The Paleo Times

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Rick Poropat, Editor

President's Corner

Hi all,

I hope you all enjoyed the March party. Thank you to everyone for bringing the food and the silent auction items. I hope to see you at the April meeting for our rescheduled speaker (see program info and bio). In May or June we will plan to schedule our annual fossil prep party at my house. There are also a couple of field trips in the works.

Abby

Fossil of the Month

The fossil of the month is the trilobite, *Calymene* sp., from the Middle Silurian Bob Formation of Central Tennessee. This enrolled specimen was found by John Stade a couple of years ago and is one of only two currently known (by the editor) to exist. It appears to be undescribed and is probably a new species. It differs from other Calymenes in that the entire skeleton is covered with pustules. Check out the upcoming MAPS Fossil Expo. issue (available at

April Meeting

Our next meeting is **Friday, April 14, 2017** at 7:30 pm in room 203 on the second floor of the Earth and Planetary Sciences building on the Washington University campus. Our program for the evening (rescheduled from the snowed-out January meeting) is entitled: *TenneSeas: A Tale of Two Oceans* and will be presented by Dr. Michael A. Gibson, University of Tennessee, Martin. His presentation will feature the Devonian **Ross Formation** fossils from Vulcan Quarry near Parsons, Tennessee and the Upper Cretaceous **Coon Creek** fossils from the famous Coon Creek Science Center locality. Our club has enjoyed trips to both sites in the past.

Please join us for an exciting and informative program! Business meeting to follow the program.

Dr. Michael A. Gibson is a University of Tennessee Alumni Association Distinguished Service Professor. He received his B.S. in Geology from the College of William and Mary in 1979 followed by an M.S. in Geology from Auburn University in 1983. Upon completion of his M.S. Gibson served as an instructor at Auburn for the 1983 academic year during which time he married. Gibson then moved to the University of Tennessee, Knoxville where he obtained his Ph.D. in Geology in 1988 studying fossils of the West Tennessee region for his dissertation and receiving the Chancellor's Award for Exceptional Professional Promise. Since 1988 he has been on faculty at the University of Tennessee at Martin, currently holding the rank of Full Professor since 1999.

Dr. Gibson's area of study is in paleontology and he teaches undergraduate and graduate courses on the Paleontology, History of Earth, Fossils: Life Through Time, Marine Geology, Oceanography, among many

others. Dr. Gibson's research includes: 1) Silurian - Devonian paleoecology and taphonomy; 2) Paleoecology of the Late Cretaceous of the Mississippi Embayment; 3) Floral paleoecology of the Claiborne Formation of West Tennessee; 4) Geology and paleontology of Belize, Central America and 5) Stromatolites of Quintana Roo, Mexico.

Dr. Gibson teaches marine geology during the summers at the Dauphin Island Sea Lab in Alabama. He is an Associate Curator for the Memphis Pink Palace Museum & Coon Creek Science Center, director of the online Masters of Education Geoscience Education (GEDU) program at UT Martin, has published over 75 articles and book chapters, 130 published abstracts, and is currently working on a book about Tennessee fossils.

Calendar

Mar. 31-Apr.2	MAPS Fossil Exposition. Sharpless Auction Center, Iowa City, Iowa
April 14	EMSP Meeting 7:30 pm Washington University
May 26-28	Aurora Fossil Festival Aurora Fossil Museum Aurora, North Carolina
June 9-11	Park Hills Swap Missouri Mines State Park
June 23-25	Bedford Rock Swap Lawrence Co. Fairgrounds S. of Bedford, Indiana

Treasurer's Report

A detailed report is available by request from the treasurer.

