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Bulletin*

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ALBERTA PALAEONTOLOGICAL SOCIETY

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President

Cory Gross

president1@albertapaleo.org (403) 617-2079

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giftshop@albertapaleo.org (587) 578-4579

Secretary

Vaclav Marsovsky

(403) 547-0182

Past-President

Wayne Braunberger

pastpres@albertapaleo.org (403) 278-5154

DIRECTORS

Editor

Howard Allen

editor2@albertapaleo.org (403) 274-1858

Membership

Howard Allen

membership@albertapaleo.org (403) 274-1858

Programs

Harold Whittaker

programs1@albertapaleo.org (403) 286-0349

Field Trips

Keith Mychaluk

fieldtrips@albertapaleo.org (403) 809-3211

COMMITTEES

Fossil Collection

Howard Allen

editor2@albertapaleo.org (403) 274-1858

Library

Georgia Hoffman

(403) 228-7729

Public Outreach

Cory Gross

president1@albertapaleo.org (403) 617-2079

Social

Virginia Goodman

(403) 252-3122

Symposium

Mona Trick

giftshop@albertapaleo.org (587) 578-4579

Website

Vaclav Marsovsky

(403) 547-0182

THE SOCIETY WAS INCORPORATED IN 1986

as a non-profit organization formed to:

- Promote the science of palaeontology through study and education.
- 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.
- 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:

Alberta Palaeontological Society

PO Box 68024, Crowfoot PO

Calgary, AB, Canada T3G 3N8

www.albertapaleo.org

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Howard Allen, Editor, APS
7828 Hunterslea Crescent, NW
Calgary, AB, Canada T2K 4M2
editor2@albertapaleo.org

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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

Held in webinar format until further notice.

October 16, 2020—Vaclav Marsovsky, Alberta Palaeontological Society.
Araucariaceae: A family of conifers from southern continents. See Page 3.

November 20, 2020—Tako Koning, Alberta Palaeontological Society.
Tyndall limestones in your neighbourhood (short presentation).

Dr. Emily Bamforth, Royal Saskatchewan Museum.

Where the wild things are: Palaeontology and partnership in Grasslands National Park, Saskatchewan (main presentation). See Pages 4 – 6.

December 11, 2020—Georgia Hoffman, Alberta Palaeontological Society.
The St. Mary River Formation and its fossils. See Page 7.

COVID-19 has affected our operations. Watch the APS website for updates!

ON THE COVER: Alberta fossils! From the 2020 hiking season, an accumulation of small horn corals, perhaps a storm deposit, in a cherty (black material) lime wackestone, probably Livingstone Formation, Lower Carboniferous. Erratic boulder on Old Goat Glacier moraine, Rocky Mountains. Photo by Howard Allen.

Upcoming Events

October

Friday, October 16, 2020, 7:30 P.M.

WEBINAR—APS members will be notified by email how to register. Or visit cspg.org, navigate to *Upcoming Events/Division E-talks/Palaeontology/* and follow the instructions. **REGISTER EARLY!** Registration ends at noon Thursday, October 15. APS and CSPG members may register for free. Non-members will be charged \$10.00 to participate. There are NO meetings at Mount Royal University until further notice.

Vaclav Marsovsky

Alberta Palaeontological Society

Araucariaceae: A family of conifers from southern continents

Araucariaceae is an ancient family of conifers going back to the Triassic. *Araucaria* is considered a living fossil, like the *Ginkgo* or the *Metasequoia*. I love exotic plants and want to share what I have learned about this group. The presentation will cover which trees are included in this family and where they live today. Their distribution in the southern hemisphere today is what I would call sparse. The presentation will also cover where the family lived during the Mesozoic and Cenozoic and some of their fossils left behind. Then, I will cover the story of the discovery of the living Wollemi pine in Australia, found by pure chance. It was a big story at the time (1994). Many enthusiasts wanted to get their hands on a seedling or a potted plant. Yes, you could purchase one shortly after discovery, and still can today. Location had to be kept a secret because there are so few living on Earth. Certainly, all the premier gardens of the world had to have one in their collections such as the Jardin des Plantes, garden and museum in Paris and Kew Gardens, London. I tried to keep the plant anatomy as basic as possible for this presentation.

Biography

Vaclav has lived in Alberta most of his life. He has been a member of APS for over twenty years and has served on the board of APS in various positions. Although he has completed a few informal palaeontology courses, most of his knowledge is

self-taught. He has an extensive library of palaeo books which he accumulated over his lifetime and now needs to downsize. He has done some palaeo volunteering in the field (Mesozoic and Cenozoic of Canada and US), volunteering at the Tyrrell Museum, and palaeo travels to other continents. He has taken in many field trips offered by the annual Society of Vertebrate Paleontology conferences in the US, England and Australia. He has presented to the APS in the past on the fossils of the Gobi desert and on Toadstool Park, Nebraska.

He also has a passion for exotic plants which is the subject of tonight's talk. He can't pass up a visit to a botanical garden or native forest when travelling. He was one of only five Canadian members of the International Palm Society 35 years ago and used to buy seeds from Hawaii (which sadly never sprouted) and could recognize many of them. He has killed more exotic house plants than he would like to admit. Lately his interest is focused on cycads and tree ferns.



Figure 1. Wollemi pine tree in Kew Gardens, showing female and male cones. Photo by Akerbeltz—own work, CC BY-SA 3.0 <https://commons.wikimedia.org/w/index.php?curid=27560551>.

Fall-Winter Fossil Sorting Cancelled

We regret that the ongoing COVID pandemic has forced us to cancel our Saturday afternoon microfossil sorting sessions at Mount Royal University, for the fall and winter 2020 – 2021 season.

Friday, November 20, 2020, 7:30 p.m.

WEBINAR—APS members will be notified by email how to register. Or visit cspg.org, navigate to *Upcoming Events/Division E-talks/Palaeontology/* and follow the instructions. **REGISTER EARLY!** Registration ends at noon Thursday, November 19. APS and CSPG members may register for free. Non-members will be charged \$10.00 to participate. There are NO meetings at Mount Royal University until further notice.

Tako Koning

Professional Geologist, Alberta Palaeontological Society

Tyndall limestones in your neighborhood

[This 15-minute presentation will precede our main speaker, Dr. Emily Bamforth.]

The Tyndall limestone is the famous and iconic building stone from the Late Ordovician (450 million years old) Red River Formation which outcrops near the town of Tyndall, approximately 30 km northeast of Winnipeg, Manitoba. The Tyndall limestone, also known as Tyndall Stone, occurs within the lower half of the Red River's Selkirk Member that is 43 m thick. Tyndall Stone is used extensively throughout Canada as an ornamental building stone. It ranks among the most beautiful building stones in the world. The interiors of the Parliament Buildings in Ottawa are of Tyndall Stone as well as the Museum of Civilization in Gatineau, Quebec; the Provincial Legislature buildings in Winnipeg and Edmonton;



Figure 1. Safeway, Kensington. *Maclurites* gastropod. Canadian loony coin for scale.

the Rimrock Hotel in Banff; the Empress Hotel in Victoria; the *T. rex* Discovery Centre in Eastend, SK and the University of Alberta's Tory Building.

The Tyndall limestone was deposited in a shallow marine environment. It is fine grained and cream coloured with pervasive mottling of darker dolomitic limestone. The highly distinctive and beautiful mottled appearance is due to the extensive presence of trace fossils known as *Thalassinoides* which are fossilized burrows left behind by organisms such as worms and crustaceans, which burrowed through the limestone during or just after its deposition.



Figure 2. Safeway, Kensington. A star-shaped sponge with a straight-shelled orthocone nautiloid in the upper right corner.

This presentation will show select locations in downtown Calgary, the Beltline, Sunnyside-Kensington and at the Southern Alberta Institute of Technology (SAIT) where Tyndall Stone is used to decorate the sides of buildings and for ornamental purposes. Downtown, on the north side of the classic art-deco style AGT (Alberta Government Telephone) Building, at 119 6 Ave. SW, built over 90 years ago in 1929, one can observe occurrences of *Receptaculites* which is the highly distinctive fossilized algae sometimes referred to as "the sunflower coral." Abundant *Thalassinoides* can also be seen there. The *Thalassinoides* are more resistant to weathering than the limestone matrix. Accordingly, they are prominently etched on the surface of these blocks by almost a century of weakly acidic rainfall.

