

The New Madrid Earthquakes of 1811-12

Dr. Nathan K. Moran, CERI, University of Memphis
SEPTEMBER PROGRAM



People in Southern California worry about “the big one.” But some of the biggest earthquakes ever recorded in the United States took place near Memphis.

In the winter of 1811 and 1812, the New Madrid seismic zone generated a sequence of earth-

quakes that lasted for several months and included three very large earthquakes estimated to be between magnitude 7 and 8. The three largest 1811-1812 earthquakes destroyed several settlements along the Mississippi River, caused minor structural *Continued, P. 3*

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BRAD LIDGE’S 10TH INNING

Lots of Philadelphia Phillies fans remember Brad Lidge’s final game of the 2008 (post)season. Especially the end. Lidge struck out Eric Hinske of the Tampa Bay Rays to seal a World Series championship for the Phils. It was a perfect end to a perfect season as a closer. Brad Lidge was 41 for 41 in save opportunities during the



MATTHEW LYBANON, EDITOR
2008 season, along with a 1.95 ERA and 92 strikeouts in 62 games.

What do you do for an encore? Become an archaeologist, of course. He started early. Lidge earned his archaeology degree from Regis University while playing professionally. He went on to get his Masters from the University of Leicester in 2017, *Continued, P. 4*

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.com

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 mlybanon@yahoo.com.

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/>

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*The New Madrid Earthquakes ...
Continued from p. 1*

damage as far away as Cincinnati and St. Louis, and were felt as far away as Hartford, Connecticut, Charleston, South Carolina, and New Orleans, Louisiana. In the New Madrid region, the earthquakes dramatically affected the landscape (they created Reelfoot Lake in northwest Tennessee, shown in the picture).

The New Madrid seismic zone is located in the northern part of the Mississippi embayment, a broad trough filled with marine sedimentary rocks about 50-100 million years old and river sediments less than 5 million years old. The Mississippi embayment is underlain by Paleozoic sedimentary rocks up to 570 million years old. The Paleozoic rocks are underlain by even older rocks that appear to have been deformed about 600 million years ago when the North

American continent almost broke apart. During the process of continental rifting, a deep valley formed that is bounded by faults and known as the Reelfoot rift, which is identified today as a subsurface system of fractures and faults in the earth's crust.

Studies conducted over the last 20 years have shown that sequences of earthquakes of comparable size to that in 1811-1812 have occurred at least twice before, in approximately 900 and 1450 AD. This implies a recurrence interval of about 500 years. The U.S. Geological Survey estimates a 25-40% chance of a magnitude 6.0 and greater earthquake in the next 50 years and about a 7-10% probability of a repeat of the 1811-1812 earthquakes in the same time period.

A native of northwest Tennessee, Dr. Nathan K. Moran has roots going back to the original

settlement of the area. Dr. Moran graduated from the University of Tennessee at Martin and earned his Ph.D. in history from the University of Memphis in 1999 in 19th century United States History. He has published or presented papers on a diverse set of topics ranging from the New Madrid earthquakes to Tennessee history. He has been interviewed on several occasions by the media on the subject of the New Madrid earthquakes and their history. He currently serves as a Research Associate at the Center for Earthquake Research and Information (CERI) at the University of Memphis. His current work is focused on the cataloging of historic information for New Madrid and other earthquakes that occurred in the Central United States prior to the 20th century and compiling information for the New Madrid Compendium website.

President's Message

Month/Date	Membership Meetings	Field Trips That Month
September 13	<ul style="list-style-type: none"> Friday night Adult and Juniors program Display theme—petrified wood 	Labor Day trip to Nonconnah Creek Location to be announced
October 11	<ul style="list-style-type: none"> Friday night Adult and Juniors program Display theme—fossils 	DMC field trip— MAGS is host <ul style="list-style-type: none"> Saturday, October 12, DeSoto County When you receive specific trip information, please note you are required to preregister.
November 9	<ul style="list-style-type: none"> Saturday day MAGS Theobald Collection undergoes a workout 	November 2, Arkansas quartz dig—location to be announced
December 14	<ul style="list-style-type: none"> Saturday day Holiday party 	December 1, creek collection—location to be announced

W. C.

Brad Lidge's 10th Inning just five years after officially retiring. His next goal is to get his Ph.D.

"The first site I ever excavated was Carsulae, in 2014," Lidge said in a newspaper interview. "The first day, I'm digging around the complex, and within probably five minutes, I scraped some soil off, and bang! There's two Roman coins there. And I was just like, 'Oh my god, this is incredible.' Just kind of a lucky, lucky deal."

