

Alberta

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ALBERTA PALAEOLOGICAL SOCIETY

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THE SOCIETY WAS INCORPORATED IN 1986

as a non-profit organization formed to:

1. Promote the science of palaeontology through study and education.
2. Make contributions to the science by: discovery; responsible collection; curation and display; education of the general public; preservation of palaeontological material for study and future generations.
3. Work with the professional and academic communities to aid in the preservation and understanding of Alberta's heritage.

MEMBERSHIP: Any person with a sincere interest in palaeontology is eligible to present their application for membership in the Society. Please enclose membership dues with your request for application.

Single membership \$20.00 annually

Family or Institution \$25.00 annually

SOCIETY MAILING ADDRESS:

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Requests for missing *Bulletin* issues should be directed to the Editor. Send changes of contact information to the Membership Director.

NOTICE: Readers are advised that opinions expressed in the articles are those of the authors and do not necessarily reflect the viewpoint of the Society. Except for articles marked "Copyright ©," reprinting of articles by exchange newsletters is permitted, as long as credit is given.

Upcoming APS Meetings

Meetings take place at 7:30 P.M. in **Room B108,**
Mount Royal University, 4825 Mount Royal Gate SW, Calgary, Alberta.

Friday, September 20, 2019—Rachel Nottrodt, University of Calgary:

Ornithomimids of Late Cretaceous Alberta.

Also a brief presentation by **Clinton Turner.**

Friday, October 18, 2019—Dr. Alwynne Beaudoin, Royal Alberta Museum:

Exploring the Natural History Hall at the new Royal Alberta Museum.

Also a brief presentation by **Arnold Ingelson.**

Friday, November 15, 2019—Mark Powers and Matthew Rhodes, University of Alberta:

First Report of a Dinosaur Trackway from the Horseshoe Canyon Formation.

Also a brief presentation by **Daegan Kovacs.**

Watch the APS website for updates!

ON THE COVER: Columnals (stem segment plates) of *Isocrinus fittoni*, a crinoid (sea lily). Gault Formation, Lower Cretaceous, from Sevenoaks, Kent, Great Britain. Part of a collection of fossils donated by Mike Clark. APS collection, catalogue number APS.2008.013. Width of field of view is 3.28 cm. APS file photo.

Results of the 2019 Annual General Meeting

By Vaclav Marsovsky, APS Secretary

The APS Annual General Meeting was held on Friday, May 10, 2019. Quorum was met with 28 voting members in attendance. The minutes of the meeting may be requested from the Secretary and will be made available to Members prior to the next AGM scheduled for May 8, 2020.

Here are the results. Elected were **Cory Gross** as President, **Vaclav Marsovsky** as Secretary, **Mona Marsovsky** as Treasurer, **Keith Mychaluk** as Field Trips Coordinator (for two years) and **Harold Whittaker** as Programs Coordinator (for two years). The position of Vice President remains vacant.

Moving on from the Field Trips Coordinator directorship is **Wayne Braunberger** who served in this position for eight years. **Keith Mychaluk** is taking over the portfolio. We will be in good hands as Keith has held this position in the past. The APS board thanks Wayne for his years of service as the Field Trips coordinator. The board also would like to recognize all the other board members and committee chairpersons for their tireless service over the past years, as many were re-elected and will continue for another year or two.

All of the important motions put forward were passed. The membership approved the new **Hope Johnson** Award for palaeontology non-professionals to recognize extraordinary achievements by amateurs. Nominations for the Hope Johnson award may be made at any time, according to the criteria issued in the March 2019 *Bulletin* and posted on the APS website. The membership also approved the purchase of general liability insurance and directors insurance. The purchase of the insurance will take place Jan 1, 2020. The impact of this insurance will be reflected in increased field trip fees. See details in the March 2019 *Bulletin*. It is our hope that the revenue from field trips will be enough to pay for the general liability insurance. □

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Find Microfossils in November and December 2019

By Risa Kawchuk

Help **Dr. Jessica Theodor** and **Dr. Alex Dutchak** of the University of Calgary sort through matrix (sediment) from the Cypress Hills Formation (middle Eocene) of Saskatchewan to find tiny fossils. All of the fossils found will be used to aid their research into this northern fauna. Meet in Room B213 at Mount Royal University from 1:00 until 3:30 P.M. on the following **Saturdays**:

November 2, 2019

November 16

November 30

December 14

We are very grateful to Mount Royal University (especially **Mike Clark**) for allowing us to use their microscopes and lab.