Ten metres high Ionic-style columns of Tyndall Stone grace the entrance of the heritage Bank of Montreal Building, built in 1932. Similar style columns of Tyndall Stone can be seen at the entrance to the Centre for the Performing Arts, built in 1930 and originally called the Calgary Public Building. Both buildings are on the Stephen Avenue Mall.



Figure 3. SAIT. *Receptaculites*, an Ordovician age algae. The darker mottled features are known as *Thalassinoides* which are trace fossils caused by organisms intensively burrowing in the soft sediment.

In front of the Safeway store in Kensington, ten blocks of Tyndall Stone are present. The top dimensions of each block are about 1.0 m by 1.0 m and the depth is 0.5 m. These blocks allow the observer to study the fossils in multi-dimensions (top, front, side and back). However, the best location in Calgary to view the Tyndall is at SAIT. In the southeast corner of the campus, four large buildings are entirely covered by slabs of Tyndall Stone. The slabs are mostly 1.4 m high by 0.7 m wide.

The Tyndall is highly fossiliferous in the locations to be reviewed in this presentation. These fossils represent life which flourished 450 million years ago in a tropical environment on an ancient sea floor. A variety of fossils have been observed including nautiloids, gastropods, stromatoporoids, brachiopods, sponges, rugose and tabulate corals and large (up to 25 cm diameter), circular *Receptaculites*.



Figure 4. SAIT. Large orthocone nautiloid, length of 50 cm.

Biography

Tako Koning is Holland-born but Canada-raised with many years of experience working as a geologist in the oil industry in Canada but also living and working in Indonesia (7 years), Nigeria (3 years) and Angola (18 years). He has a B.Sc. in Geology from the University of Alberta and a B.A. in Economics from the University of Calgary. He continues to be fascinated by geology and palaeontology. This is his second presentation to the Alberta Palaeontological Society. His first was last year with a talk on “Algal Stromatolites—From Precambrian to Present Day.”

Dr. Emily Bamforth

Royal Saskatchewan Museum, T. rex Discovery Centre, Eastend

Where the wild things are: Palaeontology and partnership in Grasslands National Park, Saskatchewan

Fossil tourism is certainly not a new concept. As early as the 17th century, holidaying gentry would flock to the south coast of England to collect “curios” such as “snakestones” (ammonites), “devil’s toenails” (a type of bivalve) and “verteberries” (fossils of fish and ichthyosaurs). Today, people are still drawn in their thousands to places like Dinosaur Provincial Park to see, and sometimes to collect, fossils of charismatic animals such as dinosaurs in their natural habitat.

While fossil tourism provides unparalleled opportunities for scientific outreach, public education, and the raising of awareness for fossil resources, it also has a more problematic side. Increased visitation to palaeontologically significant areas can lead to the unintentional damage of fossils, their illegal collection or intentional vandalism. Nowhere has the question of how to balance conservation with visitor experience been more evident than in Canada’s provincial and national park systems.

Grasslands National Park (GNP), in southern Saskatchewan, along with its partners and stakeholders, has been striving to find that balance. GNP was established in 1981 to protect the native grassland ecosystem. The East Block of GNP in particular is an area long known for its fossil resources. Geologist **George Mercer Dawson** collected the first dinosaur fossil in Canada from what is now the East Block of GNP, in 1879.

Since then, the latest Cretaceous dinosaur-bearing



Figure 1. A vista known as “The Million Dollar Viewpoint” in the East Block of Grasslands National Park, overlooking deposits of the latest Cretaceous dinosaur-bearing Frenchman Formation and the earliest Paleocene Ravenscrag Formation.

rocks known as the Frenchman Formation have yielded fossils of *T. rex*, *Triceratops*, *Edmontosaurus*, several dromaeosaur species, thecelosaurs, pachycephalosaurs, ornithomimids, and the giant caenagnathid “terror chicken,” *Anzu*. Microvertebrate fossils from GNP’s Frenchman Formation include sixteen species of turtle, twenty-one species of fish, freshwater sharks, salamanders, frogs, lizards, crocodiles, champsosaurs, marsupial and eutherian mammals, and an endemic species of toothed bird called *Brodavis*. GNP also contains one of the best and most extensive exposures of the Cretaceous-Paleogene (K-Pg) Boundary, the geological signature of the dinosaur mass extinction, in North America. The boundary contains amber inclusions with rare insect fossils, the first of this age to be found in the country. Above the boundary, the earliest Paleocene Ravenscrag Formation contains exquisitely well-preserved fossil leaves, a signature of plant recovery and a treasure trove of palaeoclimate information following the extinction. The East Block also features fossil-bearing early Miocene-aged rocks, very rare in Canada, known as the Wood Mountain Formation.

Despite the scientific significance of its fossil deposits however, the first two decades of GNP’s existence saw very little palaeontology research conducted, largely because of concerns that fossil collection would disrupt the delicate ecosystem. It

was not until the 2000s that a renewed effort by the Royal Saskatchewan Museum (RSM) and McGill University to explore and document the palaeontological resources in GNP brought the Park’s fossils back into focus. Attaining permits to collect the fossil material led to discussions with Parks Canada on the need to collect palaeontological resources in order to protect them, as well as minimizing the ecological impact of collection. These discussions led to the establishment of a GNP Paleontology Team, comprising members from Parks Canada GNP, the RSM, McGill and

other outside institutions, to discuss issues related to palaeontology in the Park. In 2014 a formal Memorandum of Understanding between the RSM and GNP established guidelines about how palaeontological resources in the Park were to be dealt with.

Since 2010 visitation numbers in Grasslands National Park have skyrocketed, largely due to increased public awareness and to a new campsite and visitor centre being built in the East Block. The new focus on palaeontology—a type of fossil tourism—in GNP has been significant and greatly beneficial. In partnership with the RSM, it has led to the development of a hugely successful public program known as “Fossil Fever.” Additionally, more fossils are being found by knowledgeable amateurs in the backcountry, who report their findings.

However, with the dramatic increase in number of people visiting the backcountry, sensitive fossil sites previously protected by their remoteness are now being discovered and sometimes disturbed. In 2017 the vandalism and partial poaching of a high-profile fossil from the Park brought the issue to a head. The GNP Paleo Team is now working to mitigate these issues by providing more education, information and signage about fossil collection legislation, more site monitoring, and more public awareness about the importance of leaving fossils in their original geological context.

Grasslands National Park provides an excellent example of how professional and amateur palaeontologists, government organizations and the general public can work together to help balance research, visitor experience and protection of valuable fossil resources on protected lands.

Biography

Dr. Emily Bamforth is a vertebrate palaeontologist with the Royal Saskatchewan Museum (RSM), working out of the RSM's T. rex Discovery Centre in Eastend, SK. Dr. Bamforth's research in Eastend focuses mainly on palaeoecology, involving the study of fossil plants and animals, as well as sedimentology and palaeoclimatology, to understand ancient ecosystems. Dr. Bamforth earned a B.Sc. in evolutionary biology from the University of Alberta in 2005, with an undergraduate thesis on 38 million-year-old fossil snake hibernacula from Wyoming. She went on to do a M.Sc. in Precambrian invertebrate palaeontology at Queens University with **Dr. Guy Narbonne**, exploring Ediacaran taphonomy and palaeoecology at Mistaken Point in Newfoundland. In 2008, she began her PhD at McGill University under the supervision of **Dr. Hans Larsson**, exploring pre-extinction biodiversity trends immediately prior to the K-Pg extinction in Saskatchewan. She earned her doctorate in 2014, the same year she began working for the Royal Saskatchewan Museum. Dr. Bamforth has published numerous papers and conference abstracts on Ediacaran and Cretaceous palaeontology. She is the recipient of several academic, teaching and community engagement awards, including the Regina YWCA's 2019 Women of Distinction Award for Science.



Figure 2. Participants in Grasslands National Park's "Fossil Fever" program, run in partnership with the Royal Saskatchewan Museum.

Friday, December 11, 2020, 7:30 p.m.

