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FOSSIL SECTION

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Free Eclipse Glasses for Members

See page 2 for details. Join the RAS or renew your membership now!

March Meeting

The March section meeting is on Tuesday, March 5, at **7:00 PM** Eastern Time. Note the earlier than usual start time. This meeting will be conducted as a virtual meeting on Zoom. Details on how to login in are in the accompanying email. We will have two speakers following a brief business meeting.

Our first guest is Dr. Derek Briggs, the G. Evelyn Hutchinson Professor of Earth and Planetary Sciences at Yale University and Curator-in-Charge of Invertebrate Fossils at the Yale Peabody Museum. He was our speaker for the Samuel J. Cieurca, Jr. Memorial Lecture last year.



Dr. Derek Briggs

He will speak on “Cieurca’s curious creatures.” He sends us the following notes. “Sam Cieurca’s collection from the Silurian Bertie Group of upper New York State and Ontario includes more than the well known diversity of remarkable eurypterids. There are other arthropods, including crustaceans (phyllocarids), horseshoe crabs and

aquatic scorpions, as well as rare shelly fossils such as nautiloids, and even plants. More notable are a couple of rare problematic fossils, forms that proved difficult to place in any living group. Sam referred to the first as Ezekiel’s Wheel and dubbed the best specimen ‘the most beautiful fossil ever found’. The second is a large disc-like fossil up to 17 cm across. Extinct animals don’t always closely resemble their living relatives but the search for details finally resolved the nature of these two mystery fossils.”

Samuel J. Cieurca, Jr. Memorial Lecture

At this meeting we will have the second annual Samuel J. Cieurca, Jr. Memorial Lecture. Sam (1939-2021) was a long-time member of the RAS and such a notable collector and researcher that he was honored with the Harrell L. Strimple Award of the Paleontological Society in 2016. He was author or co-author of thirty-three papers. He placed his collection at Yale where it is known as the *Samuel J. Cieurca Eurypterid Collection at Yale Peabody Museum of Natural History*.

Our feature speaker is Dr. James C. Lamsdell, Department of Geology and Geography, West Virginia University, Morgantown, WV. His talk is titled “From catfish to crustaceans to chelicerates: eurypterids at 200(ish).”

Dr. Lamsdell has provided the following abstract. *Eurypterids (also known as sea scorpions) are ancient, extinct aquatic arthropods known from over 250 species, that formed important components of Paleozoic ecosystems and have an evolutionary history ranging from the Middle Ordovician (467 mya) to the late Permian (254 mya). Eurypterids are charismatic fossils, counting among their number the official state fossil for New York (Eurypterus) and the largest known arthropod (Jaekelopterus). They are also*



Dr. James C. Lamsdell, West Virginia University

one of the most well-known extinct organisms. Exquisite details of their anatomy reveal how their limbs articulated, how acute their vision was, and the structure of their gills. This information affords us the unique opportunity to reconstruct eurypterids as living organisms, providing insights into their biology and ecology. The group also has a robust and well-resolved phylogeny, providing a firm framework for how the species are related and permitting studies of macroevolutionary and macroecological trends. Eurypterids, therefore, present an ideal case study for testing a variety of evolutionary hypotheses. For example, the preservation of juveniles and larval forms among several species permits interpretations of developmental trends in eurypterids and the recognition of pedomorphic or peramorphic evolutionary trends. The variety of ecological roles occupied by eurypterids also makes them an ideal group for evaluating the impact of Paleozoic mass extinctions, particularly the Late Devonian, which is known to have severely impacted the group both in terms of their diversity and ecology. After two centuries of research, a synthesis of phylogenetics, paleoecology, and functional morphology is unlocking the potential of these long-extinct creatures as a key resource in understanding how evolution operates through the interaction of development and ecology over geologic time.

Dr. Lamsdell's work on *Air Breathing in an Exceptionally Preserved 340-Million-Year-Old Sea Scorpion* was reported in our October 2020 issue. He has his Ph.D. (Honors) from the University of Kansas in 2014.

