

Newsletter of the KENTUCKY PALEONTOLOGICAL SOCIETY

“Paleozine”

Vol. 24, No. 5 May 2016

April Meeting

Dr. Kate Bulinski, Bellarmine University, gave her talk titled “*Past, Present, and Future Research at the Famous Coral Beds of the Falls of the Ohio State Park.*” It was a nice talk on one of paleontological jewels of Kentucky. Thank you Kate!

May Meeting

Dr. Donald Chesnut, Kentucky Geological Survey, Emeritus, is this month’s speaker and the title of the talk is “Deccan Traps and the Deccan Plateau of India.”

Meeting Dates

May 27; Jun. 24; Jul. 29; Aug. 26; Sep. 30;
Oct. 28; Nov. 18; Dec. 16

KPS Minutes

April 29, 2016

By Secretary Zsombor Gal

The Maysville field trip took place on May 14th. Photos of some of the fossils are in the newsletter field trip pages.

GeoFair 2016 took place on April 30th and May 1st at the Sharonville Convention Center in Greater Cincinnati. President Dan Phelps and Vice President Rick Schrantz ran a fossil identification table there.

President Dan Phelps made a number of book recommendations: *Astrobiology: Understanding Life in the Universe* by Charles Cockell; *Jewels of the Early Earth: Minerals and Fossils of the Precambrian* by Bruce L. Stinchcomb; *Mammoths and Mastodons of the Ice Age* by Adrian Lister; *Stromatolites* by RJ Leis; *The Dinosaur Book* by Edwin Colbert. He also recommended *Journal of Paleontology*; *Journal of Vertebrate Paleontology* and its memoir on the Dodo (March, November 2016); *Scientific American* (May 2016); *Science* (March 2016); *Prehistoric Times* (Winter 2016); *Discovery* (May 2016).

Treasury: \$2260.21

May Field Trip-Radcliff/Fort Knox

On Saturday, June 4, we will meet at 10:00 AM at the McDonalds located south of Radcliff, Route 31W, just north of the intersection with Highway 313 (Joe Prather Highway). We will be collecting mostly Mississippian invertebrate fossils but there is a chance to find shark teeth.

UCLA Press Release

Science + Technology

Measurements of dinosaur body temperatures shed new light on 150-year debate

UCLA scientists report that some had the ability to warm themselves by drawing heat from the sun

Stuart Wolpert | October 13, 2015

Were dinosaurs really fast, aggressive hunters like the ones depicted in the movie “Jurassic World”? Or did they have lower metabolic rates that made them move more like today’s alligators and crocodiles? For 150 years, scientists have debated the nature of dinosaurs’ body temperatures and how those temperatures influenced their activity levels.

New research by UCLA scientists indicates that some dinosaurs, at least, had the capacity to elevate their body temperature using heat sources in the environment, such as the sun. They also believe the animals were probably more active than modern-day alligators and crocodiles, which can be active and energetic, but only for brief spurts.

The researchers also found evidence that other dinosaurs they studied had lower body temperatures than modern birds, their only living relatives, and were probably less active. The research is published today in the journal *Nature Communications*.

Led by Robert Eagle, a researcher in the department of earth, planetary and space sciences in the UCLA College, the scientists examined fossilized dinosaur eggshells from Argentina and Mongolia. Analyzing the shells’ chemistry allowed them to determine the temperature at which the eggshells formed — information that had not been previously known.

“This technique tells you about the internal body temperature of the female dinosaur when she was ovulating,” said Aradhna Tripathi, a co-author of the study and a UCLA associate professor of geology, geochemistry and geobiology. “This presents the first direct measurements of theropod body temperatures.”

The Argentine eggshells, which are approximately 80 million years old, are from large, long-necked titanosaur sauropods, members of a family that include the largest animals to ever roam the Earth. The shells from Mongolia’s Gobi desert, 71 million to 75 million years old, are from oviraptorid theropods, much smaller dinosaurs that were closely related to *Tyrannosaurus rex* and birds.

Sauropods’ body temperatures were warm — approximately 100 degrees Fahrenheit, according to the study. The smaller dinosaurs had substantially lower temperatures, probably below 90 degrees.

Warm-blooded animals, or endotherms, produce heat internally and typically maintain their body temperature, regardless of the temperature of their environment; they do so mainly through metabolism. Humans and other mammals fall into this category.

Cold-blooded animals, or ectotherms, including alligators, crocodiles and lizards, rely on external environmental heat sources to regulate their body temperature. Lizards, for example, often sit on rocks in the sun to absorb heat, which enables them to be more active.

Scientists have debated since the 19th century whether dinosaurs were endotherms or ectotherms. The UCLA research indicates that the answer could lie somewhere in between. The dinosaurs, at least the oviraptorid theropods, had the ability to elevate their body temperature above the environmental temperature.

“The temperatures we measured suggest that at least some dinosaurs were not fully endotherms like modern birds,” Eagle said. “They may have been intermediate — somewhere between modern alligators and crocodiles and modern birds; certainly that’s the implication for the oviraptorid theropods.”