WEBINAR—APS members will be notified by email how to register. Or visit cspg.org, navigate to *Upcoming Events/Division E-talks/Palaeontology/* and follow the instructions. **REGISTER EARLY!** Registration ends at noon Thursday, December 10. APS and CSPG members may register for free. Non-members will be charged \$10.00 to participate. There are NO meetings at Mount Royal University until further notice.

Georgia L. Hoffman

Professional Geologist, Alberta Palaeontological Society

The St. Mary River Formation and its fossils

In June of 2019, Canadian Society of Petroleum Geologists and Alberta Palaeontological Society members participated in a field trip to outcrops of the early Maastrichtian St. Mary River Formation below the St. Mary Reservoir dam and spillway near Cardston, Alberta. This talk will review the geological setting of the formation, discuss some of the plant fossils that have been found there, and describe the dinosaur tracks that were found during the field trip. The outstanding Quaternary vertebrate remains, trackways, and palaeo-Indian artifacts from the nearby Wally's Beach locality will also be discussed.

Biography:

Georgia Hoffman earned her Bachelor's degree in geology from the University of Pennsylvania in 1970 and then came to western Canada where she has worked in exploration for coal and oil sands, as well as base and precious metals. She became interested in plant fossils while working in the coal industry. In 1995 she earned a M.Sc. from the University of Alberta for her work on a late Paleocene fossil flora from the Paskapoo Formation. She continues to work on palaeobotanical projects as time permits, most recently focusing on Paleocene plants from the Blindman River locality. □

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In Memoriam

We sadly regret to announce the recent passing of two APS members, who we will miss. Our sincerest condolences to their families and friends.

Bill McPheeters was a member from 2004 until his passing, August 10, 2020, aged 84. He attended several APS field trips and made a large donation of books for the library and a silent auction for APS fundraising (*Bulletin*, March 2014, p. 3; September 2014, p. 6). A notable palaeontological contribution was his discovery of a ceratopsian dinosaur bonebed in southern Alberta that was named for him (Google “McPheeters bonebed”). Bill’s obituary may be read at <https://calgaryherald.remembering.ca/obituary/william-mcpheeters-1079700794>.



Photo by Keith Mychaluk

Bill McPheeters posing with fellow APS members at the October 2005 field trip to the Fort Steele trilobite beds, BC. Clockwise from left: Bill, Geoff Barrett, Dan Quinsey, Wayne Braunberger.

In a sad coincidence, former member **Gustave (Gus) Yaki** passed away the very same day as Bill McPheeters, aged 87. Gus was a member from 2003 to 2016. He attended many APS general meetings, usually seated in the front row with his wife, **Aileen Pelzer**. A renowned Alberta naturalist and bird-watcher, Gus delivered a talk on his birdwatching travels to our members (*Bulletin*, June 2007, p. 5). Read Gus’ obituary at <https://calgaryherald.remembering.ca/obituary/gustave-yaki-1079706506>. □

Thank You!

APS would like to thank some of our members for donations of money, time and effort over the past few months. Thanks to **Vaclav Marsovsky**, who donated the proceeds from the sale of his collection of the *Journal of Vertebrate Paleontology (Bulletin*, June 2020, p. 8), which netted \$358.50 for the Society. And thanks to **Harvey Negrich**, who purchased all of Vaclav’s collection without haggling, thereby ensuring the maximum donation to the Society!

Thanks to **Georgia Hoffman**, who spent a good deal of time going through the Meinrad Hoffmann (no relation, different spelling; see *Bulletin*, March 2014, p. 3) collection of plant fossils, lending her palaeobotanical expertise to identify many specimens and make educated guesses at their provenance—more on this in a future *Bulletin*. Thanks to the **Estate of Meinrad Hoffmann** for the donation; thanks to **Harvey Negrich** for temporarily housing the collection at his acreage; and thanks to **Wayne Braunberger** and **Don Sabo** for hauling all 37 boxes of rocks to your interim Curator’s house, and for supplying coffee and donuts, to boot! Finally, and by no means least, thanks to **Keith Mychaluk**, who donated two wooden drawer units to help house the APS fossil collection. □

Dan Quinsey Receives Hope Johnson Award

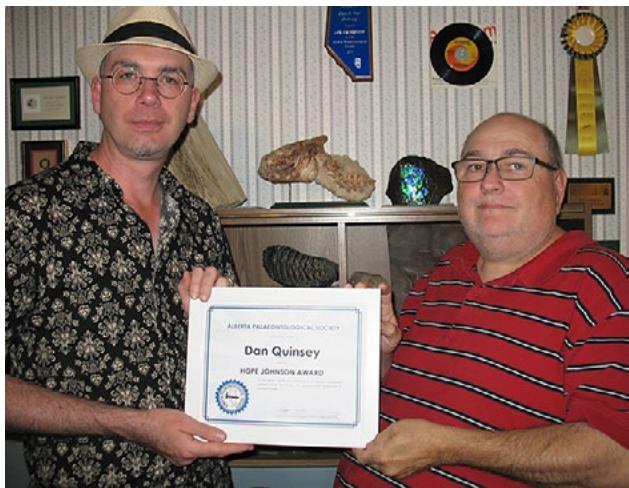
What a wonderful surprise it was to learn I was receiving the Hope Johnson Award to recognize significant contributions to Western Canadian Palaeontology (*Bulletin*, June 2020, pp. 3–4). The award was presented to me by APS President **Cory Gross** at my home, August 10, 2020.

I decided to dedicate time to volunteering many years ago to “give back” by doing good for others and the community. It was an avenue to socialize, build skills and have fun. Volunteering has helped increase my self-confidence and has provided a sense of accomplishment. Volunteering is the best work of life!

The Alberta Palaeontological Society has opened many doors to help me meet my goals. I have always

felt inspired and encouraged by my peers. I certainly feel appreciated and for this, I humbly thank you all.

—Dan Quinsey □



Dan Quinsey (right) receives his award certificate from APS President Cory Gross.

Wanted! Nominations for 2021 Hope Johnson Award

By Mona Trick

Submit your nominations for the 2021 Hope Johnson award before Dec. 31, 2020 to any member of the APS executive (e.g. to **Mona Trick** at giftshop@albertapaleo.org). The Hope Johnson Award recognizes contributions to western Canadian palaeontology by non-professional palaeontologists. This award was named in honour of the late **Hope Johnson** (1916 – 2010). The nominee must meet at least one of the following qualifications:

- Donation of significant fossil collections to a public institution.
- Expert-level curation and conservation of an important personal collection and/or locality that is made available for study by scientists, to advance the science of palaeontology.
- Volunteer work at a museum or research institute (long term, 5 or more years of cumulative effort).
- Published studies (as author or co-author) in publicly available literature or recognized scientific journals.
- Performing outreach activities bringing palaeontology to the public (e.g. school and public

presentations) for 5 or more years of cumulative contributions.

Currently sitting APS board members cannot be nominated. A nominee will be entitled to only one award in their lifetime. Ordinarily, a nominee must be an APS member, though a non-member would be considered for significant contributions.

To nominate someone to receive the Hope Johnson award, send the following to one of the APS Executive:

- A short citation outlining the individual's accomplishments, seconded by another APS member other than the nominator. This must be received before December 31 so that the applications can be reviewed and a presentation made at the following March annual symposium.
- One or more letters of support.

Nominators should be prepared to write an illustrated profile of the nominee for publication in the *APS Bulletin*.

One Hope Johnson award will be presented each year at the annual APS symposium (or as determined by the Board, given the ongoing pandemic situation). The winner will receive a framed certificate and cash award of \$250. A short profile of the winner will be published in the *APS Bulletin*. The APS executive will select the winner from the applications received before December 31. For more information, see <http://www.albertapaleo.org/hopejohnsonaward.pdf> □

Fossils in the News

Scientists argue in support of amateur palaeontologists to counter a letter recently distributed by usual suspects, SVP. <https://link.springer.com/article/10.1007/s12542-020-00522-x>.

Korite under creditor protection. Largest producer of “ammonite,” based in Calgary, victim of COVID-19. <https://en.wikipedia.org/wiki/Korite> also <https://www.bdo.ca/en-ca/extranets/korite/>

National Geographic October issue features dinosaur stories. Non-subscribers check the newsstands, as NG online stories are now paywalled.