Free Eclipse Glasses

(Reprinted from current RAS Bulletin.) As a special membership reward, the Academy will provide FREE Eclipse glasses for you and your family. Individual members are entitled to six free pairs, Family memberships will get twelve free pairs. If you haven't yet joined the RAS or renewed your membership, now is the time! New memberships are welcome!

To get yours, you may pick them up or order by mail. To order, send two First Class stamps for each six pair of glasses with your address to Michael Grenier, Rochester Academy of Science, 692 Maple Drive, Webster, NY 14580. Write "Glasses" in the envelope lower left-hand corner. These free glasses are a benefit of membership. Please take the full allotment. If more than you need yourself, use the rest as outreach, giving them to friends and family that can use them. If you want to be an outreach hero, buy more.



It may be more convenient for you to pick up your glasses. Places and times are **WEBSTER, NY** 692 Maple Drive 14580, March 12, 13, & 15 noon to 8PM or by appointment, call 585-671-8738; **PITTSFORD, NY** 140 Railroad Mills Rd 14534, March 17, 18, 19 between 1 pm and 8 pm, call 585-385-2368; **HILTON, NY** 100 Hogan Point Road 14468, by appointment, call 585-392-8299; **CHURCHVILLE, NY** 416 Bromley Road 14428, by appointment, call 585-698-3147.

IF YOU NEED MORE, you can get as many as you want. Let us know how many you need. Please include a donation of \$2 for each additional one for the next six (unless you have already bought some from ASRAS), \$1.50 for each additional one for six after that, and \$1 each thereafter. (You may make payment by PayPal, credit card, or debit card at our RAS website or include with your order.)

President's Report by Dan Krisher

The Section's February meeting was held on 2/6 via ZOOM. The short business portion of the meeting consisted primarily of an update on the creation of a Section outreach display to replace and supplement the materials which have been used in the past.

The speaker for the evening was Dr. Kristina Curry Rogers, vertebrate paleontologist and DeWitt Wallace Professor in Biology and Geology at Macalester College in St. Paul, Minnesota. Dr. Roger's talk was entitled "The Unlikely (but Very Lucky) Triumph of the Dinosaurs." This talk focused on the origin of the dinosaurs and how lucky breaks and environmental stress played a role in their success.

[Editor's Note: This talk was recorded and is available on our private YouTube channel. Look for the report on our February meeting at <https://rasny.org/fossil-section-calendar>.]

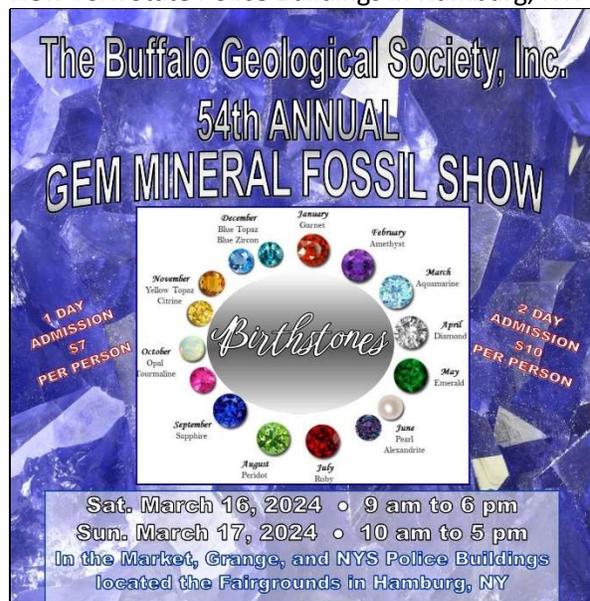
The March meeting will be via ZOOM and will have a somewhat more substantial business portion than February's meeting. We will begin creating a slate of officers for the June election as well as having initial discussions on the upcoming summer field season. We will also provide the Section with an update on the Science Olympiad training session that was held on 2/29.

