

DVESScapades

escapades: interesting, stimulating, exciting activities and adventures



DELAWARE VALLEY EARTH SCIENCE SOCIETY NEWSLETTER



September 2020

Next Meeting: Wednesday,
September 9th, via Zoom

7:00 pm social hour
8:00 pm Program: **An overview of
the geology of Saudi Arabia, mineral
resources, and learning to get along in
an alien culture by Bob Kamilli**



Next meeting: October 14th: **Peter Dodson will give a presentation**

All in-person meetings and field trips are cancelled until further notice.

**Meeting location: Education Bldg. behind Centenary United Methodist Church,
South White Horse Pike, Berlin NJ 08009**

An overview of the geology of Saudi Arabia, mineral resources, and learning to get along in an alien culture

by

Bob Kamilli

In 1983, I joined the U.S. Geological Survey mission in Jeddah, Saudi Arabia and lived there with my family and our Australian shepherd for six years. I will give an overview of the geology of the Arabian Peninsula, its non-fuel mineral resources, and the little-known active volcanoes on either side of the Red Sea. I will also talk about my family's experiences while living there. Having also studied the history and culture of Saudi Arabia and of Islam while I was there, I will attempt to answer any questions people may have about my family's life in a theocracy, as well as geologic questions.



Biographical sketch:

Bob Kamilli was born in Philadelphia and raised in Cinnaminson. He graduated from Palmyra High School the same year as Susan Moore, whom he has known since fourth grade. He received a B.A. from Rutgers College in New Brunswick, and an A.M and Ph.D, in geology from Harvard. He has been a rockhound since the age of five. His favorite mineral is quartz in its many forms and his favorite fossils are trilobites.



President's Message

I'm sure everyone is getting tired of hearing that everything is close or cancelled. We would like to start having field trips to places where we can socially distance and still have a good time collecting fossils or minerals. Several members have done some fossil, mineral or collecting something interesting during this pandemic. Franklin Mineral Museum has been hosting night digs once a month for the past two months.

Currently, the church we meet in is not allowing any outside organizations to resume regular gatherings. Everything will probably be on hold until at least Spring of 2021 or until a vaccine is developed and distributed.

In the meantime, continue taking field trips to your basement, closet, garage or secret stash area and look through many of the items you've collected over the years. You might surprise yourself and find something you didn't know you had. Remember our Junior Rockhounds, if you discover duplicates or extras that might be of interest to someone who will never be able to collect at a closed locality. Think about bringing them to a future meeting for the junior rock hounds or give away table.

Maybe if you're feeling ambitious, you could research some places you would like the club to go on field trips once we are let free from our shelter-in-place. Feel free to email, text or call myself or any officer with your recommendations. Meanwhile, until we meet again please stay safe, practice social distancing, wash your hands frequently, use hand sanitizer, disinfect surfaces and wear some type of face mask when you go out.

We held our very second Zoom meeting last month. I'd like to thank our guest speaker, our very own Cathy Eskew, who shared her experiences that got her interested in the sciences particularly Geology, Paleontology and Astronomy. Please share with us what you thought of our Zoom meeting. None of us are experts in working with the software but we are getting better every day. We will probably be continuing into the winter months and beyond using Zoom as our vehicle to hold meetings.

This month's Zoom meeting will be on the second Wednesday, September 9th at 7:00. We will have a twenty minute or so social time, then some club business and then special guest, Geologist Robert Kamilli, formerly from USGS, will share his exciting adventures in Saudi Arabia with us. Some of you might remember Bob from several years back when he did a presentation on working in mines of Peru.

I continue digging out some select articles from old club newsletters and sharing them as part of our current newsletter. There is a lot of history, write-ups of field trips, mentioning of guest speakers, the old picking table, and plenty of good old science like geology and paleontology.

It's important to share some of our club's highlights over the last 64 years. Next year we will be celebrating our 65th Anniversary.

Right now we are setting our sights on Super Diggg Spring 2021. This gives us more time to get organized, gather up more volunteers and get the Franklin Mineral Museum promoting this event on their website and social media. I have also been notified that there will be a cost per pound increase for the material you collect.

Don't forget to visit our Facebook page and share with as many friends as possible. This month share your favorite mineral with everyone on our page. [www.FB.com/dvessnj](https://www.facebook.com/dvessnj)

Everyone stay safe and hope to see you all soon!

Mark Leipert, President



Free - Robert Todd has two large TV consoles that could be converted to displays for fluorescent minerals. See Mark for more information.

Quote of the Month:

Noise proves nothing. Often a hen who has merely laid an egg cackles as if she laid an asteroid.