T. rex “Stan” sells at auction for US\$31.8M. <https://phys.org/news/2020-10-t-rex-fossil-record-breaking-mn.html>

[Thanks to Phil Benham, Wayne Braunberger, Gilles Fournier and Dan Quinsey.] □

A Magical Newfoundland Tour

Featuring palaeontology, geology, geography, archaeology and more.

Part 2: Interior and northern coastline of Newfoundland; Saint Pierre & Miquelon; Burin Peninsula.

Article and photos (unless otherwise noted) by Pete Truch.

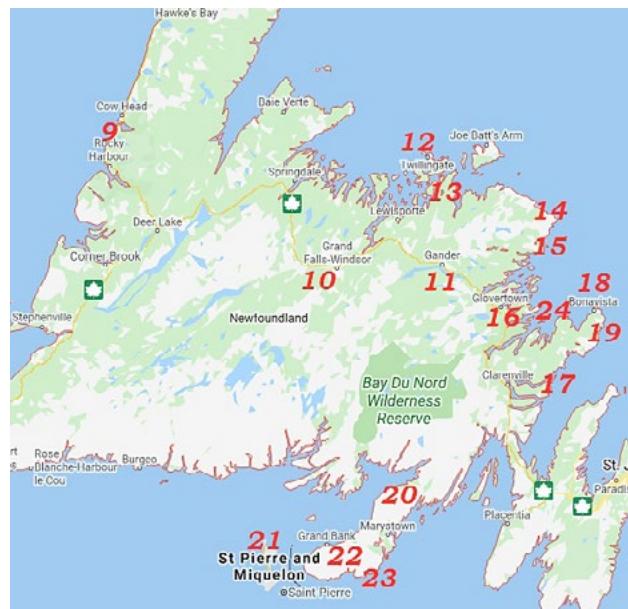
“O k, Dear, I had only asked you for today (to do some archaeology work), but Laurie (the Archaeologist) has a problem with one site in Salvage. Because he liked my work today at the quarry, he asked if I can go with him tomorrow to a Dorset Palaeoeskimo excavation site to straighten out the ‘unlevel’ levels that volunteers had left. He needs to know soon so he can make arrangements.”

“Well, it gives me another full day without you in my hair, and I did like that Labradorite pendant . . .” was my wife Doreen’s reply. Remembering and applying an old one-line Ogden Nash poem—“Candy’s dandy, but liquor is quicker,” I fully agreed to the conditions. Little did I know how super lucky I would get with the effort the next day.

We were on a two-month tour of Newfoundland and Labrador and, as presented in Part 1 (*Bulletin*, June 2020), had almost finished exploring the geological richness of the Northern Peninsula, Red Bay and parts of Gros Morne, but for one major stop: Western Brook Pond in Gros Morne National Park—a World Heritage Site designated in 1987.

Stop Nine: Western Brook Pond (Fjord)

Many television tourism ads feature blue-sky views of this spectacular inland fjord. It is a glacial remnant from approximately 10,000 years ago, 16 km in length, which became landlocked due to the process of isostatic rebound. The surrounding gneiss cliffs date back 1.2 billion years. They are part of the Long Range Mountains that are in turn part of the Appalachians. We had hoped for blue skies, but got



Map 1. Detail of Newfoundland, showing numbered stops detailed in the article. Base map image from Google Maps.

clouds instead. To my journal:

*Friday, July 18 (2008). Day #40
Cloudy + 18 °C*

It's about a 3 km walk to the dock and at 0.6 km I realize that I forgot the tickets, so double it back. I found out later that if I hadn't retrieved them, I'd have had to buy another set for \$90 cash and get the refund in town—no Visa service out there! [in 2008].

It's a bit like sailing in Milford Sound [New Zealand], except narrower—the now fresh (formerly salt) water “fjord” was cut off from the ocean several thousand years ago, with the Pond now lying 9 m above M.S.L. and the granite gneiss cliffs at 690 m high.

**Stop Ten:
Grand Falls-
Windsor**



Figure 1. One of two tour boats operating on Western Brook Pond.

The 175 m depth of the channel (average depth is 72 m) contains water that is described as “ultraligotrophic”: doesn’t conduct electricity and is virtually lifeless.

We see towering falls down the cliffs with names like Blue Denim, Woody Pond, White Point, and Pissing Falls (a feather wisp of fine spray; at 350 m it is tall enough to create a mist—think of seeing the 373 m Takakkaw Falls in Yoho Park). We also see an old man’s face in profile and Doreen spots a second one (she might have been into the Screech again).

We have a nice walk back with an Ontario couple. I had saved them a walk back on meeting them at the parking lot when I first went back for the tickets and had told them I’d forgotten. They had too, but were close to their car so it was OK.

With the finish of the boat tour, we had completed our tour of western Newfoundland with its geological and palaeontological riches. Central Newfoundland would provide a different, but enriching experience.

Central Newfoundland has a scarcity of palaeo sites compared to the richness of the eastern and western coastal areas. Although this is a palaeontology/geology-oriented bulletin, sticking



Figure 2. The author and wife Doreen sporting tans developed not in Newfoundland, but in South America three months earlier. Newfoundland tans are simply known as windburn everywhere else. Photo by an unknown tourist.

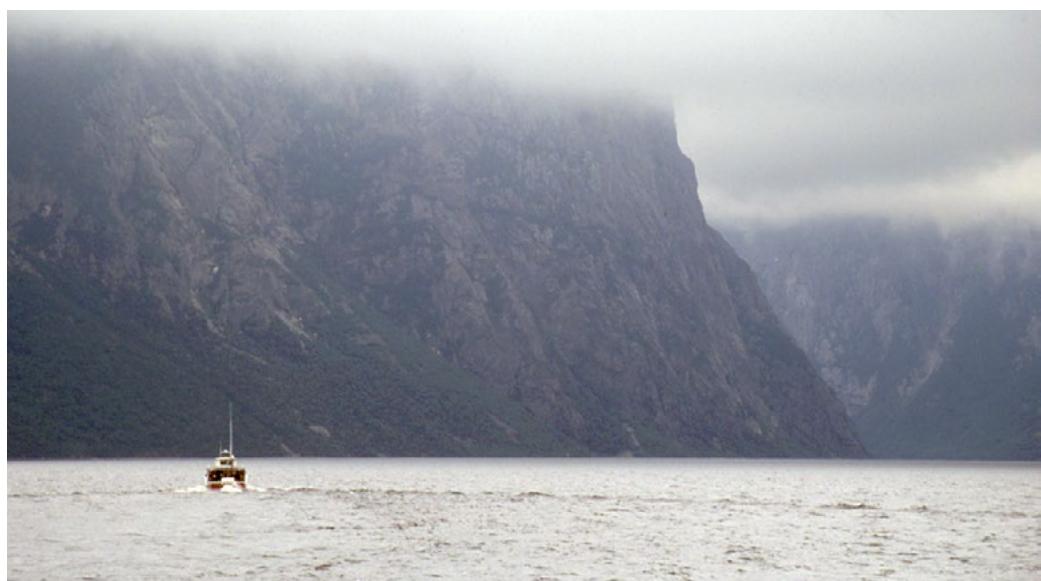


Figure 3. 690 m mountain tops obscured in the clouds.

solely to that theme would definitely diminish the experience of exploring the province. Since a number of readers may never get there, for completeness I'm trying to provide the "extra" experiences we had in addition to the amazing geology/palaeo we had encountered so far, and the yet-to-be-covered "Holy Grail of the Edicaran" in Newfoundland—palaeohighlight (to me)—the visit to Mistaken Point.

I had mentioned the demise of the Beothuk in Part 1 in general terms. Details emerged as we explored more and more of the province. As indicated in the tourist pamphlet, *Grand Falls-Windsor—The Heart of Central Newfoundland*:



Figure 4. Exploits River at The Mill. Due to the use of river waters for milling purposes, fish ladders and ponds were created to aid the salmon's navigation through the altered environment.

The Exploits Valley is the last homeland of the Beothuk Indians and their history is embodied in the tragedy surrounding Mary Marsh (Her Beothuk name was Demasduit). Captured in 1819 by John Peyton Sr., she died in 1820 before she could be repatriated to her people. Thus ended a long series of failed colonial attempts to stop the violence and retaliation. This tragic episode was to be the last opportunity to prevent the extinction of the Beothuk. Their heritage is recognized at the Beothuk Village and the Mary Marsh Regional Museum.