Rick's Ramblings

Field trips are an important part of our learning experience and we are working hard to schedule trips for you. There are several trips in the works, including: Parsons, Tennessee (Vulcan Quarry) to collect Devonian fossils and a trip to Mississippi to collect Cretaceous fossils. There are several additional opportunities for you to collect on your own. Sometime this spring, the quarry at St. Paul, Indiana will begin their open fossil (Silurian) collecting day schedule (the date of the first one has not yet been announced). Also, on August 12 & 13, the Falls of the Ohio State Park in Clarksville, Indiana will hold their 4th annual fossil seminar. This year, the topic is the Devonian and a field trip is scheduled for the second day.

Why are the field trips always so far away, you ask? Many of the nearby localities our club used to visit are either closed to collecting or are no longer productive. It is also difficult to find localities that will support larger numbers of collectors.

Instead of visiting the same old places several times a year, we try to offer our members the opportunity to collect fossils they would not find in the St. Louis area, which means we have to travel to other states. We aren't the only club encountering difficulty in scheduling field trips. Most clubs I am aware of only visit two or three places a year. A solution to this is to join established clubs in other areas such as Chicago or Cincinnati, and attend a few of their trips. Of course, this will mean doing some traveling.

Another avenue of approach is to do some research, either on-line or at the library. There are several comprehensive books (most out-of-print) and usually available through book sellers, that cover fossil localities state-to-state. While not all of the sites are still reliable, they are a good place to start. There are also several on-line chat rooms (such as the Fossil Forum) where you can interact with collectors from around the country. Many of them will give you good advice on where to collect in their areas and some will even meet with you.

If you are looking for places to collect closer to home, there are a number of day trips in this area available to members. You can find them on our website.

Membership List

There have been a number of requests (by club members) for a copy of the 2017 membership list. The idea is that publishing this list will improve communication between club members, relating to EMSP-sponsored activities. In May, we will publish a current 2017 membership list for distribution to every member. Information on the list will include your name, address, phone number and email address (if applicable). Those who do not wish to have their information (other than their name) included on this list should contact Rick, no later

than May 1st. It will be assumed that anyone who does not contact Rick by the deadline is giving permission for their information to be published.

NOTE: The information on the membership list is not to be used for any purpose other than EMSP business and will only be made available to current EMSP members.

DID YOU KNOW?

Is there really such a thing as a honey hole? In the context of fossil collecting, the honey hole is actually a myth. There are no true in-situ (fossils still in place in the surrounding rock) sites where limitless numbers of fossils will be found every time. A "nest" of crinoids is not a honey hole, because it is not self-sustaining. It might produce specimens for a short period of time, but once the nest or pocket has been cleaned out, there will be no more goodies for a return trip.

In reality, when fossil collecting from an in-situ locality, finding a few nice fossils in the same location is more about environmental factors such as the erosion rate rather than actual fossil abundance. Some of those factors, particularly in waterways such as in gullies or at the bottom of hills where runoff flows, can cause loose deposits of fossils to erode out of the formation and end up in a specific location in higher volumes.

The composition of the stratigraphic sediment is an important factor and stratigraphy varies everywhere. Concentrations of fossils from a shale, clay or sandstone will erode and accumulate faster than those eroding from a limestone or dolomite. If those softer sediments contain lots of fossils, then the concentration of eroded specimens will probably be higher and occur faster than those originating from a hard limestone or dolomite.