Registration is not required, but if you contact me, **Risa** (rhymes with Lisa) **Kawchuk**, (587) 969-1440 or rkawchuk@yahoo.com, and let me know you are planning to attend, then I'll be able to inform you in case we need to cancel a session. No experience is required. Bring tweezers to pick the tiny fossils from the matrix and a pen to label your finds.

Watch the December *Bulletin* for dates of fossil sorting sessions in winter 2020. □

Upcoming Events

September

Clinton Turner

Student, Calgary, Alberta

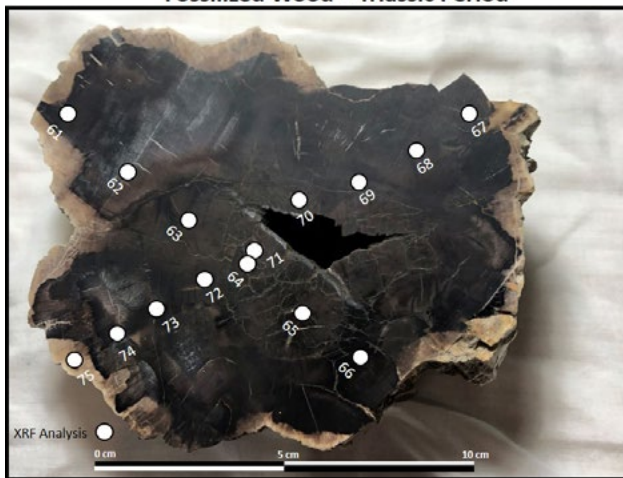
*Between a Bone and a Log:
Exploring the Elements of
Permineralization*

Friday, September 20, 2019, 7:30 P.M.
Mount Royal University, Room B108

[This 15-minute presentation will precede our main speaker, **Rachel Nottrodt**.]

The Alberta Badlands in the Cretaceous Period, and the Arizona Badlands in the Triassic Period, produced amazing fossils in very different environments. My presentation addresses the effect of different environments on how the fossils were permineralized. Using X-ray Fluorescence (XRF) Spectrometry, I analyzed a Cretaceous hadrosaur bone and a Triassic log to see if there was a difference in the elements of permineralization between the two specimens. I hypothesized that analyzing the bone and the log would give clues about the environments the fossils were permineralized in, and that the elements found in the specimens would be different because of the different habitats and different time periods.

Fossilized Wood – Triassic Period



I conducted eleven trials on the bone and fifteen trials on the log, and compared the results. I found that in the bone there were two areas that were crystallized. There was a positive correlation between Silicon (Si), Iron (Fe), Manganese (Mn), and Sulphur (S), and a positive correlation between Calcium (Ca), Phosphorus (P), Strontium (Sr), and Barium (Ba). The correlation between Si, Fe, Mn, and S is opposite to that of Ca, P, Sr, and B. I discovered that the fossilized log is almost 100% silica, and that the XRF spectrometer may not be totally accurate close to the centre of the specimen. There is less Silicon (Si) and higher amount of Fe, Aluminum (Al), and Ca.

The hadrosaur bone was buried in sand during decomposition. It was found near the edge of what was the Bearpaw Sea during the Cretaceous Period, and the presence of flowing water and wet sand contributed to the permineralization process. During the Triassic Period, in what is now the Arizona Badlands, there was a great deal of volcanic activity, and the ash fallout covered the log. Water dissolved the ash, and

over time, replaced the original organic matter with almost pure silica. This was proved through XRF spectrometer analysis. More research and analysis is needed to figure out why there is an opposite correlation between Si, Fe, Mn, and S vs. Ca, P, Sr, and Ba.

Biography

Clinton Turner is in Grade 6 and is a palaeontology enthusiast. He has been a member of the Alberta Palaeontological Society since 2015. His favourite aspects of the APS are the field trips. He also really enjoys fossil hunting with his family in the Alberta Badlands. □

Rachel E. Nottrodt

University of Calgary

Ornithomimids of Late Cretaceous Alberta

Friday, September 20, 2019, 7:30 P.M.
Mount Royal University, Room B108

Ornithomimids, or bird-mimic dinosaurs, are a clade of ostrich-like theropods that are found in Upper Cretaceous sediments of Asia and North America. They are the most abundant non-avian theropods preserved in North American Upper Cretaceous deposits, with Alberta having the greatest number of ornithomimid fossils.

Ornithomimids have edentulous beaks and feathers, making them the most basal member of Theropoda to possess both of these characteristic bird traits and therefore an important group to study in order to understand how these features first originated in dinosaurs.