The newspaper article (in the *Philadelphia Inquirer*) notes that Lidge published research with University of Massachusetts Amherst Classics Professor Anthony Tuck, on excavations at Poggio Civitate (Murlo, in Italy), an Etruscan site dating to the 8th to 6th centuries BCE. Tuck and Lidge examined symbols carved into pottery and roof tiles, and found that while many symbols were carved in tombs, they were also inscribed at an ancient Etruscan workshop in Murlo. They concluded these symbols were likely meant to quantify materials used at the workshop.

"For me, it's amazing to kind of know that that is something that's still out there that we don't really know about," Lidge said. "And then specifically, these symbols are really mysterious because they're not really documented at all. It's been really, really exciting to get to understand something like that in much more depth than really anything I had done in the past."

His interest in archaeology may even have helped him be a

better baseball player. If Lidge had a bad outing, he'd come home and read about ancient Roman civilization, or Etruscan civilization, or Christian apologetics. It cleared his mind.

"He would talk to us about it," former starter Joe Blanton told the *Inquirer*. "I mean ... to a point we could understand. But I think it's super interesting." Another teammate, Chad Durbin, said he's not surprised by Lidge's Ph.D. pursuits. "I'm going to have a tough time calling him doctor, though," Durbin added.

Brad Lidge could have had a second career in sports broadcasting, sitting in an air-conditioned booth getting paid to watch his favorite sport. But he prefers digging in the dirt.

They're The Best

David New



My daughters Abigail and Lydia New won first and second prize for "Best Recent Find--Youth Category" at the Magnolia State Archaeological Society Artifact

show in Amory, Mississippi. These points were found by them on some of our expeditions in DeSoto and Marshall Counties, Mississippi, in the past year. Abigail is 8 and Lydia is 10. See the photo for the prize.

The Crystal Maiden of the Actun Tunichil Muknal Cave

Christine Anderson

Editor's Note: *The Actun Tunichil Muknal Cave is in the Tapir Mountain Nature Reserve in Belize.*

When I say this was the most difficult adventure I've ever had I'm not kidding. You start with a hike to the cave involving three cold river crossings, one of which is chest high. Then you swim into the cave and climb in, around and under boulders. Once inside you squeeze, shimmy, swim, and squish through spots I honestly didn't think I'd fit through. There are times you're literally crawling through deep water using only your FINGERTIPS to move with razor sharp edges getting way too close to your neck for comfort. After 2½ hours of spelunking you get to another level. After you climb a huge boulder and then take your shoes off you continue climbing almost vertically in your SOCKS! This is so you don't ruin any artifacts that are scattered around the path if you accidentally step into the tape lined barriers. Once there you see a treasure trove of pottery and ceramic vessels from past offerings. You also see several skulls from sacrificial ceremonies. Keep climbing! The pièce de résistance

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MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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The Crystal Maiden is the “Crystal Maiden”—full skeletal remains that have been calcified and crystallized. I *Continued from P. 4* felt privileged and humbled to experience being in a sacred Mayan cave. They don’t allow cameras in the cave for several reasons—one being that two separate boneheads dropped their cameras on the human remains causing them damage, but we were lucky to have a guide who was part of the original archaeological expedition and was kind enough to share the photos with us. This was an incredible and unique experience and we’re grateful for such a special opportunity.

More information: <https://www.atlasobscura.com/places/the-crystal-maiden-of-the-actun-tunichil-muknal-cave-belize>



A view of the opening of the cave. This is where you swim into to start the journey.



The calcite covered skeletal remains of a possible sacrifice.



Carved rocks to resemble their ritual tools.



The Mayans would consume hallucinogenic substances and perform their rituals. Here is a rock shaped like a god. They would watch the shadows and gather messages from the spiritual realm.



Beautiful stalactites everywhere.



Various stoneware, some whole, some in pieces.

Book Report

Nannett McDougal-Dykes

MAGS Librarian
Teacher at Sea

by Mary Esther Cook and Diane Marie Stanitski

Close to home, this book is written by a teacher from Oil

Trough, Arkansas, who teaches at Batesville Middle School.

This book will walk you through a Deep Sea Exploration voyage and take you on an operation with a remotely operated vehicle (ROV). See, how divers work with this vehicle and how their

exploration of the ocean goes beyond our human limitations.

Mary Cook (teacher) spent three weeks at sea on board a NOAA research ship, the RONALD H. BROWN This is an amazing read for all ages.