After touring the Museum, we next encountered the Atlantic salmon (*Salmo salar*) at the nearby Salmonid Interpretation Centre. Our very first major experience with salmon was with a chum run (*Oncorhynchus keta*) in Alaska, in 1990. Pacific salmon are *anadromous*, which means they are born in fresh water, adapt to salt water and return to fresh water to spawn. The Pacific species die after their first

spawn so are labeled as *semelparous*. So many were involved in the run we witnessed, that the gulls dined gourmet-style. They selected only the salmon eyes. It was a very strange sight indeed to see the gravel bars lined with hundreds and hundreds of dead salmon with only their eyes missing! Other scavengers (bears, eagles, etc.) were so full, the dead carcasses eventually were distributed by the waters back to the forests to become tree fertilizer. Nothing is wasted in Nature.

Atlantic salmon are much smarter than their Pacific cousins. They will survive three or four breeding sessions before their own demise. They are thus termed *iteroparous*, which means they can survive

spawning and return to sea.

Activities of the giant pulp-paper company Abitibi Price (Abitibi-Bowater) mill had created barriers on the Exploits River (Figure 4), mitigated by the construction of fish ladders. As the company brochure indicated, "We call it our Fish Viewing Windows, but the fish refer to it as the People Viewing Windows."

Some of the salmon I saw through the plexiglas are truly incredible, both

in size (using a ruler etched on the window—84 cm/33 inches!) and in pure beauty (never thought I'd say that about a fish!). Having now visited Parc National de Miguasha, as I write this I have an even better appreciation of the fish I saw here at Grand Falls-Windsor.

The geology of the area is well described in Neale (1972, p. 44): "Red micaceous sandstones of the Silurian Botwood Group are evident in road cuts from the Exploits River to Grand Falls and a few miles west of Grand Falls [became Grand Falls-Windsor in 1991] the Silurian rocks are faulted against Middle Ordovician graptolitic slates of the Exploits Group." (Thanks again to **Harvey Negrich** for the reference—be sure to take a set of these books with you if you ever get to Newfoundland!)

Stop Eleven: Gander Stop Twelve: Twillingate

The medallion from the North Atlantic Aviation Museum pasted in my journal celebrates the 50th anniversary (2008) of the Avro Arrow: an advanced Canadian-designed-and-built jet fighter. After Prime Minister Diefenbaker cancelled the program many of Avro's engineers helped put the US on the moon, as NASA had quickly hired them. In the early days of aviation, Gander was a key refueling stop for Trans-Atlantic flights. It was especially key in WWII, with the deployment of 12,732 B17 Bombers built between 1939 and 1945 (although many were shipped in pieces and convoyed across). Much more recently, the small town of Gander handled thirty-seven planeloads of people forced to land in Gander during 9/11. In 2008 several passengers from those flights returned to Gander to thank the citizens again for their kind hospitality during the crisis.

For lighthouse enthusiasts, Long Point lighthouse, built in 1876, shines its light out from 82 m above the sea at Twillingate Harbour. Another whale-watching cruise yielded no sightings of any kind, while the woman narrator ranted about the Canadian Government

destroying the cod industry. However, though no whales were seen, we were again fortunate to experience the culture (far better than the rantings). From my journal:

... We had a good fun campfire last night with button and piano accordion music by Frank & Joyce Tibot ... We shared campfire pies (our contribution) with them and another couple, Hank & Doreen, also from Gander. As the music progressed through the night, Joyce brought out a traditional Newfoundland delicacy—a huge round cylinder of baloney, eaten raw in chunks that she cut off for everyone ... different!

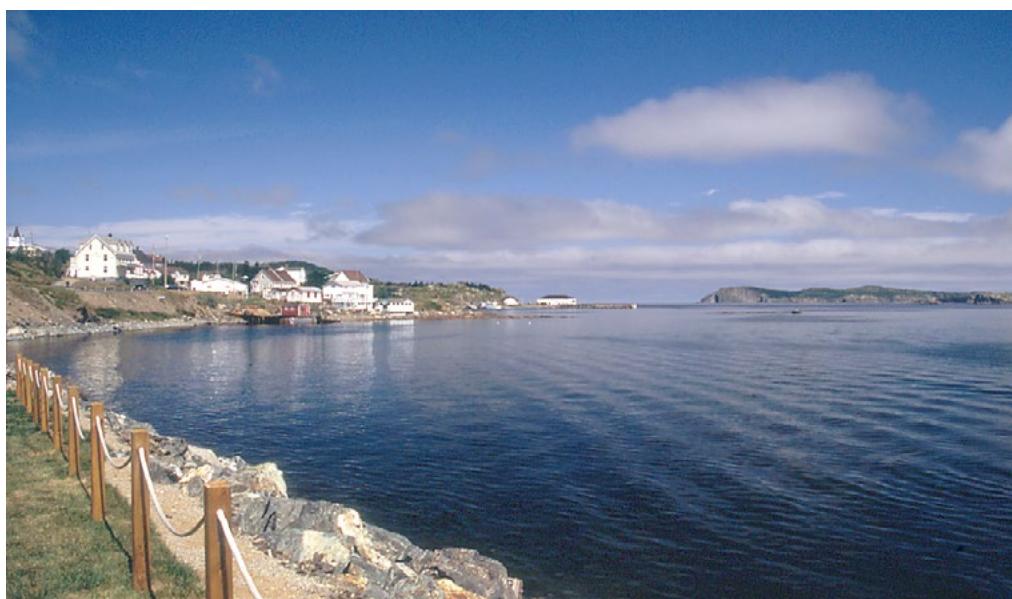


Figure 5. Twillingate Harbour.



Figure 6. North Atlantic Aviation Museum in Gander.

As for the geology of the area (Stander, 1984), attesting to the lack of local fossils (that's no baloney):

The Twillingate region is underlain by three lithologic units. The oldest of these is the Sleepy Cove Group, a one to two kilometre thick volcanic pile which exhibits ophiolitic affinities. To the west, and in thrust contact with this group is the Moretons Harbour Group, a massive, 8 to 9 kilometre thick volcanic pile which most likely developed in an island arc environment. The Twillingate Granite is intrusive into both units and is thus the youngest unit in the region. ... The Twillingate Granite and its basaltic hosts were affected by four deformational episodes.

Stop Thirteen: Boyd's Cove

The geology of Boyd's Cove is described in the great references from Harvey, and helps explain some of the stone tool source materials:

“ . . . The matrix is commonly sheared scaly black argillite with contorted green silty laminations, generally homogenized into a chaotic paste devoid of sedimentary structure.” (Neale, 1972, p. 41)

We encountered the tragic tale of the Beothuk in a few more places (but mainly in The Rooms Museum in St. John’s). Since this is the only case I’m aware of that resulted in complete genocide, it is a tribute to the victims to at least be remembered. Perhaps no better place than Boyd’s Cove (Figure 7), their last stronghold. To my journal:

Thursday, July 24 (2008). Day #46

Sunny +27 °C

We leave Long Point Lighthouse, circa 1876 . . . that shines its light out 18 miles and Shag Rock & the Sleepy Cove Tickle (water canals that create an isthmus) and Twillingate for further exploration up [highways] 340/331/330 as we make our way to Gambo (home town of Joey Smallwood).

First stop is Boyd’s Cove [Figure 7], the archaeological site of the last known “permanent” settlement of the Beothuk (pronounced “Beothicks” by the Newfoundlanders) as first discovered in 1981 and excavated 1982 – 85 by Dr. Ralph Pastore of Memorial University. RC dating indicates a very early occupation at around 1000 AD, but the main hits were indicating potential links to Algonquin Beothuks occupying the site from 1650 to 1720. This places Boyd’s Cove between the French fishing to the north and English to the south (during the summer season).