The most recent in-depth review of ornithomimid taxonomy placed all Albertan specimens, all of which were found in the Dinosaur Park and Horseshoe Canyon formations, into *Ornithomimus edmontonicus* and *Struthiomimus altus*, resulting in the temporal range of *O. edmontonicus* and *S. altus* extending nearly ten million years, while other dinosaur species generally range around one million years. Insufficient diagnostic characters, allegedly stemming from the conservative morphology of ornithomimids, has led to this exceptionally long temporal range and has made it difficult for several studies to confidently assign ornithomimid material to either taxa.

Recognition of two new taxa, *Rativates evadens* and *Qiupalong* sp., from existing specimens from the Dinosaur Park Formation promises the potential to identify new taxa. Furthermore, the recent

description of a specimen from the Horseshoe Canyon Formation provides renewed support for the previously synonymized ornithomimid taxon, *Dromiceiomimus*. Examination of all accessible ornithomimid specimens from the Late Cretaceous of Alberta has revealed diagnostic ornithomimid material from the upper Maastrichtian Scollard Formation for the first time (including the remains of a giant ornithomimid), identified a unique large ornithomimosaur within the Dinosaur Park Formation, and provided a new suite of characters to refine the taxonomic classifications. Overall, these findings seek to improve our understanding of ornithomimids during the Late Cretaceous in Alberta, thereby providing a clearer picture of the species that existed, the relationships among those taxa, and the opportunity going forward to investigate how these individuals fit into the global history of ornithomimosaur.

Biography

Rachel Nottrodt grew up in St. Catharines, Ontario. She completed her undergraduate education at Brock University in St. Catharines, where she conducted undergraduate research on newt limb regeneration with **Dr. Robert Carlone**. She completed an M.Sc. in Biological Sciences with a specialization in Cell and Molecular Biology at Brock University with Dr. Carlone, in which she examined the role of cell cycle regulation in newt spinal cord and tail regeneration. She is currently pursuing a Ph.D. at the University of Calgary with **Dr. Jessica Theodor** and **Dr. Alex Dutchak** studying the taxonomy and phylogeny of ornithomimids in Alberta. Rachel's research interests include theropod evolution, structure-function relationships, and evolutionary development biology. □

On a recent trip to Shimizu Japan, the dinosaur and fossil displays at the Natural History Museum of Tokai University held a number of surprises. In his presentation, Arnold will share a number of photographs and descriptions of the dinosaurs and fossil specimens collected from Asia and around the world. The museum collection includes the fossil remains of gigantic dinosaurs such as the 26 m *Diplodocus*, *Tarbosaurus* with sharp teeth, *Triceratops* and *Stegosaurus*.

Biography:

Arnold Ingelson is a native Calgarian and has been involved in searching for fossils and dinosaur bones for the past five decades. As a young boy, his uncle, **Bill Downton**, one of the founding members of the Calgary Rock and Lapidary Club would take Arnold and his younger brother, **Allan**, on field trips to the Badlands. This inspired a life-long interest in both palaeontology and landscape painting. Following high school, Arnold pursued a Bachelor of Education from the University of Calgary majoring in Secondary Art. Arnold also completed three diplomas in the areas of Speech Arts and Drama from Trinity College of London, England, the Royal Conservatory of Toronto and Mount Royal College. This provided the opportunity to teach Speech Arts for a number of years at Mount Royal Conservatory. He later completed a Masters in Educational Leadership from the University of Portland, Oregon. Arnold taught at both the elementary and secondary levels in a career spanning thirty-four years with the Calgary Board of Education. He was Principal at five different schools prior to his retirement in 2012.

Arnold has continued his passion for painting as well as palaeontology during his retirement. He and his wife also have a strong interest in travelling. His recent trip to Japan in December 2018 forms the basis for this presentation. □

October

William Arnold Ingelson

Alberta Palaeontological Society

If in Japan, Visit the Tokai University Natural History Museum

Friday, October 18, 2019, 7:30 P.M.
Mount Royal University, Room B108

[This 15-minute presentation will precede our main speaker, **Dr. Alwynne Beaudoin**.]

Alwynne B. Beaudoin

Royal Alberta Museum

Exploring the Natural History Hall at the new Royal Alberta Museum

Friday, October 18, 2019, 7:30 P.M.
Mount Royal University, Room B108

The purpose-built Royal Alberta Museum opened on October 3, 2018, the culmination of more than seven years' planning and development. Inside the impressive building, four new permanent galleries highlight Alberta's people, land, and history. At 419,000 square feet—twice the size of the original museum—it is the largest museum in western Canada, with more than 70,000 square feet of permanent gallery space, accompanied by a large feature gallery. In 26,000 square feet of exhibit space, the Natural History Hall provides a visually compelling view into the landscapes of Alberta, past and present, displaying more than 2000 specimens in 180 stories. Three galleries—Ancient Alberta, Ice Age Alberta, and Wild Alberta—show the development of modern Alberta, from the foundational bedrock and geological structures, through the massive glaciations that smoothed and wrinkled the surface, to the plants and animals that now live in its varied ecoregions. The global perspective of the Gems and Minerals Gallery, with its high aesthetic ambiance, complements these Alberta stories.