Fabulous Tennessee Fossils

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

FTF 114

Kaely's Shark Tooth



This past month of July is well-known for the annual Shark Week programming that spans three weeks in July. The Discovery Channel's Shark Week is special to the Gibson household because our daughter, Dr. Kesley Banks, is a shark biologist with the Harte Institute in Corpus Christi, Texas, and has been a recurring Shark Week personality for the past five years with several episodes filmed that feature her and her work. We had planned to be on-hand in Corpus for this year's festivities; however, Hurricane Beryl cut us off during our travels when it hit Houston, forcing us to turn back this year. This summer has also seen its share of notable shark attacks on the beaches of the Gulf Coast. So, in honor of last month being a month full of shark news, I wanted to focus this essay on a shark fossil from our Cretaceous Coon Creek Formation that was collected at the UT Martin Coon Creek Science Center this past year.

Figure 1 shows a single shark tooth discovered by local McNairy Countian Kaely Plunk on her visit to the Coon Creek site, and she kindly donated it to our collection. In spite of the abundance of

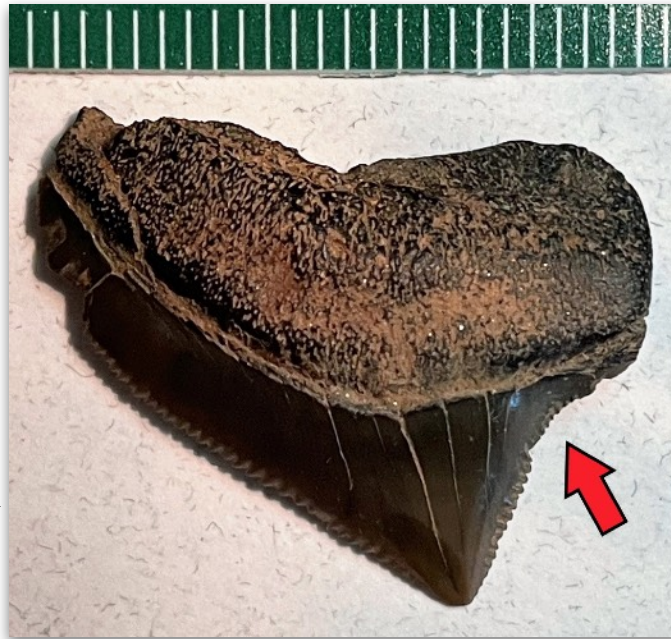


Figure 1. McNairy County resident Kaely Plunk's Crow Shark (*Squalicorax*) tooth from the Coon Creek Formation. The lack of a distinct notch along the margin (red arrow) indicates that it belongs to *S. pristidontis*. (Photo by MAG, scale in mm).

amazingly preserved invertebrate fossils in the Coon Creek Formation, finding vertebrate fossils is a rare event comparatively. Past research indicates that there were many species of sharks that hunted the Coon Creek waters, but their remains are elusive. Of course, the primary reason for this is that sharks (Class Chondrichthyes) are primarily cartilaginous, so their remains do not fossilize as well as other vertebrates. We all know that sharks have many rows of teeth, composed of weather resistant apatite, that break off during attacks to be-

come part of the fossil record. Many sharks have as many as 450 teeth in their mouth at any one time. Additionally, sharks continually grow new teeth throughout their lifetime in a conveyor belt fashion; hence, the rows of teeth in the jaw. Consequently, shark teeth are the most-commonly found fossil related to sharks, although the occasional vertebra centrum do occur.

Kaely's tooth is an excellent specimen of the most-commonly found shark tooth in the Coon Creek formation—*Squalicorax*—the Crow Shark. Based upon the only slight notching of the side of the crown (arrow), this is

probably *Squalicorax pristidontis* (*S. kaupi* has a very strong notch at this position). The now extinct *Squalicorax* is thought to have lived much like the modern Tiger Shark, feeding on fish and turtles (and probably mosasaurs, plesiosaurs, etc.), but also doing a lot of scavenging. Kaely's tooth shows the distinctive curved and serrated cutting margin used for slicing into meat and bone. It also shows the backwards facing point which allowed the shark to grab prey and hold its prey during the biting process.

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Fabulous Tennessee Fossils Interestingly, you
Continued from P. 6 would

think that shark teeth would be plentiful in the Coon Creek Formation, considering all of the other fossils that are encountered; however, finding shark teeth is not that common. Other nearby Cretaceous fossil sites (e.g., the W.M. Browning Frankstown site in northern Mississippi) often have more abundant tooth-rich beds unlike what we see at Coon Creek. Most likely, this is a taphonomic signature. Tooth beds are often formed as accumulations of reworked teeth, as is the case with the Frankstown site. Teeth can be accumulated as lag deposits (along with bone) during storm events and changes in sea level. The Coon Creek site shows less influence of reworking taphonomic processes as the deposition rate was high and steady, so the teeth are more disseminated throughout the formation.