“This could mean that they produced some heat internally and elevated their body temperatures above that of the environment but didn’t maintain as high temperatures or as controlled temperatures as modern birds,” he added. “If dinosaurs were at least endothermic to a degree, they had more capacity to run around searching for food than an alligator would.”

The study was the first direct measurement of body temperatures in two types of dinosaurs. Tripathi said it shows clearly that they are different from each other.

The researchers also analyzed fossil soils, including minerals that formed in the upper layer of the soil on which the oviraptorid theropods’ nests were built. This enabled them to estimate that the environmental temperature in Mongolia shortly before the dinosaurs went extinct was approximately 79 degrees Fahrenheit.



Gerald Grellet-Tinner
Titanosaur sauropod eggs, pictured next to an excavation tool

The researchers measured, in calcium carbonate minerals, the subtle differences in the abundance of chemical bonding between two rare, heavy isotopes: carbon-13 and oxygen-18. They studied the extent to which these heavy isotopes clustered together using a mass spectrometer — a technique that enabled them to determine mineral formation temperatures. Mineral forming inside colder bodies has more clustering of isotopes.

The scientists analyzed six fossilized eggshells from Argentina, three of which were well-preserved, and 13 eggshells from Mongolia’s Gobi desert, again selecting three that are well-preserved. They determined whether the fossilized eggshells maintain their original chemistry or were altered over tens of millions of years. They also analyzed fossilized dinosaur eggshells from France, but found these were not well-preserved, and excluded them.

The researchers acquired the Argentine eggshells from the Los Angeles County Natural History Museum, and the eggshells from Mongolia’s Gobi desert from New York’s American Natural History Museum.

Eagle, Tripathi and colleagues published the first analysis of fossilized dinosaur teeth in the journal *Science* in 2011. They studied the chemistry of fossil teeth to measure the body temperature of titanosaur sauropods, and determined their body temperature was between approximately 95 and 100.5 degrees Fahrenheit. The new research on eggshells is consistent with the 2011 findings, and adds new body temperature data on oviraptorid theropods.

The research was funded by the National Science Foundation and UCLA’s physical sciences division.

Co-authors of the new research are from the California Institute of Technology; University of Alabama, Tuscaloosa; Germany’s University of Mainz; Columbia University; California State University, Fullerton; California State University, Los Angeles; Orcas Island Historical Museums in Washington state; CONCIET, Argentina; Boise State University; University of Utah; and the Natural History Museum of Los Angeles County.

Death of two members of the Kentucky Paleontological Society

With sadness, we report that Sarah Lambert, Kentucky Paleontological Society member and once secretary of the KPS and Teri Lear, PhD, KPS member and one of the lead scientists on the Equine Genome project at the University of Kentucky Gluck Equine Center have died. Those who knew Sarah and Teri will miss them.

Sarah

<http://www.legacy.com/obituaries/kentucky/obituary.aspx?n=sarah-lambert&pid=179490494&>

Teri

<http://www.legacy.com/obituaries/kentucky/obituary.aspx?n=teri-lear&pid=179997562&>

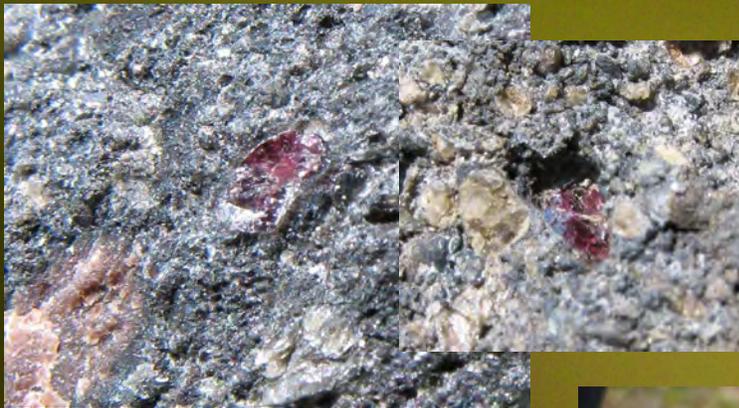


Brachiopods in xenolith



Kimberlite fragment

Kimberlite Field Trip



Kimberlite with granite xenolith

Garnets in kimberlite



Photos Dan Phelps & Rick Schrantz

Maysville Field Trip



Crinoid

Calcite in *Platystrophia*

Tentaculites

Hardground with borings

Glyptocrinus

The site

Glyptocrinus

Acidaspis

Petrocrania* on *Rafinesquina

Photos Dan Phelps & Rick Schrantz

MAY MEETING ANNOUNCEMENT

WHO- The Kentucky Paleontological Society (KPS).

