A publication of the Rochester Academy of Science FOSSIL SECTION

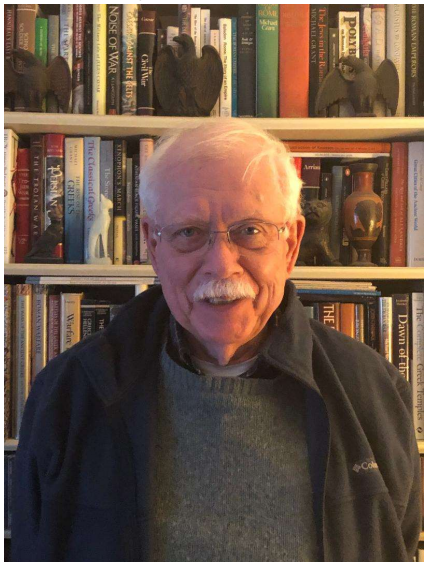
The FOSSILETTER

VOL. 42 Number 6 April 2024

April Meeting

The April section meeting is on Tuesday, April 2nd, at **7:30 PM** Eastern Time. We will meet at the Community Meeting Room at the NEQALS (North East Quadrant Advanced Life Support) building at 1030 Jackson Rd, Webster, 14580.

During the short business meeting, Dan will review the planned field trips for the upcoming season, which seems auspiciously fruitful. It will be good to get back out again. We will also discuss acquisition of fossils for an outreach kit and our participation at the annual Adirondack Mountain Club Outdoor Expo on Saturday, June 8th, 2024, at Mendon Ponds Park, Pittsford NY.



Dr. George McIntosh

Our speaker this night will be RAS Member Dr. George McIntosh, emeritus Curator of Paleontology at the Rochester Museum & Science Center. He is a life-long researcher on crinoids and has numerous publications on these starfish relatives. He will discuss "Late Devonian crinoid ghost lineages" with us. This is an expansion on a short talk he gave at last year's Subcommission on Devonian Stratigraphy (SDS) meeting at SUNY Geneseo.

These are referred to as "ghost lineages" because there is a long gap of time (~25 million years) between many of the genera found in Middle Devonian rock and when their descendants are found in the Carboniferous, during which no fossils of the intermediate forms have ever been found. We know that they lived in the intervening time, but we have no examples.

Since this will be our first live meeting of 2024, we will have cake and ice cream to celebrate.

President's Report *by Dan Krisher*

The Section's March meeting was on March 5 via ZOOM. The meeting opened with a brief business portion in which we updated members on the slate of candidates for the Section election, the fieldtrip season as well as upcoming events such as the Central New York Earth Science Student Symposium at Syracuse University in April. The second portion of the meeting featured two speakers for the evening.

The first speaker was Dr. Derek Briggs—Professor of Earth and Planetary Sciences at Yale University and Curator in charge of Invertebrate Fossils at the Yale Peabody Museum. Dr. Briggs updated us on the status of Sam Ciurca's more enigmatic finds such as Ezekiel's' Wheel which studies showed to be a form of planktonic graptolite.

The next talk was the second Annual Samuel J. Ciurca Jr. Memorial Lecture given this year by Dr. James C. Lamsdell, Department of Geology and Geography, West Virginia University, Morgantown, West Virginia. Dr. Lamsdell provided an overview of current Eurypterid

research including phylogeny, paleoecology, and functional morphology.

Fossil Section Election – Need Volunteers

It is once again time for the Fossil Section to nominate its slate of officers for the 2024-2025 year. PLEASE consider helping and nominate yourself to be President, VP, Secretary, or Board member. We promise that it is not much work! If you might be interested in running for any of these positions but would like additional information as to the duties and time involved, please contact one of the current Officers or Board members. The finalized ballot will appear in the June newsletter. Current RAS Fossil Section Officers are listed on the last page of this newsletter.