The featured speaker for our 2nd Annual Samuel Ciarca Memorial Lecture will be Dr. James Lamsdell, Associate Professor of Geology at West Virginia University. Dr. Lamsdell has published extensively on fossil arthropods including eurypterids and on evolutionary theory. There will also be a short talk by Dr. Derek Briggs, Professor of Earth & Planetary Sciences at Yale University and Curator at the Yale Peabody Museum of Natural History. He and his team have published on two newly identified fossils collected by Sam in the Silurian Bertie Group of upper New York State and Ontario.

Buffalo Geological Society's 54th Annual Gem-Mineral-Fossil Show

See last month's issue for more details. This is a reminder that the Buffalo Geological Society's 54th Annual Gem, Mineral and Fossil Show is on

Saturday March 16, 2024, 9 am to 6 pm, and on Sunday, March 17, 2024, 10 am to 5 pm, at the Erie County Fairgrounds in the Grange, Market and New York State Police Buildings in Hamburg, NY.



Spring 2024 Central NY Earth Science Student Symposium

Madison Woodley, grad student chair of the CNYESSS at Syracuse University has sent word that the 2024 Symposium will be held on **Saturday April 20th** at Heroy Geology Laboratory.

The abstract deadline is Friday, April 5th. This is also the event registration deadline. The event will run approximately from 9 am-5 pm with breakfast and lunch provided. There is a \$5 registration fee at the door for individuals not affiliated with Syracuse University.

Expected Schedule

- 9:00-10:00 AM: Registration (coffee and light breakfast)
- 10:00 - 11:00 AM: Poster Session 1
- 11:00 - Noon: Student Talks Session 1
- Noon - 1 PM: Lunch
- 1:00 - 2:00 PM: Student Talks Session 2
- 2:00 - 3:00 PM: Poster Session 2
- 3:00 - 4:15 PM: Keynote Presentation, by Dr. Patrick Fulton
- 5:30 - 8:30 PM: Reception (InnComplete)

The Keynote presentation will be made by Dr. Patrick Fulton. Dr. Fulton is an assistant professor

in Cornell University's School of Earth and Atmospheric Sciences whose research interests include hydrologic and thermal processes within fault zones and how these processes either control fault slip behavior or provide insightful signatures within fault rocks.

We will again organize a carpool from Rochester. More details will be provided in the April issue.



If you wish to attend, register at this QR code or click on URL <https://forms.gle/ENxBSBzqpG9j1Qi37>

Fossil News

Iconic early Permian reptile fossil found to have forged soft tissue

University College Cork, Ireland Press release issued February 16, 2024.

<https://www.ucc.ie/en/news/2024/mystery-solved-the-oldest-fossil-reptile-from-the-alps-is-an-historical-forgery.html>



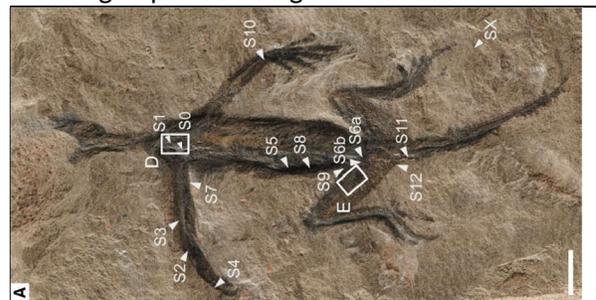
Dr Valentina Rossi of University College Cork led the team which discovered that a 280-million-year-old lizard fossil is, in part, a forgery. (Image credit: Zixiao Yang)

A 280-million-year-old fossil that has baffled researchers for decades has been shown to be, in part, a forgery following new examination of the remnants. *Tridentinosaurus antiquus* was discovered in the Italian alps in 1931 and was thought to be an important specimen for understanding early reptile evolution. Its body outline, appearing dark against the surrounding

rock, was initially interpreted as preserved soft tissues. This led to its classification as a member of the reptile group Protorosauria. However, this new research reveals that the fossil renowned for its remarkable preservation is mostly just black paint on a carved lizard-shaped rock surface. The purported fossilized skin had been celebrated in articles and books but never studied in detail.