The natives were being hunted for “stealing” iron—nails especially—which were fashioned into spear and arrow points. On the 3,000 m² site, 4 of 11 building sites were excavated, yielding 4,100 artifacts; 21,000 flakes (argillites, some of green and red cherts, rhyolite from Notre Dame Bay, and the clear Ramah chert from northern Labrador that was so prized it has been found as far south as Connecticut); 12,000 bones and 32 kg of

shells. The latter yielded evidence of smelt and flounder (via flotation). Bones were of beaver, black bear, caribou, lynx, otter, seal, cormorants, geese, guillemots, murres, and three polar bear. Shells included clams and mussels. It is suspected the caribou were driven to a fence leading to a crater where they were slaughtered.

One of the pits (non-excavated) is oval in shape, 10 m × 5 m, with an apparent long hearth through it with two entrances. One of the pits excavated was exactly this and the second one left intact. This house, similar to ones in Labrador, is both a spiritual and dining place. The practice, in Labrador, held in the shaputan (name given to the building), is in honour of the caribou. The hearth is the mokoshan, where leg bones are broken up and cooled, and with the broth cooled, collected, and formed into cakes and eaten. I’m sure the marrow in such would be very nutritious.

Walking the trail to the site (3 km round trip) in the presence of heavy DEET sure reinforces why the Beothuks would smear themselves with seal oil mixed with red ochre. It is believed this made for a good insect repellent and without our DEET, we would have been added to the mosquitoes’ and horse flies’ feast.

The trail was marked with all kinds of edible berries from wild blueberries and raspberries to partridge berries and I’m sure so many other types of edible and medicinal plants.

The [excavation] site is cordoned off, but the pits are marked by numbers. Indian River and Wilson Falls are nearby, so fresh water was available as well as spawning salmon and smelts, including eggs. Because



Figure 7. Beautiful, serene Boyd’s Cove.

the area overlies glacial till, it is very dry due to great drainage. We have a good overview of the bay from Pearce's Lookout and can hear the falls from there.

We stop for a Doreen photo of a sculpture done by Gerald Squires of Shawandithit, (not the captured Demasduit—"Mary Marsh"—of 1819) the truly last of the Beothuk. Someone has put an offering on her chest—I'm sure it's recent and not dating to 2000, the year the statue was erected.

Stop Fourteen: Lumsden

Stop Fifteen: Newtown

Observing a bit of local culture, at breakfast we supplied the ham and in return got *toutons* (pronounced "tawtons"), a fried bread with molasses offered by two couples from St. John's, who were camping with us at Lumsden. Speaking of ham, we had a surplus from a Sobey's back in Corner Brook. They had a remarkable sale: buy one ham and get two free! Things are definitely different in Newfoundland! We were camped right on the beach—the first one I could ride my bike along for kilometres. It reminded me of Long Beach on Vancouver Island where, a few years before, I had ridden every morning for two weeks. Later it took me a week and a full quart of oil to refurbish my bike—thanks to the saltwater-induced rust, but the memories of racing the waves (and losing) was worth it. To my journal:

...Then it's down the road again to Newtown, touting itself as the "Venice of Newfoundland." It is actually 17 different islands (more like Stockholm than Venice) separated by 16 tickles (canals) and joined by bridges [Figure 8]. The town dates to 1853. We first tour the Barbour "Village"—actually a series of houses and warehouses that belonged to a merchant family of the same name. There is also an interesting tale of a ship survival dating to the tsunami of 1929.

One of the industries is sealing and one ship held a record of 56,627 pelts in one load. That's a lot of clubbing.

Stop Sixteen: Terra Nova National Park

From my journal:

*Monday, July 28 (2008). Day #50
Sunny +27 °C*

The view of Newman Sound from Blue Hill [Figure 9] is a sweeping panorama of its blue waters and the granitic vista of Mount Sanford. At 199 m it is the highest point in the Park, and the Labrador Current often cloaks it in a fog. Such fog leads to unique plants and its location is a central flyway for birds. The stouts (horseflies) are at a minimum today, especially com-



Figure 8. Newtown Church reflected in one of seventeen tickles.

pared to the beach onslaught I had at the dig yesterday.

We tour the Visitor Centre/touch sea creatures exhibit. The water, at 5 °C, is quite cold and it is a bit weird touching the living starfish and sea cucumbers, etc. Terra Nova, the first National Park in Newfoundland, 402 km², and Canada's most easterly, was established in 1957. We have a seafood chowder soup for lunch and then find Pissamare Falls. It is quite small. There are more beautiful vistas of Clode Sound as we make our way to Clarenville. This town is really a service centre, with only an abandoned railway and engine to show . . .

Camp at Lockston Provincial Park near Port Rexton.

**Stop Seventeen: Trinity
Stop Eighteen: Bonavista
Stop Nineteen: Elliston; The Dungeon;
Puffin Colony**

From my journal:

Tuesday, July 29 (2008). Day #51
Cloudy most of the day; sunny late afternoon.
Bonavista +26 °C

We had a really nice birchwood fire last night in Spot #41, which was surrounded nicely by trees. A season permit for Prov. Parks here is \$20 or \$5/night—much cheaper than the ripoff in Ontario! It is also nice having 30-amp service in a park. Showers are had and we're off on the Highway 230 loop, with targets of Trinity and possibly Bonavista.

It's a 5 km drive out from Lockston Path on an oiled gravel-pothole road and we turn towards Trinity. A foggy bay later clears to reveal God's Cove and white



Figure 9. Newman Sound in the distance, from Blue Hill.

and blue buoys by the hundreds—mussel growing heaven.

Trinity is criss-crossed with historical buildings, starting with the beautiful St. Paul's Anglican Church [Figure 10]. The first was built in 1730, the second in 1821 and the third and final one standing in 1892. The Holy Trinity Catholic Church has had only one life starting in 1833 and is the oldest in Newfoundland. Many other historic buildings such as the Orthodox-looking Parish Hall; Hiscock House (1881); the Lester-

Garland reconstructed brick house that originally evolved in 1760; the Court House & Gaol (Jail) and Gerald Building of 1903 complete with tower and mansard roof by architect Wilbur Henry Churchill, complete the Trinity skyline. An interesting image is spotted in one house window [Figure 11], likely one of the approximate 48% naysayers.

We have a great cod lunch at the Dockside, and after having walked the bulk of the town, are ready for new vistas. The forest/landscape starts to look more Arctic-like as we drive Highway 230 to find Elliston, “The Root Cellar Capital of the World” [Figure 15] and later Bonavista.

We missed the puffin colony here, so we will have to see it tomorrow through Elliston, although we did spot some puffins on the shores near the 1843 Cape Bonavista lighthouse [Figure 12]. We also saw a lot of whales feeding and later went and saw the Cabot statue [Figure 13]; a number of rock effigies [Figure 16]; the Dungeon [Figure 19] where 600 million-year-old

igneous rock, overlain by later sedimentary rock, have been eroded to form a tunnel and collapsed roof in a horseshoe-shaped cavern (sea caves) visible from the top. We toured the town and the good ship Mathew replica [Figure 14]. An excellent book by Peter Firstbrook discusses the subject matter—The Voyage of the Mathew—John Cabot’s Discovery of North America; 1997, 192 pp.

Wednesday, July 30 (2008). Day #52
Foggy/sunny/
cloudy/foggy +25 °C

Puffins (*Fratercula arctica*) are amazing birds, taking to land [Figure 17] only for the breeding season, about 2 – 3 months of the year (June to mid-August) and take to the sea the rest of the time! I thought only the albatross did this. We watch the colony from the shoreline at Elliston and are amazed and mesmerized.

These birds look a little like penguins but they fly and are fast enough under water to catch fish. Doreen watched one parent coax the youngest to the cliff with



Figure 10. St. Paul's Anglican Church in Trinity.

food—and then off the cliff! It surprised itself and flew! This of course happened when I went to get new camera batteries because my Buenos Aires ones finally went—what a lot of rolls with them!

We watched the puffins for at least a couple of fogs in and out (probably an hour and a half). Mixed with puffins were black guillemot (murre, with orange feet; Uria aalge) and likely herring gulls (Larus smithsonianus). Doreen also spotted cormorants. Wow!

After tracking through Bonavista, we took Highway 235 through a gazillion coves, including the lunch stop at Plate Cove East. Doreen cooked up ham for sandwiches while I went and looked at all the road cuts. The geology here is very interesting as I found

some fantastic coloured sandstones (purple and green) and some pink quartz, white quartz and a neat conglomerate mudstone. Fortunately there is enough room in the motor home for samples.