RAS Annual Meeting & Spring Lecture

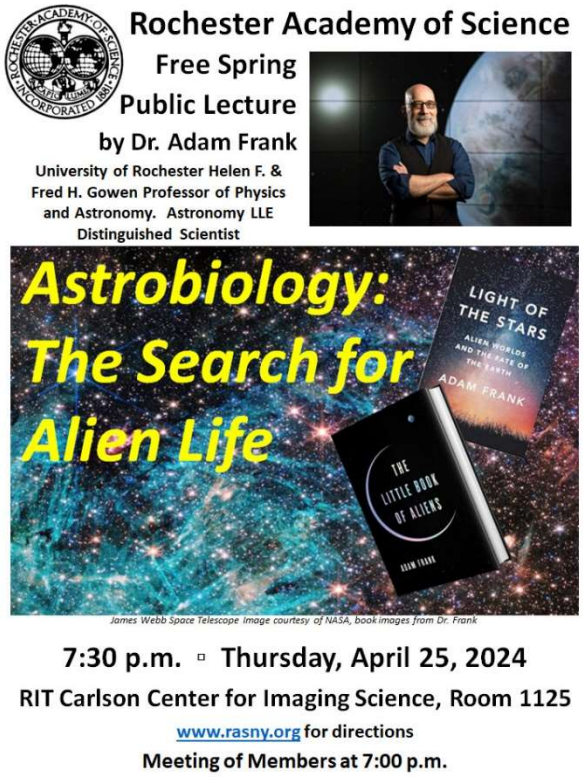
Hear popular speaker and astrobiologist Dr. Adam Frank on the search for alien life. The Rochester Academy of Science Annual Meeting and Spring Lecture is Thursday, April 25, 7:00 p.m.

This live meeting (with Zoom broadcast) will be at Rochester Institute of Technology's Rochester Institute of Technology's (R.I.T.) Chester F. Carlson Center for Imaging Science, Room 1125. Directions are at https://rasny.org/ras-annual-spring-lecture. After a short introduction and other business, the Board of Directors election will be conducted. A ballot and Zoom link are at https://rasny.org/ras-annual-meeting. Please show us your support by printing and mailing your completed ballot to RAS, P.O. Box 92642, Rochester NY 14692-0642. You will also be able to vote at the meeting through the Zoom Chat function. Note that you must have renewed your membership by March 31st.

The Spring Lecture will begin at 7:30 p.m. Dr. Frank is the Helen F. and Fred H. Gowen Professor of Physics and Astronomy, and Astronomy LLE Distinguished Scientist at the University of Rochester. He is also actively involved in science outreach as a popular science writer of articles, author of five books, frequent appearances on TV, and as technical advisor on *Dr. Strange* movies.

Dr. Frank states that "*The 2020 Astronomy Decadal Survey put a "Habitable Worlds Observatory" at the top of the community's projects for the next twenty years. I will discuss the current state of research and plans in the search for life via "biosignatures" and "techno-signatures". I will review the history of the field and discuss what advances have allowed the ancient question of "are we alone?" to finally become one which science might answer.*

See the April RAS Bulletin for more information.



Fossil Section Summer Field Trips

by Dan Krisher

Welcome to the 2024 field trip season for the FOSSIL Section. The process for signing up for a trip is largely unchanged from years past. About a week or so before a trip I will send an email out to all Section members concerning the upcoming trip. All interested members should get back to me via email at least 2 days before the trip and I'll respond with additional information for that trip as soon as I receive your email. I will send out a final email to all attendees the night before the trip. If you have any questions or otherwise need to get a hold of me, you can contact me at 585.698.3147 or DLKFossil@gmail.com. At this

time the following field trips are scheduled or are in the process of being scheduled.

4/27 - The Gulf at Lockport:

The Gulf at Lockport is is a family-friendly site with no hazards, plenty of room to spread out, and many fossils.

This trip will visit two sites. The first is located on the west side of the town of Lockport. The site is a railroad cut a few yards off the road and it exposes the Silurian Rochester Shale Formation. This is a family-friendly site with no hazards, room to spread out, and many fossils. The fossils are relatively small but can be found lying loose on the hillside. The material consists primarily of brachiopods and bryozoan with some trilobites, corals, and cystoids as well as other rarer material. The second stop is optional and consists of a road cut at the nearby Hickory Corners. This site exposes the Silurian Reynales Formation, and the fauna consists of bryozoa, brachiopods, and the occasional gastropod.