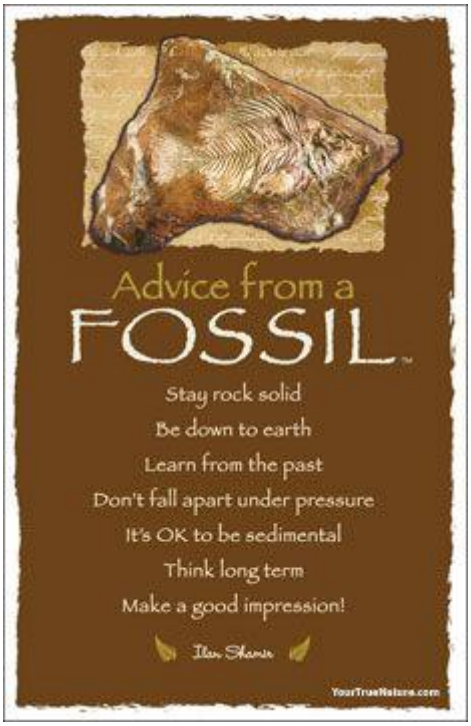
Book Review

Identifying fossil shark teeth has always been a problem for me. Many of them look so much alike that the task of figuring out what they are is a bit daunting. As a result, that part of my collection has suffered. One problem lies in the fact that the upper teeth of one species may look just like the lower teeth of another species. The second problem is that there are a lot of "in-betweeners" in the fossil record and the identifications of many are constantly being revised and changed. Recently I that has made the work a little easier for me, at least when I'm working with some of the more "recent" teeth. (The Carboniferous teeth are a whole different story!)

Fossil Shark Teeth of the World, A Collector's Guide (2002) by Joe Cocke (pronounced coke) provides illustrations and identifications for the teeth of more than 85 different sharks from the Cenozoic, Mesozoic and Paleozoic Eras. The easy-to-read text make it simple for the novice collector to follow and understand. In addition to all of the pictures are a number of helpful diagrams illustrating the various parts of teeth and shark jaws. Also included is a useful glossary of terms and a bibliography of additional resources, including publications covering specific sites and geologic formations.

If you are like me and have a difficult time identifying shark teeth, this book is for you. Ask for it at your favorite bookstore or check out the many book dealers on line.

Fossil Shark Teeth of the World, A Collectors Guide.
Joe Cocke, 2002
Original Price: $19.99
Published by Lamna Books, PO Box 10372, Torrance, CA. 90505
Library of Congress #2001-133121
ISBN: 0-9715381-3-1



Amber versus Copal, and Inclusions Within

A Summary by Terrance M. Allen, S.C.E.
Modified from the 2016 Tucson Show MetaGuide

There has been some confusion and contention about what defines "fossilized" amber from copal (or Copalite), especially the material from Colombia, South America. Fossilized botanical resins with inclusions (mainly insects) have raised the level of interest and value of amber. (Ed Note: especially after the discovery of dinosaur remains complete with feathers.)

Definitions:

Amber is defined as a hard, yellowish to brownish, translucent fossil resin that takes a fine polish. Although the oldest recorded amber comes from the Upper Carboniferous Period of the Paleozoic Era, over 290 million years ago, insect-bearing amber is generally determined to be 20 to 140 million years old, depending on the continent, location or stratigraphic layer where found.

Copal is defined as a recent or fossil resin from various tropical trees. Copal is considered by many to be very young, soft, solidified tree resin sating back only 200 to 400 years. Some researchers, however, agree that copal may be upon to 2 million years old, with estimates ranging to about 20 million years. Ages of resins over 10,000 years old qualify them to be fossilized and any inclusions, plant or animal, found within, qualify them to be true fossilized specimens. Copal, as well as Kauri-gum, can be young, soft and/or gummy, having been more recently exuded from the araucariacea trees from which it originates. Older resins, that bled out thousands or millions of years ago, and which were buried under layers of clay or successions of strata, have had time to dissipate volatile liquids and polymerize: they became harder and more solidified.

Similar Characteristics of Amber and Copal/Copalite:

Trees in South America have been producing resin for as long as other trees anywhere else on the planet. Older copal from Colombia and is harder and sometimes darker in color, is termed copalite. The "ite" ending comes from the Latin root "ites" meaning fossil and indicating that it comes from the Earth. Buried copal is the nearest to amber in durability and is, in many cases, virtually indistinguishable from it.

Amber and copal are both polymerized tree resins. They have the same specific gravity (about 1.1) and will float in salt water, compared to fake amber made of glass, phenolic resin, celluloid, casein and many other plastics, which will sink. Amber and copal both give off a resinous aroma when touched with a hot needle. Amber and copal will both produce static electricity if rubbed (the Greek name for amber was "electron", from which we derive the word, electricity).