DMC Field Trips

There will be two DMC field trips in September. The regular one will be a two-day trip (September 28 and 29), hosted by the Pendleton District Gem and Mineral Society, (Seneca, SC). There will also be an extra DMC field trip on September 21, hosted by the Gem and Mineral Society (Lynchburg, VA). It was originally scheduled for September 2023 and had to be rescheduled due to dangerous weather.

The October DMC field trip will be hosted by MAGS. Look for more details in the near future.



Fossil Hunt in Maysville, Kentucky

Bill McManus

After many missed opportunities Laura and I decided this was one not to be missed. And that turned out to be exactly right! We traveled to Maysville on Friday, July 26. It's about 7 hours straight drive time, though we took a couple hours longer for lunch, dinner, and gas. We also lost an hour crossing into EST. We met our group (July DMC field trip) the next morning at the Walmart. People from West Virginia, Georgia, North Carolina, Ohio, and Tennessee were represented, about 15 in all.

First stop—Brachiopods and Bryozoa.



See picture 1. We stopped near the intersection of US route 68 and Country road 3056 W. There is a small parking lot at the end of the guardrails. More parking is available on the berm along the road (we're told it's public land) cut along 3056 W, and across the street (3056E), and if you're adventurous, along route 68. Our group searched on the ground next to the road cut on 3056 W. However, our advice: if you were to go, to simply walk either side of route 68, as picture 2 shows one of our better specimens, packed with Bryozoa, just lying on the ground. This was the most common type



of find—just look at what's fallen already. You can dig into the cliff if you'd like but there's no need to climb. Most of our finds were conglomerates, but the people who spent the most time found the best stand-alone specimens.

Second stop—Horn Coral graveyard.



See picture 3. Turning east from the intersection of routes 62 and 10, you'll travel 5.1 miles (4.3 miles from Walmart, our meeting place) to this otherwise nondescript hillside. This is clearly public land. Again, surprisingly, the corals (see picture 4, P. 8) seem to be just waiting for you to pick them up. Our group searched the ground and did some digging for these fossils on the north side of the highway, but our advice: is to search the hillside on the opposite (south) side—it's overgrown and must have the same deposits, but is greatly under explored. These corals are unlike

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Fossil Hunt in Maysville, Kentucky
Continued from P. 7



anything we've ever found before—large, small, whole, some showing internals, and it's easy to see where their name came from.

Third stop—Brachiopod Heaven!



This is located on Tucker Drive, about 0.2 mile east of route 62. There is a large paved lot at address 450A. Park as far east as you can, as the site is 0.1 mile further east in a large empty field. There are no signs and it doesn't look like much, but we were surprised. Between the road and the tree line is a flat area (sometimes a small pond is present) of rock and marine fossils. See picture 5—lots of whole (both shells) Brachiopods just on ground level, and further toward the hillside, you can easily cut out some 'plates'. Our advice: This site is in a commercial area and will likely be developed in the future so if interested, go soon!

We named the above sections after what we found, though there have been other Ordovician fossils found rarely (Trilobites, Gastropods, etc).

We'd like to thank our hosts - Kanawha Rock & Gem Club, and their officers Brent and Sue Williams who organized this adventure, and Susie Lamb and Linda Johnstone for driving and identifying finds. This will make it hard for us to get excited about local trips 😊.

SFMS September Workshop—Last Call

We have one more week of classes at Wildacres Retreat, September 9-15. We still have some room and would love to have you join us. It's more than just a class. It's a chance to make new friends, hear some pretty great music, eat smores around a fire, and commune with nature in a beautiful mountain setting.

Here's the link to the classes.

<https://www.sfmsworkshops.org/wildacr.../wildacres-99-152024>

and a list of classes and how much room we have in September:

- Acid Etching & Enamel**—4 openings
- Chain-Loop n' Loop**, Chuck Bruce—3 openings
- Cabs 1.5**, Rick Marshall—2 openings
- Chain Maile**, Marilou Hillenbrand—2 openings
- Moovin Metal**, Cindy Moore—1 opening
- Silver All-in-One**—2 openings

Jim Reed, SFMS Wildacres
Director
wa-director@southeastfed.org
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Adult Programs

September 13: Dr. Kent Moran, CERI, "The New Madrid Earthquakes of 1811-12"

October 11: Dr. Ryan Parish, TBD

November 9: W.C. McDaniel, "MAGS Theobald Collection undergoes a workout"

Junior Programs

September 13: Mike Baldwin, Exploring

October 11: TBD

November 9: TBD

Field Trips

September: Labor Day trip to Nonconnah Creek

October: DMC field trip, details to be announced

November 2, Arkansas quartz dig, location to be announced

Suggestions

I would like to go on a creek walk where there may be arrowheads or other Native American artifacts.