Mark Twain



News

This map lets you see where your hometown was on the Earth millions of years ago

<https://www.cnn.com/2020/08/30/us/map-hometown-earth-continental-drift-scn-trnd/index.html>

Giantess Geyser, One of Yellowstone's Largest, Roars Back to Life After 6 1/2 Year Silence

<https://cowboystatedaily.com/2020/08/29/giantess-geyser-one-of-yellowstones-largest-roars-back-to-life-after-6-1-2-year-silence/>



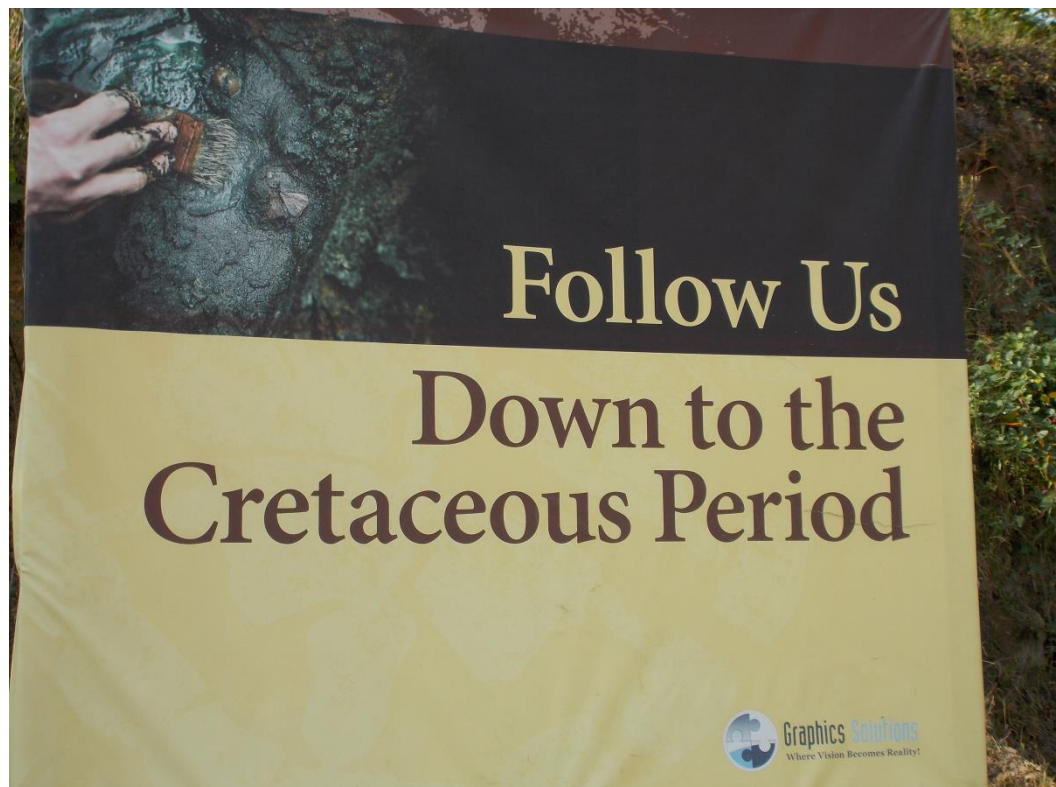
Websites

Dinosaur Pictures and Facts <https://dinosaurpictures.org/>

The internet's largest dinosaur database. Check out a random dinosaur, search for one, or look at an interactive globe of ancient Earth

Photos Where were we last September?

by Susan Moore





Simple Tests for Identifying True Amber (Succinite)

by Garry Platt (garry@gplatt.demon.co.uk)

Since the screening of 'Jurassic Park,' interest in the mineral amber has grown significantly. Unfortunately, so has the quantity of fake amber coming on to the market. Some of these pieces have insect inclusions skillfully placed in the body of the matrix.

The British Natural History Museum recently discovered that a bee preserved in amber thought to be one of the oldest known examples of this particular species was in fact a fake and probably no more than 150 years old. (More of this bee later). Evidence of this nature, that even the best can be fooled, should alert all collectors to the possibility of being misled or simply cheated.

In some cases copal, which is tree resin which has not yet fully fossilized to amber and may be anything up to 3-4 million years old, is described as true amber. Debate still rages in the UK about certain Kenyan deposits as to whether they should be called copal or amber and I have heard of similar arguments concerning deposits found in South America.

There are a number of simple tests which can be carried out on amber to check its authenticity. I have listed here all the basic methods I have come across. More sophisticated and complex tests are possible, but they require access to laboratory equipment. These more complex tests include: refraction index, polarized light test for ambroid (conglomerated and pressed) amber, precise specific gravity and melting point.