Stop Twenty: Burin Peninsula

From my journal: *... it's raining when we leave Swift Current (nearby is Lethbridge—both in Newfoundland!) The Burin Peninsula is much*



Figure 11. "Republic of Newfoundland" sign hung in a Trinity window.



Figure 12. Cape Bonavista lighthouse.

more rugged than I envisioned it. Glaciers have scoured the area, leaving every kind of depression imaginable in size and shape to form ponds and left a very thin layer of soil so the area looks Arctic-like with the spruce being very krummholtz-styled [Figure 20]. It is also very hilly terrain (so really it is a feature called knob-and-kettle topography). I also spot an area with a glacial feature



Figure 13. Statue to John Cabot who landed here in 1497. (Like maybe most statues nowadays, it may be subject to removal for some great cause or another).



Figure 14. Full-scale replica of Cabot's ship, *Mathew*, with Doreen Truch on board, acting as first mate (and if I want to stay married, only mate). Funny that the term first mate implies there are more. The building in the background houses the replica through the fierce winter months.



Figure 15. As in many small towns, the good citizens of Elliston resorted to creativity in establishing their claim to fame.



Figure 16. Drinking too much Screech can cause fanciful images to appear on the rocks—in this case a stone seal.



Figure 17. Puffins at a colony near Elliston.



Figure 18. Sea stacks. It reminded me of the Twelve Apostles in Australia. (I think there are only ten—stacks, that is). Here in Newfoundland, it's down to four.

called roche moutonnée, a fancy term meaning the glacier scraped and scoured the bedrock into rounded lumps as it passed over.

... From Marystown it's a stop at Frenchman's Cove where Doreen makes a delicious lunch. We eat it on the beach, watching a bird (likely a cormorant) dive like a bullet into the water for his lunch. He did it three times before he got the fish and flew off to his nest site. The first two times he circled back and tried again, but we knew he caught a fish, because he flew low along the water afterward.

Then we hit Grand Bank [Figures 21, 22] and Fortune (they're only 3 km apart). In Fortune we bought one-day trip ferry tickets (to St. Pierre) for tomorrow; booked a dinner theater on Saturday night in Grand Bank; got geo/palaeo information for the area, and booked our camping spot in Fortune.

Stop Twenty-One: St. Pierre & Miquelon

Canada mostly borders the USA. Only in the high Arctic, where we can get to Greenland (though not easily), is

another foreign country so close to Canada as the French territory of St. Pierre & Miquelon is to Newfoundland.

Visiting is both an interesting and eye-opening cultural experience. To my journal:

Friday, August 1
(2008). Day #54

Mostly cloudy +19 °C.
4:00 A.M. is awfully early to get up for any excursion (although some European bus tour days were like that), but that's what we have to

do. The St. Pierre ferry leaves at 7:30 A.M., but we're picked up from the RV park at 6:40. The ride to the island dock includes a bit of whale/dolphin/puffin/bald eagle/gannet watching, so it's neat.

The approximate 1½ hour ferry ride brought us to St. Pierre. We pass the "Elephant Island of St. Pierre," the interpreted image of which is again Screech-dependent. The town/island itself is a taste of France, complete with a tall ship [Figure 24] flying the French tricolour. We hit the local bank for Euros; a bakery for our breakfast sandwich and lunch supplies; the post office



Figure 19. The Dungeon in Cape Dungeon Provincial Park.



Figure 20. Typical glaciated terrain of the Burin Peninsula, brightened by fireweed.

for stamps, and take the self-guided walking tour, including getting our traditional picture [Figure 27]. The Musée de l'Arche is an interesting building with a Chinese (or Japanese)-style roof. The war memorial is good and the Cathedral is OK, but its doors are locked!

The 6,000 or so residents live in a virtual welfare state: 30% of the workers are government employed and the remainder are heavily subsidized. Gasoline is 1.17 Euros per litre or about \$1.99: far cheaper than in France! Medicine is free (Newfoundland is paid to take care of the French), as is education, including a living allowance. No small wonder these guys don't know how to take care of visitors, nor do they really care to.

Shops and other places, including the restaurants [Figure 25] close from noon to 1:30 P.M. every day so the owners and workers can have their lunch! Some close half day Saturdays and others all day Sunday. Fine thing for one-day visitors on a short day to begin with. There is a half hour time dif-



Figure 21. Painted mural on exterior of the Maritime Museum in Grand Bank.



Figure 22. Grand Bank dockside and old house with a widows' walk completing the roofline.



Figure 23. Harbour lighthouse and skyline of St. Pierre.



Figure 24. Three-masted tall ship sailing schooner, *Belem* in St. Pierre harbour.

ference and we basically lost another half hour to clear customs. So, from 10:00 A.M. till return boarding at 2:30 P.M. was all the time we had. We had been informed of this in advance, so made the most of our time there. We had decided not to pre-book an overnight stay, as the hotel prices were

higher than the Banff Springs in peak season!

On the return ferry ride, we talked with people who had overnighted—the place closed down by 8:00 P.M. so it was very boring for some, but OK if you want only quiet and relaxation. I also talked to a lady who told me to look at “Joggins in New Brunswick” as she thought it was a possible fossil site!

More on the folk art sign of Figure 25, with translations thanks to my son, Peter:

White writing on blue fish: literally, “Choose to enter the sea from little streams.” This is a quotation attributed to St. Thomas Aquinas (1224 – 1274),



Figure 25. Folk-art street signs (using the tricolour scheme of the French flag) advertising in front of a St. Pierre restaurant that closes at noon for the owner to enjoy lunch!



Figure 26. A typical St. Pierre street scene.



Figure 27. Doreen Truch and St. Pierre & Miquelon license plate. In addition to feet on the beach, Doreen is photographed with a local license plate whenever we enter a new country.

Italian philosopher, priest, scientist, psychologist and theologian. The principle suggests that one should not attempt to resolve large difficulties at the outset, but rather advance one's knowledge on a subject little by little in order to solve the larger issues.

Red writing on white lighthouse: "Crab Cocktail" with a list of ingredients.

White writing on red starfish: literally, "If the ocean is boiling, you'll have well cooked fish." This is actually a French idiom coined by Diderot in 1776

that talks about denouncing baseless rumours.

How French! Basically, two philosophical thoughts with a good stiff drink in between!

Stop Twenty-Two: Fortune Head Ecological Reserve

From my journal:

*We sleep in late after our early morning yesterday. We're up and leaving by 10:00 A.M. for the Reserve. It's close to the campground—in fact, we can see it from the top of the hill. In the display room [Figure 28], the only trilobite around is one that was broken and glued back together with a piece missing. Otherwise the lighthouse and the formations are interesting. At least I got to see—sort of—one slab that had some of the famed trace fossils, *Treptichnus pedum* [Figure 29]. It was under glass with such a bad reflection that it was impossible to photograph.*

This is one of the few sites I know of that is famous only for the presence of trace fossils; however, the burrows are very unique. More on the geology and fossils (Wikipedia, 2020b):

The global stratotype at Fortune Head is composed of the uppermost part of member 1 and all of member 2 of the Chapel Island Formation of the Marystow Group. The Chapel Island Formation consists primarily of sandstones, siltstones, and limestones. Some of these rocks exhibit mud cracks and stromatolites, suggesting that deposition occurred in tidal or, at deepest, continental shelf environments.

Fossils

The boundary between the Precambrian and Cambrian is demarcated by the presence of trace fossils of *Treptichnus pedum*, one of the earliest animals. Without any hard anatomical fea-



Figure 28. "Salt-and-pepper" style lighthouse that doubles as the Fortune Head Ecological Reserve's interpretation centre.



Figure 29. *Treptichnus pedum* trace fossil. Cropped image, width of view 6.4 cm. Photo by G. Baranov, Geoscience Collections of Estonia, <http://geocollections.info/file/111032>. CC BY-NC 3.0 licence.

tures, *Treptichnus* is known only by its distinctive burrow pattern, which can be seen at Fortune Head.