Ancient Alberta profiles the large-scale processes, especially plate tectonics and mountain building, which shaped the underlying form of the landscape. Among the signature displays are *Edmontosaurus* specimens from the Danek Bonebed, a saltwater tank featuring a community of marine invertebrates, and three huge polished rock slabs showing the products of sedimentary, metamorphic and igneous rock formation processes. Ice Age Alberta highlights the role of glaciation in shaping the modern land surface, and climate and environmental changes that have occurred in the last 13,000 years. The museum is well known for its extensive collection of Ice Age fossils, which forms the centerpiece of this gallery. Ten large replica skeleton mounts of Ice Age animals, including mastodon, giant short-faced bear, and Jefferson's ground sloth, anchor the experience. Fragmentary fossil specimens, many sourced from local gravel operations in cooperation with industry, show the challenging nature of Alberta's Ice Age fossil record. Wild Alberta showcases modern environments of Alberta, arranged by four major ecoregions. Eight original dioramas provide familiar reference points while nine new dioramas show animals in active and dynamic poses, including a wallowing bison and a lynx-hare chase. The Gems and Minerals gallery encourages contemplation of beauty, colour, shape, and form, through display of one of Canada's premier mineral collections. Keynote pieces include a large purple amethyst geode and a huge touchable concrete

tion with holes, while meteorite specimens, fluorescent minerals, and a spectacular array of gemstones round out the displays.

Biography

Alwynne Beaudoin is Director, Natural History, at the Royal Alberta Museum. She is responsible for the oversight of eight curatorial programs and more than thirty staff. Alwynne joined the museum in 1991. She holds a Ph.D. in physical geography from Western University, Ontario. Her research focus is on Alberta's postglacial landscapes and environments, especially in relation to the archaeological record, investigated mainly through pollen and plant macrofossil analysis. □

Field Trips Update

By Wayne Braunberger

**Trip 2019-4, September 14 & 15, 2019
The Big Ammonite, Fernie area, BC**

There has been interest expressed in making a pilgrimage to the site of "The Big Ammonite." A tentative date of September 14–15 has been proposed. If you are interested, contact **Wayne Braunberger** at (403) 278-5154 or email fieldtrips@albertapaleo.org.

You can now pay field trip fees by Interac™ E-transfer (Canada only). Follow directions on your bank's online banking site or mobile app. Bank fees may apply. Payee is giftshop@albertapaleo.org. Please state in the message field: "Field Trip Fees for 2019." Email a scan or photo of the completed registration form to fieldtrips@albertapaleo.org.

Fossils in the News

Cambroraster, new Burgess Shale animal revealed.
www.cbc.ca (search "Cambroraster").

Mosasaur found in Alberta ammonite mine.
www.cbc.ca (search "mosasaur Lethbridge").

Labrador site of Cretaceous fossil leaves discovery.
m.phys.org (search "Labrador fossils").

Hyena fossils found in Yukon, first for Arctic.
openquaternary.com (search "Hyena Arctic").

[Thanks to Phil Benham, Vaclav Marsovsky, Dan Quinsey, Evelyn Wotherspoon] □

Motion to be put forward to Members of the Alberta Palaeontological Society at the Friday, September 20, 2019 General Meeting

Approval for expenditure to print new APS book

Motion to approve the expenditure of up to \$3,000.00 to print up to 100 copies of the new APS book: *Now There Was a Lady! Hope Johnson, LL.D., 1916–2010*. This motion also approves expenditures for subsequent printings of this book, as required to maintain a reasonable inventory.

Moved by: Mona Marsovsky.

Seconded by: _____

Motion passed: Yes/No

Background

Author **Darren Tanke** has written the 283-page, illustrated biography of iconic Alberta amateur palaeontologist, naturalist and artist, Hope Johnson. The book has been edited and produced by members of the Alberta Palaeontological Society. Darren has agreed, in exchange for twelve free printed copies, to grant APS the rights to publish this book and for APS to retain all of the profits from sales. The intention of APS is to sell the book to raise funds for APS activities and to give complimentary copies as speaker gifts.

The APS bylaws state:

(8.2) Extraordinary expenditures in the amount of \$100.00 or more must be prior approved by the Voting Members at a properly Constituted General Meeting. Extraordinary expenditures are expenditures for items other than normal operating expenses, budgeted projects, and items supported by designated grants or donations.