5/04 - Split Rock Quarry near Syracuse:

Split Rock Quarry. Image taken during a 2004 SUNY Cortland Historical Geology field trip.
https://earthathome.org/splitrock/

This family-friendly site is a large quarry located southwest of Syracuse. The site exposes Upper Silurian and Lower Devonian strata, but the main point of interest will be the large exposures of the Onondaga Limestone. Collecting here is limited to picking up loose material scattered near the quarry walls. This will be an exploratory visit to the site as I have not visited it in 35 years.

5/18 - Road Cuts Near Cherry Valley: A series of large road cuts near Cherry Valley expose various members of the Middle Devonian Onondaga Formation and Oatka Creek Formations. The rock is primarily limestone and contains a fauna of brachiopods and corals as well as a variety of other organisms in smaller amounts.

6/1 Little Beard's Creek:

The highly productive Little Beard's Creek trip in June 2019.

(Date pending – awaiting permission) This is a large shale exposure along Little Beard's Creek near Geneseo. The site exposes the Windom Member of the Moscow Formation and aside from many brachiopods and a few trilobites, the site is most well-known for the size and quantities of horn corals it produces. This trip is still in the process of being set up with the landowner so there is a small chance this date could change.

6/29 – Penn Dixie:

https://penndixie.org

(Date pending - awaiting availability): This family-friendly site is a large open shale pit. There is a modest daily fee to collect but we may be able to get a group rate. The site exposes the Middle Devonian Windom Member of the Moscow Formation. A wide variety of fauna is found here but the site is most well-known for its trilobites. The date selected is shortly after the Dig with the Experts so there will be many well-weathered piles.

7/13 - Jaycox Run:

Jaycox Run trip in July 2019. (photo by Fred Haynes)

(Date pending - awaiting permission): The trip will visit the Jaycox Run site between Avon and Geneseo and the collecting will be in the Middle Devonian Ludlowville and Moscow Formations. This is a Genesee Valley Nature Conservancy site that requires permission to visit. Heavy rains over the past few years have seriously eroded the Green's Landing bed so collecting in that area of the outcrop will be limited. No large-scale removal of bedrock will be allowed. Collecting will be limited to surface collecting, only the removal of exposed fossils.

Aside from the above trips, additional trips for late July and August are being planned.

Spring 2024 Central NY Earth Science Student Symposium

We have our invitation from the Syracuse University Department of Earth Sciences to join them for on **Saturday April 20th, 2024,** at Heroy Geology Laboratory. Non-SU student registration is $5.00 and includes breakfast, reception, and lunch. Register using the QR code below or at *https://forms.gle/ENxBSBzqpG9j1Qi37.*

We will carpool from the Park and Ride parking lot at the Bushnell's Basin exit off I-490, meeting at 7:45AM. If you would like to join us, **register for the event**, contact John Handley at jhandley@rochester.rr.com, and meet us. (If you want to make your own way there, the address is Heroy Geology Laboratory, 900 S Crouse Ave, Syracuse, NY 13210.).

The symposium consists of two Poster Sessions and two Oral Presentation Sessions in which undergraduate and graduate students in Upstate and Central NY colleges and universities present their research.

Schedule

9:00-9:30 AM: Registration (coffee and light breakfast)
9:30 - 10:30 1st Oral Session
10:30 - 12:00 1st Poster Session
12:00 - 1:15 Lunch (King David's)
1:15 - 2:30 Keynote Presentation by Dr. Fulton
2:30 - 4:00 2nd Poster Session
4:00 - 5:00 2nd Oral Session

Dr. Patrick Fulton, Cornell University

The keynote speaker this year is Dr. Patrick Fulton. His title is *Subsurface Insights from the Cornell University Borehole Observatory (CUBO): A 3km Deep Exploratory Well for Advancing Earth Source Heat Deep Direct-Use Geothermal Energy*.