When examining a specimen you should try at least 3 of the following methods detailed here. If the item in question fails any one of the tests, it could well mean the piece is not true amber.

Test 1: HARDNESS.

Amber has a hardness on Moh's scale in the region of 2 - 3. Using appropriate scratch sticks, it should be reasonably straightforward to test the sample under question.

Test 2: HOT NEEDLE.

Heat a needle point in a flame until glowing red and then push the point into the sample for testing. With copal, the needle melts the material quicker than amber and emits a light fragrant odor. Amber when tested does not melt as quickly as the copal and emits sooty fumes.

Test 3: SOLUBILITY.

Copal will dissolve in acetone. This test can be done by dispensing the acetone from an eye dropper onto a clean surface of the test specimen. Place one drop on the surface of the test piece and allow to evaporate, then place a second drop on the same area. Copal will become tacky; amber will remain unaffected by contact with acetone.

Test 4: UV

Copal under a short-wave UV light shows hardly any colour change. Amber fluoresces a pale shade of blue.

Test 5: FRICTION

Rub the specimen vigorously on a soft cloth. True amber may emit a faint resinous fragrance but copal may actually begin to soften and the surface become sticky. Amber will also become heavily charged with static electricity and will easily pick up small pieces of loose paper.

Test 6: TASTE

This test was introduced to me by an antique trader who specialized in amber beads. She explained that one of the most reliable tests she used was to taste the amber specimen after washing it in mild soapy water and then plain water. Whilst she could make no distinction between copal and amber, she could easily identify plastics and other common substitutes because of their unpleasant or chemical taste. Amber has hardly any taste at all. As a method for identification, I have not seen this procedure recorded elsewhere. I can vouch for its effectiveness as a non-destructive method of differentiating between amber and certain other substances often misleadingly labeled amber.

TEST 7: INCLUSIONS

Infrequently amber contains flora or fauna inclusions. Correctly identifying the trapped insect or plant should be an excellent indicator of a piece's authenticity. Most inclusions from ancient amber are of species which are now extinct.

TEST 8: FLOTATION (Specific Gravity)

Mix 23gms of standard table salt with 200ml of luke warm water. Stir until completely dissolved. Amber should float in such a mixture and some copals together with various plastics sink.

Now back to the bee I mentioned earlier. I am afraid that only the seventh of these tests would have identified this particular fake. The item consisted of a block of true amber into which had been drilled a hole large enough to receive the dead bee. Amber which had been melted was then poured back over the insect, encasing it in a genuine amber prison.

Anyone wishing to find out more about amber in general or these test methods specifically would do well to consult one of three books currently available on amber, they are:

Life In Amber, George O. Poinar, Jr., Stanford University Press ISBN: 0-8047-2001-0

The Quest for Life in Amber, George O. Poinar, Jr., Stanford University Press

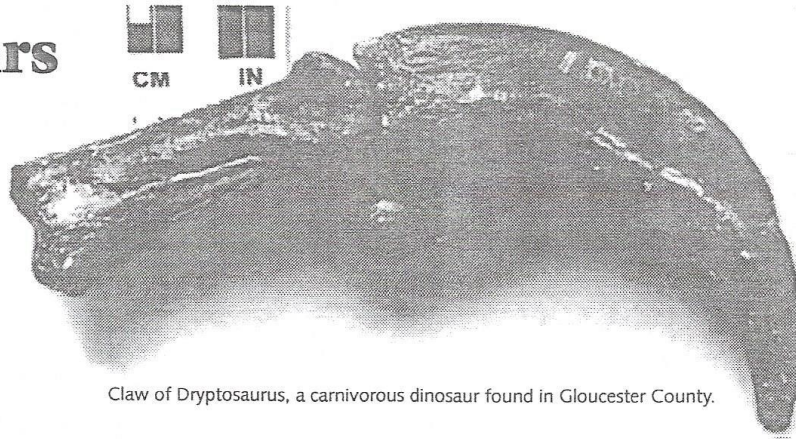
Amber — The Golden Gem of the Ages, Patty C. Rice, The Kosciuszko Foundation, Inc ISBN: 0-917-00720-5

Asbestos: Part II to appear in January

Due to a quirk in the eligibility requirements for the AMFS newsletter contest, December's issue is not eligible for either the 1994 or the 1995 contest. Therefore, the second part of Nathan's excellent asbestos article will appear in January so we can enter it in the 95 competition.

Dinosaurs of South Jersey

By Steve Kurth,
DVESS member



Claw of Dryptosaurus, a carnivorous dinosaur found in Gloucester County.

