entirely, anyway. It's more about a person with more than one identity.

Robert Shurtliff (sometimes

spelled Shurtlieff) enlisted as a private in 1781, under General Paterson's command. But Robert Shurtliff was actually Deborah Samson (or Sampson, which may be the preferred spelling). Deborah Samson was the only woman definitely known to have masqueraded as a man to fight for the colonists in the Revolutionary War. She was the first woman to serve in combat for the U.S. military.

Samson was a descendent of people who came over on the Mayflower, but her family wasn't wealthy. When she was around eight or nine, she became an indentured servant to Jeremiah Thomas of Middleborough, Massachusetts. She lived in his home for 10 years helping with housework and in the field harvesting crops. Then she volunteered for the army. For a time she (as Private Shurtliff) was General Paterson's aide-de-camp, a position that usually went to an officer.

Later in life she embarked on a lecture tour, recounting her experiences as a soldier. She may have been the first woman to give public lectures in the U.S. Eventually she was awarded a pension for her service in the army, in part due to a letter written to Congress by her friend Paul Revere (then, as now, it helped to have friends in high places).



THE LIFE OF JOHN PATERSON, MAJOR-GENERAL IN THE REVOLUTIONARY ARMY BY HIS GREAT-GRAND-SON

THOMAS EGLESTON, LL.D., available online from the Library of Congress, gives the historical details. (The LOC also has other material about Deborah Sampson.). Here's an excerpt:

Early in May, 1781, General Paterson received under his authority a soldier who turned out to be a woman, Deborah Sampson, who enlisted as a man in Captain Webb's company in Colonel Shepard's regiment, under the name of Robert Shurtliff. Her height was recorded by the proper officer as 5 feet, 7½ inches; eyes hazel, inclining to blue. She enlisted in Worcester in company with a large number of other recruits. At West Point her civilian suit was exchanged for the Continental uniform, which was a blue coat, faced with white, a white vest, breeches, stockings with black straps about the knees, half-boots, black stock made of velvet stiffened with leather, a cap with a variegated cockade on one side, a white plume tipped with red on the other, and a white sash about the crown. She was furnished with a French fuse and bayonet, knapsack, cartridge-box, and twenty cartridges.

That's the historical record.

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Fabulous Tennessee Fossils

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

FTF 105

Tom Phillips—Paleobotanist



I want to share with you another person who had their paleontological roots from a Tennessee school, UT Knoxville, and then went on to become a luminary in the field of paleontology. In this case I will also highlight the branch of paleontology that most people would not associate with Tennessee, which is paleobotany—the study of fossil plants. In Tennessee, paleobotanical studies are somewhat limited due to the overwhelming “marine” nature of our fossil record; however, Tennessee has had several episodes of terrestrialization throughout its geohistory. There are, of course, marine plants that we can include (such as the abundant dasyclad algae from the Ordovician units of the Valley and Ridge and Central Basin) but fossilized terrestrial plants from Tennessee are predominantly restricted to a few occurrences. There are rare reports of plant microfossils spanning the Ordovician through Devonian in the Early to Middle Paleozoic, but these are mostly pollen and spores washed into marine sediments. Many of Tennessee’s paleobotanical studies were conducted by paleobotanists with interests in the Quaternary Period climate change record in Tennessee (e.g., Paul and Hazel Delcourt from UTK) and the ecological history of the Smoky Mountains. The Delcourts (I will profile them later) produced many graduate students that used some macrofossil plants, but most-

ly pollen studies (that branch of paleobotany is called palynology) in their work. More recently, the paleontologists at the Gray Fossil Site have delved into the paleobotanical record (both macrofossil plants and palynology) preserved in that sinkhole deposit from the Miocene. Dave Dilcher (Indiana University and University of Florida), and his students, conducted a career-long span of studies in the Eocene clay pits of West Tennessee (See FTF 32 & 64); arguably the second most productive area of paleobotany for Tennessee (e.g., Dave and I mentored a UT Martin graduate student, Roger Moore, on fossil plants from the Claiborne Formation of West Tennessee). But the oldest abundant plant fossils in Tennessee come from the “coal measures” of the Cumberland Plateau region and the correlative strata on ridge-tops of the Valley and Ridge or Short Mountain. These are Pennsylvanian age “coal swamp” deposits that formed along the flooded coastal areas of the rising Appalachian Mountains.