Dr Rossi, of UCC's School of Biological, Earth and Environmental Sciences, said: "Fossil soft tissues are rare, but when found in a fossil they can reveal important biological information, for instance, the external coloration, internal anatomy, and physiology. The answer to all our questions was right in front of us, we had to study this fossil specimen in detail to reveal its secrets – even those that perhaps we did not want to know".

The microscopic analysis showed that the texture and composition of the material did not match that of genuine fossilized soft tissues. Preliminary investigation using UV photography revealed that the entirety of the specimen was treated with some sort of coating material. Coating fossils with varnishes and/or lacquers was the norm in the past and sometimes is still necessary to preserve a fossil specimen in museum cabinets and exhibits. The team was hoping that beneath the coating layer, the original soft tissues were still in good condition to extract meaningful palaeobiological information.



Rossi et al. 2024 FIG. 1. *Tridentinosaurus antiquus*. A, photograph of the specimen, including sampling locations S0–S12 and SX (matrix).

The findings indicate that the body outline of *Tridentinosaurus antiquus* was artificially created, likely to enhance the appearance of the fossil. This deception misled previous researchers, and now caution is being urged when using this specimen in future studies.

This paper (Rossi, V., Bernardi, M., Fornasiero, M., Nestola, F., Unitt, R., Castelli, S. and Kustatscher, E., 2024. Forged soft tissues revealed in the oldest fossil reptile from the early Permian of the Alps. *Palaeontology*, 67(1), p.e12690), is available at <https://onlinelibrary.wiley.com/doi/pdf/10.1111/pala.12690>.

3D preservation of trilobite soft tissues sheds light on evolution of defensive enrollment

Harvard University Press release issued December 20, 2023.

<https://oeb.harvard.edu/news/unveiling-ancient-secrets-3d-preservation-trilobite-soft-tissues-sheds-light-convergent>

They'd been in the collections of the Harvard Museum of Comparative Zoology (MCZ) since the 1870s when they were first discovered. Nestled in among the largest collection of trilobites, the unique fossils rested in drawers until 145 years later when PhD candidate Sarah Losso began combing through the collection of trilobites as part of her dissertation. "I started my PhD going through all of these thin sections of trilobites, imaging them, and trying to figure what we can actually see," Losso said. "And then I came across something we never see in trilobite fossils."

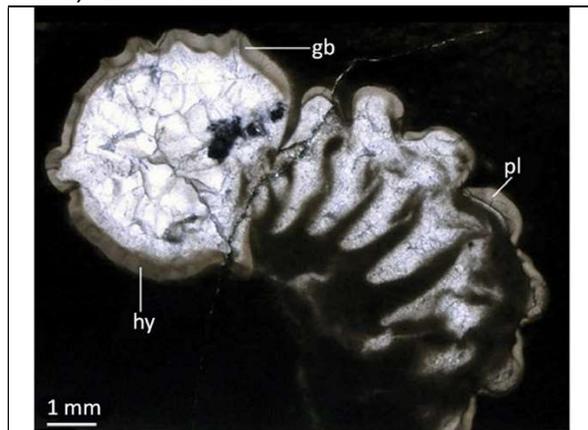
In a new study, lead author Losso describes the unusual three-dimensional trilobite fossils prepared as thin sections showing the 3D soft tissues during enrollment. The study reveals the soft undersides of enrolled trilobites and the evolutionary mechanism that allows arthropods to enroll their bodies for protection from predators and adverse environmental conditions.