Videos of Past Meeting Lectures

By Michael Grenier

Videos from the November 2023 and February 2024 meeting are now up on our YouTube channel. You can view Dr. Jeff Over's November meeting talk on the *Devonian of New York* at https://www.youtube.com/watch?v=6yuCCY-oHQ4. Jeff had offered copies of the three-volume, 1016-page treatise revising Devonian stratigraphy at a sale price as a benefit to members attending that meeting. It is still available from PRI at the regular price of $200. https://pri-gift-shop.myshopify.com/collections/publications/products/403-408-devonian-of-new-york-vols-1-3

Dr. Kristina Curry Rogers' talk on *The Unlikely (but Very Lucky!) Triumph of Dinosaurs* from our February meeting is at https://www.youtube.com/watch?v=efIRJjSBhag.

Fossil News

Prehistoric Amphibian Ancestor Discovered in Smithsonian Collection

Smithsonian Institution National Museum of American History Press release March 21, 2024. https://www.si.edu/newsdesk/releases/researchers-name-prehistoric-amphibian-ancestor-discovered-smithsonian-collection

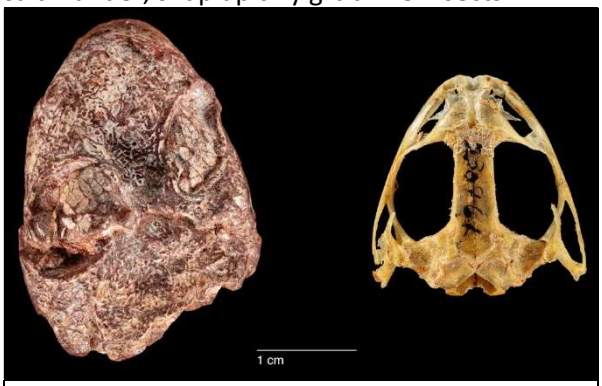
Scientists have uncovered the fossilized skull of a 270-million-year-old ancient amphibian ancestor in the collection of the Smithsonian's National Museum of Natural History. The team of researchers described the fossil as a new species of proto-amphibian, which they named *Kermitops gratus* in honor of the Muppet, Kermit the Frog.

Calvin So is the lead author on the new paper describing the fossilized skull—which measures just over an inch long and possesses large, oval-shaped eye sockets. It was originally unearthed by the late paleontologist Nicholas Hotton III in the early Permian period Red Beds rock outcrops in north central Texas more than 270 million years old. These contain the fossilized remains of ancient reptiles, amphibians and sail-backed synapsids, the precursors to modern mammals. Hotton and his team collected so many fossils that they were not able to study all of them.

Calvin So (right), a doctoral student at George Washington University, and Arjan Mann (left), a Smithsonian postdoctoral paleontologist with the fossil skull of Kermitops. Photo by Brittany M. Hance, Smithsonian.

In 2021, Arjan Mann was sifting through Hotton's trove of Texas fossils when one specimen labeled as an early amphibian caught his eye. "One fossil immediately jumped out at me—this really well preserved, mostly prepared skull," said Mann, co-author on the new paper.

Mann and So teamed up to determine what kind of prehistoric creature the fossil belonged to. The skull possessed a mishmash of traits that were different from features seen in the skulls of older tetrapods, the ancient ancestors of amphibians and other living four-legged vertebrates. For example, the region of the skull behind the animal's eyes was much shorter than its elongated, curved snout. These skull proportions helped the animal, which likely resembled a stout salamander, snap up tiny grub-like insects.



The fossil skull of Kermitops (left) alongside a modern frog skull (Lithobates palustris, right). Photo by Brittany M. Hance, Smithsonian.

The researchers identified the fossil as a temnospondyl, a diverse group of primitive

amphibian relatives that lived for over 200 million years from the Carboniferous to the Triassic periods. The early fossil record of amphibians and their ancestors is fragmentary, which makes it difficult to understand how frogs, salamanders and their kin originated. Adding relatives like *Kermitops* into the fold is essential for fleshing out the early branches of the amphibian family tree.

This paper—So, C., Pardo, J.D. and Mann, A., 2024. A new amphibamiform from the Early Permian of Texas elucidates patterns of cranial diversity among terrestrial amphibamiforms. *Zoological Journal of the Linnean Society*, p.zlae012—is available for download at https://academic.oup.com/zoolinnean/advance-article/doi/10.1093/zoolinnean/zlae012/7630141 or can be had from the editor.