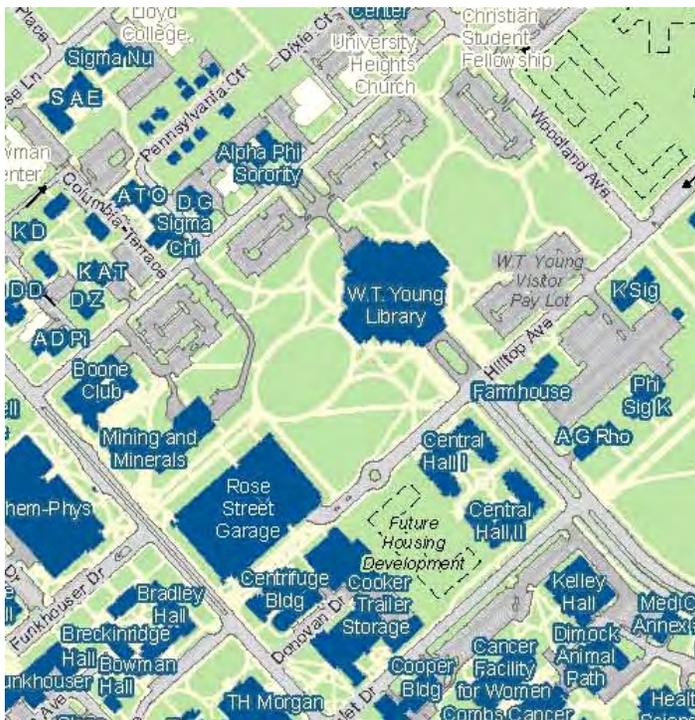
WHEN- Friday, May 27, 2016, 7:30 pm

WHERE- Lexington, Kentucky, Mines and Minerals Resources Building, Room 101, Rose Street, UK Campus.

SPEAKER - Dr. Donald Chesnut, Kentucky Geological Survey, Emeritus

TOPIC - "Deccan Traps and the Deccan Plateau of India."

There are two easy ways to get to the Mining and Minerals building. One way to get to the parking deck is to get on S. Limestone and take Huguelet across to University Ave. Turn left on University Ave., then left at the W. T. Young Library (Hilltop Ave). The parking deck will be on your right when you get to the end of Hilltop. The other way is to turn left on Columbia (which is now open) from Rose and take a right at Woodland (the light). Take Woodland up to Hilltop, turn right and follow it to the end (past Young library) to the *Rose Street Garage* which is free past 5:00 PM. The lat/long for the parking deck entrance is: 38.03348 -84.50395 .



MEMBERSHIP

MAIL TO: KENTUCKY PALEONTOLOGICAL SOCIETY, INC.
2004 Sawyer Ct.
Lexington, KY 40514

SOCIETY PURPOSE

The Kentucky Paleontological Society was founded in 1993 for the purpose of promoting interest in and knowledge of the science of paleontology. It is intended that the Society be a network for the exchange of data between professionals and serious amateurs in the field. A newsletter is published monthly, and several field trips are arranged annually.

Meetings of the Society are held once a month. Visitors are welcome.

[] **Family Membership.** For families. \$17 annually.

[] **Individual Membership.** \$12 annually.

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THE NEWSLETTER COMES VIA EMAIL. IF YOU DO NOT HAVE EMAIL AND NEED TO RECEIVE A COPY VIA US MAIL, CALL George Weems at 859 281-1662.

I hereby promise to support the ethical standards and purposes of this society-

(Signed) _____

CODE OF ETHICS

I. Members shall not collect specimens where prohibited by federal, state or local laws.

II. Members shall not trespass on private property. All private property laws shall be respected by members.

III. Members agree to protect scientifically important sites. These sites will be made known to members by the Executive Committee.

IV. Members agree to make all specimens of scientific importance available to recognized scientific researchers or institutions for study and photography before final disposal. Sale of specimens of scientific importance should be done with respect towards their scientific value; donations to scientific institutions are encouraged.

V. Members agree not to over collect sites, thus allowing others to study and enjoy those sites.

VI. Members agree not to collect in advance of Society field trips.

The following (optional) information will be included in the society's membership directory:

OCCUPATION, INTERESTS/COMMENTS on back of form.

KENTUCKY PALEONTOLOGICAL SOCIETY, INC.

www.kyps.org



EXECUTIVE COMMITTEE

PRESIDENT- Dan Phelps edrioasteroid@msn.com
VICE-PRESIDENT- Rick Schrantz (859) 885-7294.
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EDITOR- George Weems (859) 281-1662

QR Code for
KPS Website

SCIENTIFIC ADVISORS: Dr. Frank Ettensohn
Dr. Don Chesnut

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Contributions to our newsletter are encouraged from all interested parties. Please send material to: George Weems, Editor, 220 Castlewood Dr., Lexington, KY 40505 or via email: george.weems@twc.com.

Photos are especially welcome! Please include in your email subject line in all caps: KPS NEWSLETTER.

KENTUCKY PALEONTOLOGICAL SOCIETY.

2004 Sawyer Ct
Lexington, KY 40514

**Art by Doyle
Trankina and
Gerald Grellet-
Tinner**

Among the shells studied were specimens dating to 75 million years ago from oviraptorid theropods, small dinosaurs that were closely related to Tyrannosaurus rex and birds.



Meeting May 27, "May" Field Trip Radcliff, June 4