Fortune Head records the beginning of a period of increasing biological diversity known as the “Cambrian explosion,” and it exhibits a number of other Cambrian and Precambrian fossils, including early shell fossils, vendotaenid algae, soft-bodied megafossils, and microfossils. Below *Treptichnus*, the stratotype at Fortune Head includes traces of the arthropod *Monomorphaichnus*, vertical dwelling burrows from *Skolithos* and *Arenicolites*, cnidarian resting burrows from *Conichnus* and *Bergauria*, and more intricate feeding burrows from *Gyrolithes*. More complex fossils appear later.



Figure 30. Beautifully defined and coloured Precambrian and Cambrian beds at Fortune Head.

Stop Twenty-Three: Lord’s Cove; St. Lawrence

Again to my journal:

We head south on Highway 220. We can see St. Pierre, and the bog/krummholz landscape changes to just plain bog. It is still pretty and right near sea level. This was not the place to be around 7:00 P.M. the night of November 18, 1929. An earthquake of 7.2 magnitude hit off the Burin Peninsula around 5:00 P.M. (so it must have been some distance) and the 2-hour delayed tsunamis (three of them) hit hard, especially Lord’s Cove. In total, 27 people died.

Two hundred three seamen died on the 18th of February 1942 when two US Warships (USS Pollux and USS Truxtun) went aground. Due to wartime measures, the lighthouse had been turned off. More would have died were it not for the locals in St. Lawrence who risked their lives to save as many as possible. The US government later rewarded them with a brand-new hospital. There’s an interesting side story with one of the survivors. The locals from St. Lawrence bathed and fed the survivors; however, one local asked for help in cleaning the oil off of one sailor. She couldn’t seem to be able to scrub it off. She had never seen an African American before. This person turned out to be Lanier Phillips.

Adding to my original journal notes, from Dead

Reckoning: The Pollux-Truxtun Disaster (Maritime History Archive, 2010):

... A striking example is Lanier Phillips, a black sailor aboard the *Truxtun* who was the victim of severe racism while growing up in Georgia during the 1920s and 30s, and also while enlisted in the US Navy. To this day, Phillips credits the kindness and respect he received from the white people of St. Lawrence with changing his life and giving him a newfound sense of self-worth. He says it motivated him to fight racial discrimination in the United States and to become the first black sonar technician in the US Navy. Today, Phillips is widely recognized as a civil rights role model. Although many lives were lost as a result of the two shipwrecks, 186 were saved, and at least one was changed for the better, with profound and far-reaching results."



Figure 31. A true rock garden in Grand Bank.

Continuing with my journal:

Tragedy seems to be the rule around here, as over 2,000 miners were exposed to radon gas for long periods of time when working in the [St. Lawrence] fluorspar mine. The mine was one of the largest in North America. It first was discovered in 1825 and went into full swing in 1929. Between 1943 and 1960 when it went very deep, miners complained of headaches and breathing problems. When it was finally tested, it was determined that levels of radon were 27 to 193 times the normally accepted levels. Many miners died of cancer and many others from silicosis (fine rock dust in the lungs). My dad was a coal miner, rather than a hard rock miner, but had similar problems later in life.

Fluorspar lives on here, however, in the form of jewellery. Doreen buys a bracelet; pendant and earrings of a green tone of fluorspar, just one of over 30 shades. The green is a deep rich colour. Nero was reported to have owned a carved bowl of fluorspar, so unique it was valued at the price of a Roman villa. Good thing Doreen didn't buy at the same place! An example of a carved fluospar vase, known as the Crawford Cup, is held in the British Museum (but I don't think this

was Nero's). I end up buying a couple of raw pieces of fluorspar crystals—one purple and one a lighter shade of green [Figure 32] for my display case. I also found some purple and yellow samples in some breaker boulders near the fish production plant.

We drive the scenic way on Highway 220 back to Marystow, where we run into half of Newfoundland going to the demolition derby outside of the town. It's busy so we decided on supper at Kelly's (good ribs) and we park at WalMart with other RVs.

Since we last visited in 2008, apparently the St.

Lawrence mine has been re-opened, fluorspar being utilized as follows (Wikipedia, 2020a):

There are three principal types of industrial use for natural fluorite, commonly referred to as "fluorspar" in these industries, corresponding to different grades of purity. Metallurgical grade fluorite (60–85% CaF₂), the lowest of the three grades, has traditionally been used as a flux to lower the melting point of raw materials in steel production to aid the removal of impurities, and later in the production of aluminium. Ceramic grade fluorite (85–95% CaF₂) is used in the manufacture of opalescent glass, enamels, and cooking utensils. The highest grade, "acid grade fluorite" (97% or more

CaF₂), accounts for about 95% of fluorite consumption in the US where it is used to make hydrogen fluoride and hydrofluoric acid by reacting the fluorite with sulfuric acid.

Internationally, acid-grade fluorite is also used in the production of AlF₃ and cryolite (Na₃AlF₆), which are the main fluorine compounds used in aluminum smelting. Alumina is dissolved in a bath that consists primarily of molten Na₃AlF₆, AlF₃, and fluorite (CaF₂) to allow electrolytic recovery of aluminum.



Figure 32. Green fluorite sample from the St. Lawrence fluorspar mine. Scale is in centimetres.

Stop Twenty-Four: Burnside and Salvage

Close to Burnside is The Beaches, the largest Beothuk inhabited site in Newfoundland (not to be confused with Boyd's Cove, the last major Beothuk site). Knapping materials were readily available from the nearby Quarry Site, which overlooks Bloody Bay Cove (Figure 33) and The Beaches. It is here that I did some work with archaeologist Laurie Mclean and then on to the Salvage Site (Figure 35) the next day. The Quarry Site is heavily glaciated and a large erratic was dumped in a very peculiar place, on the top of a granite outcrop (Figure 34).

To my journal at the Salvage site:

The grid square S12 W1 had a lot of shattered rock which made finding flakes a bit harder. It also made keeping the “level” difficult if you didn’t have a lot of experience working in this type of environment. No wonder it got out of whack. I was methodically starting to get the square to shape up, but I had to work slowly. Flakes of both rhyolite and quartzite started to appear—very small pieces that one would expect from micro-blade sharpening. I had seen such flakes from high Arctic sites.



Figure 33. Spectacular view of Bloody Bay Cove from the Quarry Site.

Just as Laurie called for a lunch break, my trowel uncovered the “find of the day” and for me, the find of the trip, archaeologically speaking. I put my trowel back over it and suggested to Laurie he grab his camera. I said I found something very interesting and he might want a photo of it in situ. When I pulled back the trowel, Laurie almost fell over. What he saw was a clear quartz crystal shaped into a knife [Figure 36]—it was so pure and clear that it could easily be mistaken for glass. It was about 2 cm long and ½ cm wide and worked to an edge. It was at 40E 56S and 5 cm deep, so almost in the centre. Turns out, it was possibly a



Figure 34. Archaeologist Laurie Mclean discusses a large chert erratic at The Quarry.



Figure 35. The author with Laurie’s assistants Tanya (left) and Wanda (right, pointing) posing above the dig site. Photo by Laurie Mclean.



Figure 36. Possible Shaman quartz crystal blade (at tip of trowel), as found at the site.

Shaman's blade, and only the second Laurie had seen in Newfoundland.

Later I find a retouched flake of rhyolite, but after the crystal, a bit anticlimactic (one can get jaded pretty quick; the retouched flake was really neat in its own right!) I probably found and mapped sixty or so flakes—not a bad day's work and had the square good-to-go for Laurie, who was very pleased with my efforts. We all had a beer at the motorhome, including Doreen, who was impressed with the piece. I usually don't find very good specimens, especially palaeo ones, so Doreen was happy to see me find something worthwhile for a change! Laurie plans to display it, as people who came into the museum were shown the blade and were “wowed.”

I don't know if Laurie eventually displayed the blade, but Doreen does wear her new labradorite pendant (Figure 37) from time to time!



Figure 37. Another labradorite pendant: the appeasement stone.

Next up—the eastern portion of Newfoundland, known as the Avalon Peninsula. It is here that the super palaeontological site of Mistaken Point is located. As the sun sets over central Newfoundland (Figure 38), please join us for Part 3, as we complete this epic tour of Newfoundland! □

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Figure 38. Sunset over central Newfoundland.