Earth's earliest forest revealed in Somerset fossils by Sarah Collins
University of Cambridge Press release published 7 March 2024.
https://www.cam.ac.uk/stories/earths-earliest-forest-somerset

Cliffs of the Hangman Sandstone Formation, where many of the fossils were found. Credit: Neil Davies

The oldest fossilized forest known on Earth—dating from 390 million years ago—has been found in the high sandstone cliffs along the Devon and Somerset coast of Southwest England. The fossils, discovered and identified by researchers from the Universities of Cambridge and Cardiff, are the oldest fossilized trees ever found in Britain, and the oldest known fossil forest on Earth. This fossil forest is roughly four million years older than the previous record holder, the Cairo Forest in New York State.

One of the co-authors is Christopher Berry, who spoke with us on Devonian forests from Cardiff, Wales at our February 2021 meeting.

The fossils were found near Minehead, on the south bank of the Bristol Channel. The fossilized trees, known as *Calamophyton*, at first glance resemble palm trees, but they were a 'prototype' of the kinds of trees we are familiar with today. Rather than solid wood, their trunks were thin and hollow in the center. They also lacked leaves, and their branches were covered in hundreds of twig-like structures. During the Devonian period, this region was not attached to the rest of England, but instead lay further south, connected to parts of Germany and Belgium, where similar Devonian fossils have been found.

Scientist standing by a large fossil of tree stump

These trees were also much shorter than their descendants: the largest were between two and four meters tall. As the trees grew, they shed their branches, dropping lots of vegetation litter, which supported invertebrates on the forest floor.

Scientists had previously assumed this stretch of the English coast did not contain significant plant fossils, but this find, in addition to its age, also shows how early trees helped shape landscapes and stabilize riverbanks and coastlines hundreds of millions of years ago.

The forest dates to the Devonian Period, between 419 million and 358 million years ago, when life started its first big expansion onto land: by the end of the period, the first seed-bearing plants appeared and the earliest land animals, mostly arthropods, were well-established.

"The Devonian period fundamentally changed life on Earth," said Professor Neil Davies from

Cambridge's Department of Earth Sciences, the study's first author. "It also changed how water and land interacted with each other, since trees and other plants helped stabilize sediment through their root systems, but little is known about the very earliest forests."

"When I first saw pictures of the tree trunks, I immediately knew what they were, based on 30 years of studying this type of tree worldwide" said co-author Dr. Christopher Berry from Cardiff's School of Earth and Environmental Sciences. "It was amazing to see them so near to home. But the most revealing insight comes from seeing, for the first time, these trees in the positions where they grew. It is our first opportunity to look directly at the ecology of this earliest type of forest, to interpret the environment in which *Calamophyton* trees were growing, and to evaluate their impact on the sedimentary system."

This period marked the first time that tightly packed plants were able to grow on land, and the sheer abundance of debris shed by the *Calamophyton* trees built up within layers of sediment. The sediment affected the way that the rivers flowed across the landscape, affecting the course of rivers.

This paper—Neil S. Davies, William J. McMahon and Christopher M. Barry. 'Earth's earliest forest: fossilised trees and vegetation-induced sedimentary structures from the Middle Devonian (Eifelian) Hangman Sandstone Formation, Somerset and Devon, SW England.' *Journal of the Geological Society* (2024). DOI: 10.1144/jgs2023-204—is available for download at https://www.lyellcollection.org/doi/epdf/10.1144/jgs2023-204 or can be had from the editor.

Fossil named "Attenborough's strange bird" was the first of its kind without teeth.

Field Museum Press release published 3/4/2024.
https://www.fieldmuseum.org/about/press/fossil-named-attenboroughs-strange-bird-was-the-first-of-its-kind-without-teeth

No birds alive today have teeth. But that wasn't always the case—many early fossil birds had beaks full of sharp, tiny teeth. Scientists have described a new species of fossil bird that was the first of its kind to evolve toothless-ness.