Dating Amber and Copal Resins:

Generally speaking, the age of different indigenous amber(s) and similar copal(s) cannot be determined by any direct analysis. Age may be estimated based on indicator or index fossils found in associated sediments, however, there is no method of determining exactly how long the resin took to become deposited in a defined layer.

It may be possible to estimate the age of particular amber or copal by comparing inclusions (specific species of arthropods and botanicals) in the resin with the same inclusions in other more-accurately dated specimens. Qualified entomologists may be able to separate extinct species of insects from those living today. Most species of plants and animals don't persist throughout evolutionary time.

To confuse things, some species of insects found in amber and copal exhibit "perpetual longevity", that is, certain species have existed continually for hundreds of millions of years, with little or no significant change. These species reached an evolutionary plateau and were so successful in surviving natural disasters, global temperature change, predators/parasites, diseases, etc., that they no longer evolved. Examples of these include: cockroaches and

snakeflies. These same species may be found throughout geological time ranges and on disengages continents and islands. Thus, they may not be useful in separating or dating amber and copal.

Conversely, it may be possible to infer that a piece of amber or copal is of a particular age if it includes an indicator species that disappeared at a known geological time period. Stellate oak tree or floral hair, Family: Fagaceae, Genus: Quercus sp., a microscopic, branched plant hair, often found in Baltic amber, is used as an indicator botanical species for authenticating Baltic amber (30-40 million years old). It is sometimes found in Dominican amber (20-23 myo) and rarely (recently) found in Chiapas (Mexican) amber (20-30 myo). Based on the fact that microscopic plant hairs the same or similar to stellate oak hair were discovered in Colombian copal, it may be possible to infer that some Colombian copal may be dated to at least 20 million years. This has not been verified, however, thus, Colombian copal still is not recognized to be true fossilized amber.

Conclusion:

Amber provides us with the rare glimpse of life from ancient tropical rain forests, from continents and islands around the world, at different time periods. Sometimes inclusions and their associations (plant parts, arthropods, including insects and spiders, other small animals and their parts) became trapped and preserved in the sticky tree secretions, which polymerized and hardened into amber. The same, similar or different species found entombed in amber, separated by hundreds of miles or millions of years, are part of the Earth's fossil record. Weather termed "amber" or "copal", as long as it is qualified and recorded as to where the samples of prehistoric resins originate, the inclusions and their associations are all valuable scientific specimens and are indicators and direct evidence as to the history and evolution of life on Earth.

Additional Reading:

Amber, The Natural Time Capsule
By Andrew Ross, 2010

Amber, Window to the Past
By David A. Grimaldi, 1996

Cenozoic Fossils II, The Neogene
By Bruce Stinchcomb, 2010

The Eastern Missouri Society for Paleontology (EMSP) is a registered Missouri not-for-profit organization dedicated to promoting the enjoyment of fossil collecting. It is open to all individuals interested in learning about the history of ancient life on earth. The club membership includes professional paleontologists as well as amateur hobbyists. EMSP provides an open forum for the exchange of information and access to expertise on collecting, identifying, preparing and displaying fossils.

EMSP meetings are held on the second Friday of every month (except July, August and December) at 7:30pm in Room 203, on the second floor of the Earth and Planetary Sciences Building on the campus of Washington University. The building is located at the SW corner of the intersection of Forest Park Parkway and Hoyt Drive. Each meeting includes an informal exchange of information and speakers on a variety of fossil-related topics. Note: the building doors automatically lock at 7:30pm.

Club activities include field trips lead by experienced collectors and are a fun way to augment discussions at the monthly meetings. The club also participates in joint field trips with other paleo clubs, visiting fossil sites throughout the United States. EMSP is also proud to be involved in partnerships with the St. Louis Science Center and the Greater St. Louis Association of Earth Science Clubs, Inc; as well as STEM outreach to classrooms, community events and science fair special awards.

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