While all of us are familiar with the dinosaur discoveries of the Western US, many don't realize that dinosaurs have been found right in their backyard. In fact, many of the most important early discoveries occurred in New Jersey.

By far the most famous of these discoveries was that of *Hadrosaurus foulkii*. It was discovered in 1838 by workers digging a marl pit on a farm in Haddonfield, NJ. It wasn't until 1858 that it came to the attention of science. William Foulke was vacationing in Haddonfield when he heard of some large bones found in a pit on the farm of John Hopkins. Foulke, a member of the Philadelphia Academy of Natural Science, organized an expedition to relocate the site. After considerable searching, an excavation revealed a mass of large dark-colored bones. Dr Joseph Leidy, also of the Academy, was brought in to study the find.

The discovery was significant, not only because it was the first dinosaur skeleton found in the Western hemisphere, but was in fact the first nearly complete dinosaur found in the world. It also dramatically changed how dinosaurs were viewed. Before its discovery, dinosaurs were assumed to be low, squat, lizard-like quadrupeds. But as Leidy pointed out, the small forelimbs and large rear leg bones were clearly those of a biped.

The *Hadrosaur* also set another precedent by being the first dinosaur skeleton to be mounted. It was put on display in the Philadelphia Academy of Science in 1868, and gave the public their first glimpse of these massive creatures.

Interestingly, although the *Hadrosaur* was a very early dinosaur find, it was not the first in New Jersey. Benjamin Franklin lectured in the American Philosophical Society in Philadelphia on the discovery of a large leg bone found in the banks of Woodbury Creek. This find predates by a number of years the early discoveries of dinosaurs in England. This specimen was apparently lost for many years, but was recently relocated in the Academy of Natural Science of Philadelphia. (Gallagher 1990)

The city of Philadelphia was a major academic center of America for much of the 19th century. Many promi-

nent scientists studied the fossils continually being discovered from greensand marl pits across the river. One of the most famous of these was Edward Cope. A student of Leidy in Philadelphia, he became one of the most prominent paleontologists ever.

In 1863, Cope moved from Philadelphia to Haddonfield, NJ. He lived in the center of town, where the borough hall of Haddonfield now stands. There he was able to study the fossils from the local marl pits, where he made contacts with the marl workers to send him their finds. His life was marked by the fierce rivalry he shared with Othniel Marsh. The 'bone wars' they waged in Wyoming and Colorado are legendary, but their relationship was at first friendly, as Cope shared some of his more prolific localities on a visit by Marsh. The relationship soured, however, when Marsh paid marl workers to send fossils his way, rather than to Cope.

Perhaps the most spectacular discovery of Cope during his stay in New Jersey was that of a partial skeleton of a carnivorous dinosaur, *Laelaps*, in a marl pit near Barnsboro, Gloucester County. Now known as *Dryptosaurus*, it represented one of the earliest theropods found. Its most distinguishing feature was the presence of dagger-like nine inch claws on its forelimbs.

Another unique find was the discovery, in 1929, of the footprints of a large carnivorous dinosaur at Woodbridge, NJ. This represents the only Cretaceous dinosaur footprints east of the Mississippi. The clay was still soft, making removal of the footprints nearly impossible (Baird, 1989). A single footprint remains, displayed in the Geological Museum of Rutgers.

Unfortunately, the decline of the marl industry has reduced the number of localities where dinosaur fossils may be found. The last functioning pit is the Inversand Pit at Sewell, Gloucester County. A partial skeleton of *Hadrosaurus minor*, and a number of isolated bones have been found there over the years, including those of a *Dryptosaur*.

A thin scattering of dinosaur remains have been found in South Jersey, though they are generally extremely rare. This is for three major reasons. First, dur-

ing most of the Cretaceous, New Jersey was under water. Thus, the bones had to survive washing down streams and rivers into the ocean to become fossilized. The *Hadrosaurus foulkii* find was especially unlikely, since the entire carcass had to float out to sea and become buried before it was torn apart by scavengers. The second reason dinosaur finds are rare is the lack of exposure of dinosaur age outcrops. A narrow band of Cretaceous formations extends northeast from Salem County to Sandy Hook. Unfortunately, this band is covered nearly everywhere by a thick deposit of Tertiary and recent deposits. Generally, only deep streams expose the Cretaceous sediments. Dinosaur footprints of Triassic and Jurassic age are found in North Jersey; however, these rocks are not exposed further south. Finally, numerous housing developments have obscured many once prolific sites.