Keep those suggestions coming.

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MEMPHIS ARCHAEOLOGICAL AND GEOLOGICAL SOCIETY

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MAGS Notes

Continued from P. 8

🎵 September Birthdays

5	Emily Fox-Hill Andrew Fields Gail Kerr
10	Alishia Parks
12	Kayla Brown
13	Wayne Fewell Sarah Taylor Stout
14	Jane Coop
18	Cliff Caudle
19	Shirley Hawkins
22	Christina Clapsdale
23	Park Noyes Mildred Schiff
26	Lucia Clarke
28	Elmer Stout Bonnie Cooper

July Board Minutes

Josh Anderson

Zoom meeting called to order 6:35 P.M. Present: W.C. McDaniel, Christine Anderson, Joshua Anderson, Nannett McDougal-Dykes, Bonnie Cooper, Matthew Lybanon.

Secretary: No June Board meeting. Reviewed W.C. summary of Board reports and presented to Board. Approved.

Treasurer: Email report approved. MAGS received a \$0.61 interest payment on our CD.

Membership: No new memberships or renewals.

Field Trips: No July or August field trips scheduled.

Youth Programs: Former Board Member, Mike Baldwin, is helping the program restart activities.

Adult Programs: Actively pursuing speakers for next year. 2025 mostly booked. July, Ryan Pudwell, Secrets of Nonconnah Creek. • August, Rock Swap. September, Kent Moran, Cen-

ter for Earthquake Research & Information. October, Dr. Ryan Parish, U. of Memphis Archaeology. November, Exploring the Theobald Collection, W.C. McDaniel (in progress).

Library: New book: *When Clay Sings*. Book report coming for newsletter.

Editor: Requests three months of material and events be given to newsletter editor in advance of publication. The last date to submit materials is the 20th of each month.

Rock Swaps: No report.

Show: Checking account review. Should be closing books in August. Requesting rates for 2025 Show

New Business:

1. W.C. sending email concerning incentive program for Members.
2. Discussed Treasurer Report items.
 - Liability Insurance—cost nearly double since 2023
 - Meeting Venue—always considered in budget
 - Membership—renewals and new memberships are down. No Show signups.
 - Dues—Member dues were discussed. Rates for other clubs compared.
 - Club Costs—approximately \$5,000/year
 - Recruitment—new MAGS Members needed
 - Lifetime Membership—discussed program and associated costs to cashflow
 - Cost Cutting—ideas included
 - ➔ Newsletter printing
 - ➔ I.D. Cards and badges
 - ➔ Family Membership age considerations and quantity of family members
 - ➔ MAGS dues
 - ➔ MAGS event in fall to add cash to budget possibility

Old Business: None.

Adjourned 7:30 P.M.

Jewelry Bench Tips by Brad Smith

NEW MELTING DISH



A new melting dish or crucible must be given a protective coating of borax before its first use. Borax extends the life of the ceramic material. Once done, it generally does not have to be repeated.

The procedure is straightforward. Heat the new melting dish to red with a large torch. You'll need plenty of heat. I use an acetylene/air Prest-O-Lite torch with a large #5 nozzle.



When the dish is hot, sprinkle in a half teaspoon of borax, let it melt, and spread it with a carbon rod over all of the interior surface of the dish. Add more borax if needed.


Sometimes you will have to hold the dish at an angle to coat the sides up to the rim. And don't forget to coat the pouring spout itself.

See Other Tips in my Smart Solutions for Jewelry Making Series

<http://amazon.com/dp/B0BQ8YVLTJ>

MAGS At A Glance

September 2024

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2 LABOR DAY/MAGS Nonconnah Creek Field Trip	3	4	5 Zoom Board Meeting, 6:30 P.M.	6	7
8	9	10	11	12	13 Membership Meeting, 7:00 P.M., "The New Madrid Earthquakes of 1811-12"	14
15	16	17	18	19	20	21 Extra DMC Field Trip (see P. 7)
22 	23	24	25	26	27	28 Regular DMC Field Trip (2 days)
29 Regular DMC Field Trip (see P. 7)	30	1	2	3	4	5 MAGS will host the October DMC Field Trip

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