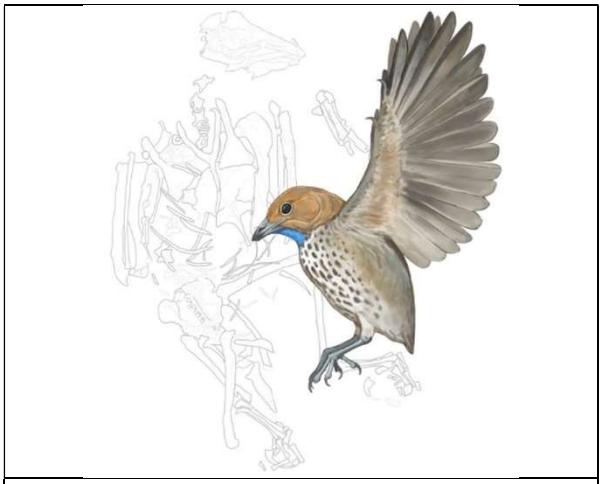


Illustration showing the fossil skeleton of Imparavis attenboroughi*, "Attenborough's strange bird," named in honor of naturalist Sir David Attenborough alongside a reconstruction of the bird in life. © Ville Sinkkonen.*

Imparavis attenboroughi was an enantiornithine, or "opposite bird," named for a feature in their shoulder joints that is "opposite" from that seen in modern birds. Enantiornithines were once the most diverse group of birds, but they went extinct 66 million years ago following the meteor impact that killed most of the dinosaurs. "Scientists previously thought that the first record of toothlessness in this group was about 72 million years ago, in the late Cretaceous. This little guy, *Imparavis*, pushes that back by about 48 to 50 million years. So toothlessness, or edentulism, evolved much earlier in this group than we thought," says co-author Alexander Clark. "Most of Enantiornithines had teeth and still had clawed fingers." The unusual wing bones could have let this bird flap its wings with extra power.

Scientists are still working to figure out why the enantiornithines went extinct in the end-Cretaceous and the ornithuromorphs, the group that gave rise to modern birds, survived.

This paper—Wang, X., Clark, A.D., O'Connor, J.K., Zhang, X., Wang, X., Zheng, X. and Zhou, Z., 2024. First Edentulous Enantiornithine from the Lower Cretaceous Jehol Avifauna. *Cretaceous Research*, p.105867.—is only available for purchase.

CALENDAR OF EVENTS

April

Tuesday April 2, FOSSIL MEETING 7:30 PM. NEQALS Community Meeting Room, 1030 Jackson Rd, Webster, 14580. Our speaker is RAS member Dr. George McIntosh on *Late Devonian crinoid ghost lineages*. Visitors welcome.

Saturday, April 27, FIELD TRIP: The Gulf at Lockport

May

Tuesday, May 7, FOSSIL MEETING 7:30 PM. LOCATION: NEQALS Community Meeting Room, 1030 Jackson Rd, Webster, 14580. Our speaker is Dr. James Boyle, SUNY Buffalo, on Devonian fish, including *Dunkleosteus* and *Titanichthys*. Visitors welcome.

Saturday, May 4, FIELD TRIP: Split Rock Quarry near Syracuse

Visitors are welcome to all Fossil Section meetings! For more information and the latest updates check the RAS Website (**www.RASNY.org**). You can also contact Dan Krisher at DLKFossil@gmail.com or John Handley at jhandley@rochester.rr.com for further information.

ROCHESTER ACADEMY OF SCIENCE FOSSIL SECTION

Monthly meetings are held as hybrid meetings, live but also broadcast on Zoom. Meetings are on the first Tuesday of each month from October to December and from February to May at 7:30 pm. In-person meetings are now held at the NEQALS Community Meeting Room, 1030 Jackson Rd, Webster, NY 14580 unless otherwise listed.

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The FossiLetter is published before each meeting month of the year. Please send submissions to mgrenier@frontiernet.net or by U.S. Postal Service mail to 692 Maple Drive, Webster, NY 14580. Deadline for submissions to the Fossiletter is the 15th of the month.

For scheduling changes and the latest updates please check the RAS Website (www.rasny.org) and click on the Fossil Section link. Last minute updates can also be found on the *General Announcements* page of the Academy Website.

Researcher Calvin So holds the fossil skull of *Kermitops* next to the Kermit the Frog puppet on display at the National Museum of American History. Photo Credit: James D. Tiller and James Di Loreto, *Smithsonian Magazine*