Despite these drawbacks, a number of interesting finds have been made in recent years, largely through the efforts of dedicated amateur collectors. In 1984, an amateur discovered a number of bone fragments near Ellisdale, Burlington County. An excavation of the site was done by the New Jersey State Museum on a grant by the National Geographic Society. Bones and teeth of *Hadrosaurus* and *Dryptosaurus* were found, along with extremely rare mammal and amphibian remains. Another site where dinosaur remains are still being found is Big Brook, in Marlboro, Monmouth County. This site is one of the more accessible and prolific fossil sites in the area. However, the odds of finding any dinosaur remains in South Jersey are still remote. The author considers himself very lucky to have three *Hadrosaurus* teeth and several probable dinosaur bone fragments. Generally, the collector is looking for other fossils, such as shark teeth or mollusks, and stumbles on dinosaur remains by chance.

The number of species which have been positively identified in New Jersey are small, at least partly because the finds are almost always fragmentary. The currently accepted species include: *Hadrosaurus foulkii*; *Dryptosaurus aquilunguis*; *Lambeosaurinae* indet.; *Hadrosaur* minor; *Nodosauridae* indet.; *Ornithomimus*. Gallagher (1993) Other specimens hint at further types, and are awaiting further study.

Besides their remains, research has also been conducted on the possible causes of the great extinction which wiped out all the dinosaurs and many other forms of life. Southern New Jersey has exposures of the interval during the extinction. Known as the K/T boundary, this zone separates the Age of Dinosaurs from the Age of Mammals which followed. According to current theories, an asteroid hit the Earth about 65 million years ago, causing a cloud of ash and smoke to blot out the sun, resulting in the death of many plants and the animals, both on land and in the sea. Evidence of the impact is based partly on the detection of high levels of the element Iridium at a number of spots around the world at the K/T boundary. Iridium is very rare in the Earth's crust, but is common in meteorites. Testing of samples from the Inversand Pit in Sewell have shown



Joseph Leidy with the leg bone of the *Hadrosaurus foulkii* he described.

enriched levels of Iridium; however, there is no singular spike such as that discovered in Europe by Alvarez in Europe (Gallagher, personal communication). This may be due to marine animals which burrowed into the sea floor, or erosion and redeposition by ocean currents.

Although many exciting discoveries of dinosaurs and the animals which lived with them in New Jersey have been made over the years, much more remains to be found. Careful collection and documentation of finds by amateurs, and research and education of the public by professionals will ensure our increasing knowledge of the time known as 'The Age of the Dinosaurs.' ✕

Acknowledgments:

Special thanks to William Gallagher for his assistance and encouragement.

References:

- Baird, Donald. 1989. "Medial Cretaceous carnivorous dinosaur and footprints from New Jersey." *The Mosasaur, Volume IV*.
- Forster, Catherine A., Spamer, Earle E. 1986. "A paleontological pilgrimage through Philadelphia, the birthplace of American paleontology." *The Mosasaur, Volume III*.
- Gallagher, William B., Parris, David C., Spamer, Earle E. 1986. "Paleontology, biostratigraphy, and depositional environments of the Cretaceous-Tertiary transition in the New Jersey Coastal Plain." *The Mosasaur, Volume III*.
- Gallagher, William B. 1990. "Dinosaurs: Creatures of Time." *New Jersey State Museum Bulletin No. 14*.
- Gallagher, William B. 1993. "The Cretaceous/Tertiary mass extinction event in the northern Atlantic Coastal Plain." *The Mosasaur, Volume V*.
- Howard, Robert W. 1975. *The Dawnseekers; The First History of American Paleontology*. New York: Harcourt Brace Jovanovich.
- Richards, Horace G. 1958, 1962. *The Cretaceous Fossils of New Jersey: Parts I and II*. New Jersey Bureau of Geology and Topography.

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Membership Information

Regular memberships are entitled to participate in all DVESS activities.

Regular Membership:

\$20.00 for the 1st family member + \$5.00 for each family member

\$10.00 for the 1st Senior (65+) member + \$5.00 for each family member

Delaware Valley Earth Science Society Information

The Delaware Valley Earth Science Society, Inc. (DVESS), a non-profit organization, was founded in 1956 and incorporated in the state of New Jersey in 1957. The Society:

- promotes interest in, knowledge of, and the development of skills in the “earth sciences.” These interests include mineralogy, paleontology, lapidary arts, archeology, and local preservation.
- supports the conservation of natural resources, advocates the availability of collecting sites, and maintains close contact with those in the academic field.
- is a member club of the Eastern Federation of Mineralogical and Lapidary Societies (<http://www.AmFed.org/EFMLS>)

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