University of Illinois Urbana Champaign’s Dr. Tommy Lee Phillips (Dec. 6, 1931–July 14, 2018) was a paleobotanist who obtained his interest in and some of his basic botany training at the University of Tennessee Knoxville under the tutelage of Dr. Ed Clebsch (who later served on my PhD committee) in botany and Mac

MacLaughlin in geology. Tom was born (1931) and spent his youth in the mountains of East Tennessee near Kingsport. He attended Tennessee Western Junior College (1951; now Tennessee Wesleyan in Athens, Tennessee) and then transferred to UT Knoxville. His interest in paleobotany began when he attended UTK from 1953–1957, at a time when the teaching of evolution was still banned in Tennessee (a legacy of the famous Scopes “Monkey” Trial that would not change until the 1960s). Tom was interested in the evolution debate and desired to study plants as a way to test evolutionary concepts. At UTK, Tom earned a major in science education (B.A., 1953) and after his military service returned to major in botany (B.S.) and minor in geology (1957). During his undergraduate days, Tom wanted to identify a taxon of plant that he could trace throughout geologic time. As noted above, his undergraduate training was interrupted by the Korean War where Tom served as an intelligence officer from 1953–1955 (he even interviewed Werner von Braun). Tom was a classmate, and then a student, of Robert MacLaughlin, who would complete his graduate research in Eocene of plants of West Tennessee (more on that later) in 1957 and subsequently became the paleontologist at UT Knoxville. The role of plants in evolution was emphasized to Tom by Dr. Mac when *Continued, P. 7*

Fabulous Tennessee Fossils Mac
Continued from P. 6 taught a course of his own design called “Geological History of Land Organisms”, which Tom took. This course surveyed the geological history and development of terrestrial biota and ecosystems with special emphasis on fossil record of land plants and vertebrates. Dr. Mac, through his graduate students’ research, would go on to amass a large collection of coal balls that eventually was given to Tom when Mac retired in 1987 (my Auburn University advisor Bob Gastaldo and Tom Phillips drove to Knoxville to transfer the specimens in 1987 while I was still a graduate student at UTK).

Upon graduating from UTK in 1957, Tom worked as an intern in the great paleobotanist James Schopf’s U.S.G.S. coal lab until 1959, where he honed his skills. He also began his graduate training at Washington University in St. Louis under great paleobotanist Professor Henry Andrews where his research focused on the genus *Botryopteris* preserved mostly in coal balls. Tom completed both his M.S. degree (1959) and his Ph.D. (1961) from WashU. Coal balls are a type of concretion that formed in coal swamps when dissolved



Figure 1. Tommy Lee Phillips (1931-2018)—Paleobotanist whose early paleobotany training occurred at Tennessee Western Junior College and the University of Tennessee at Knoxville.

carbonate in the waters prevents peat from coalifying. Calcite forms instead as a cement and “permineralizes” the coal. Coal balls preserve an amazing record of cellular structure in coal swamp plants. It is here that Tom will make his professional mark by amassing an extensive coal ball collection from around the world. Upon finishing his degree, Tom becomes a professor of botany at the University of Illinois Urbana where he remained until his retirement in the late 1980s.

It is an understatement to assert that Tom Phillips was a luminary giant in the paleobotany

world. He trained some of the great paleobotanists of today, such as Bill DiMichele (Smithsonian Institution), Karl Niklas (Cornell), and Richard Winston (U.S.G.S.), just to name a couple. His work was instrumental in unraveling the evolutionary history of lycopsid ferns, especially the fine cellular details preserved in his beloved coal balls. Which leads to his most lasting legacy, the over 40,000 coal balls (and acetate peels of them)—arguably the largest collection in the world—that now resides at the university. Tom is credited with inventing the discipline of coal ball paleoecology. Tom was a Korean War vet who traveled the world as part of his work, including being as a honored scientist in the Soviet Union (which also led to Tom being a part of the U.S. intelligence community for a while), chaired the Department of Botany at the University of Illinois Urbana, was inducted into the National Academy of Sciences, and the recipient of numerous awards over his career, including a career award from Tennessee Wesleyan. Clearly, paleobotany has strong roots in Tennessee (sorry for the pun), and we now count the late Tom Lee Phillips as a Tennessee paleontology luminary.

A Really Good Book There’s another version of the story in *A Girl Called Samson: A Novel* by Amy Harmon, published Apr 1, 2023, and (of course) available from Amazon.

It’s a novel, not just a history book. Harmon bent the truth a

little for literary purposes, but all the important historical stuff is there as well. And she makes a good case for her version of why Deborah Samson made herself into a soldier. She uses a series of letters as a plot device with tremendous skill. The letters reveal a lot about what Samson/

Shurtliff (at least according to Amy Harmon) was thinking and feeling. And (Deborah Samson was a young woman, and this is a novel) there’s even a romance.

The story has a few twists, and each time the author makes the right choice for the outcome. The characters (almost *Continued, P. 8*

MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

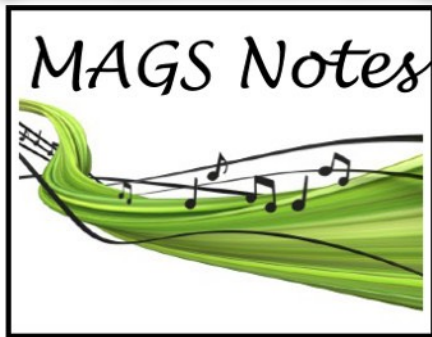
MAGS Rockhound News ♦ A monthly newsletter for and by the members of MAGS

A Really Good Book all real people)
Continue from P. 5 are believable
and likable.