The fossils are from the Mohawkian Stage of the Ordovician Period (462-451 million years ago). They were discovered in the Walcott-Rust Quarry located in upstate New York near Trenton Falls. The quarry is named in part after the scientist Charles D. Walcott, who discovered the enrolled trilobites there. He later discovered the Burgess Shale while Director of the Smithsonian.

The fossils, sold to Harvard in the 1870s, were trapped in a sediment slurry that quickly moved downslope and entombed the trilobites, leading

to the preservation of delicate tissues before decay destroyed them. They are unusual in that the soft tissues, such as legs and antennae, are preserved in 3D. Walcott studied the fossils by cutting them into sections of paper-thin slices of rock and attaching them to glass slides.

"These were the first known complete trilobite appendages," said Losso, "before their discovery in the late 1800s, scientists knew of the walking leg, but not what the gill branches looked like." Because of the environmental disturbance, the trilobites enrolled to protect their more delicate appendages. Sediment then surrounded the legs of the partially enrolled trilobites, creating a mold of the external shape even while the tissues decayed. "These fossils give us the first clear view of the three-dimensional organization of trilobite soft tissues, as well as the first molds of trilobites in different stages of enrollment, which allowed us to actually see how they moved their appendages and other structures in order to enroll," Losso said.



Losso et al. 2023 Figure 4. (a) Photomicrograph of *Ceraurus pleurexanthemus*. gb, glabella; hy, hypostome; pl, pleural lobe.

This paper (Losso, S.R., Affatato, P., Nanglu, K. and Ortega-Hernández, J., 2023. Convergent evolution of ventral adaptations for enrolment in trilobites and extant euarthropods. *Proceedings of the Royal Society B*, 290(2013), p.20232212) is available at

<https://oeb.harvard.edu/news/unveiling-ancient-secrets-3d-preservation-trilobite-soft-tissues-sheds-light-convergent>

CALENDAR OF EVENTS

March

Tuesday March 5, FOSSIL MEETING 7:00 PM. Virtual Meeting on Zoom. Note earlier start time.

Opening speaker is Dr. Derek Briggs of the Yale Peabody Museum of Natural History with short talk on *Ciurca's curious creatures*. Featured speaker is Dr. James Lamsdell, Associate Professor of Geology at West Virginia University, on recent eurypterid research, *From catfish to crustaceans to chelicerates: eurypterids at 200(ish)*.

Visitors welcome.

April

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

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 now held as hybrid meetings, live but also broadcast on Zoom. Meetings are held 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.

OFFICERS

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Vice President/Program Chair: Michael Grenier

Secretary: Dan Krisher

Treasurer: John Handley

Director (three-year term): Melanie Martin

Director (two-year term): Fred Haynes

Director (one-year term): **Open**

APPOINTED POSITIONS

Field Trip Coordinator: Dan Krisher

FossilLetter Editor: Michael Grenier

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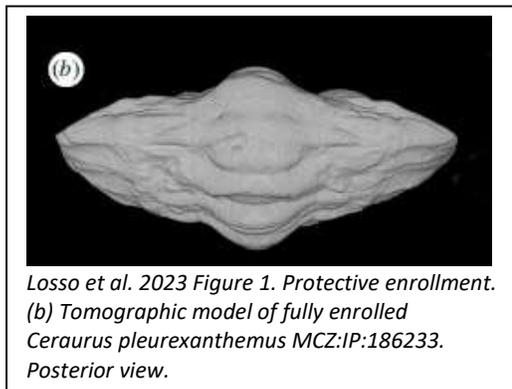
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The FossilLetter is published before each meeting month of the year. Please send submissions to mgrenier@frontiernet.net or by U.S. Postal Service mail to 692 Maple Drive, Webster, NY 14580. Deadline for submissions to the FossilLetter is the 15th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



Losso et al. 2023 Figure 1. Protective enrollment.
(b) Tomographic model of fully enrolled *Ceraurus pleurexanthemus* MCZ:IP:186233.
Posterior view.