This book would be worth reading if it was pure fiction, but it's even better because it's much more than that.

We've all heard the old saying, "Truth is stranger than fiction" (like many other good observations, it's due to Mark Twain). This book is proof. You probably think that I'm recommending this book. If your library doesn't have it, you can get it this way: [link to Amazon](#).

Personal note: At first I just thought this was an exceptionally good book. Then I discovered that it tells a slightly fictionalized (not the important events) version of an amazing true story. What's more, there's a direct connection from one of the key figures in American mining engineering and metallurgy to a Revolutionary War general, and through the general to his most unusual soldier. Who expected that?



Adult Programs

November 11: Josh Anderson, The RASA Project

December 9: Holiday Party

Junior Programs

November 11: Building things with rocks

December 9: Holiday Party

Field Trips

November: Creek Collecting, TBA

December: No field trip scheduled

Schedules change. Contact field trip chair Jim Butchko for the latest information.

November Birthdays

- 1 W.C. McDaniel
- 8 Josh Anderson
- 13 Matthew Lambert
- 14 Robin Brown
Logan Tucker
- 16 Chris Scott
- 17 Gabriella Wrasse
- 18 Cathie Jacobs
- 19 Kim Duran
Nina Riding
- 20 Will Kitkowski
- 21 Tabitha Lambert
- 22 Melba Cole
- 23 James Brown
Shirley Ruth Chrisman
- 25 Gloria Klauser
- 27 Dylan George
- 28 Diane Donahue
Alan Parks
- 29 McLain Walls
Nedra Baum
Eve Webster
- 30 Robert Neill

September Board Minutes

Josh Anderson

Zoom Board Meeting called to order 6:34 pm. Present: W.C. McDaniel, Christine McManus, Joshua Anderson, Nannett McDougal-Dykes, Melissa Koontz, Jim Butchko, Matthew Lybanon, Bonnie Cooper.

Secretary: Minutes submitted via email, presented and approved.

Treasurer: Report approved.

Membership: One renewal.

Field Trips: Jim will continue to help with trips the rest of the year as he can. If you would like to lead a trip, let W.C. know. Out of town/overnight trips are reimbursed by MAGS up to \$100 for expenses. September, Richardson Landing. October, Geodes, Dale Hollow. November, Creek Collecting, TBA; maybe Jim Hill w/ Sugar Creek.

Youth Programs: September, Painting Tiles. October, Lapping & Learning. November, Rock Sculptures.

Library: Two new books coming for youth section.

Editor: Requests for photos and material for newsletter.

Rock Swaps: September, Labor Day Rock Swap/Sale-Lou White.

Adult Programs: September, Jimmy O'Neil, Mineral Trip to South Africa. October, Lapping and learning w/ MAGS. November, Josh Anderson, A Geologist's Trip to Ancient Yemen.

Show: Contract signed with the Agricenter for 2024 Show. We will be located in West Pavilion, Section B, and partial Section A. New contact coming for Agricenter.

New Business:

1. Help with Fluorescence Frenzy Exhibit MOSH.
2. Help with Memphis Botanic Gardens Holiday Exhibit.
3. Metal Museum Class Options introduced to Board. W.C. will continue to advise.

- Larger groups recommend Scratch Block Workshop \$35/person.
- Less expensive option Copper Rose making \$10/person.

4. Searching for someone who can teach wire wrapping to a group

Old Business: None.

Adjourned 7:02 pm.

MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

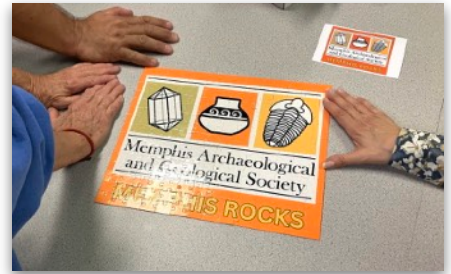
MAGS Rockhound News ♦ A monthly newsletter for and by the members of MAGS

October Was A Busy Month

October 13: Membership Meeting



Tour De Rocks, Guided By MAGS Members



October 15: Rock Swap



At the home of
Cornelia & W.C. McDaniel



Last rock swap
of 2023

October 28: Halloween Hike

MAGS was invited to be
a "learning opportunity" ...




... at this
Memphis Botanic
Garden event



MAGS At A Glance

November 2023

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
29	30	31	1	2	3	4
				Zoom Board Meeting, 6:30 P.M.		
5	6	7	8	9	10	11
						Membership Meeting, "The RASA Project," 10:00 A.M./ DMC Field Trip
12	13	14	15	16	17	18
19	20	21	22	23	24	25
						
26	27	28	29	30	1	2

Memphis Archaeological and Geological Society
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