

Alberta

Palaeontological Society Bulletin

VOLUME 25 • NUMBER 1

www.albertapaleo.org

MARCH 2010

Alberta's First Woman
Amateur Vertebrate
Palaeontologist



Remembering
Irene Vanderloh
1917–2009

ALBERTA PALAEOLOGICAL SOCIETY

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Secretary	Cory Gross	617-2079
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Membership	Vaclav Marsovsky	547-0182
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APAC†	Howard Allen	274-1858
Fossil Collection	Howard Allen	274-1858
Library	(position open: interested?)	
Public Outreach	Dan Quinsey	247-3022
Social	Paul Dugan	934-9599
Symposium	Philip Benham	280-6283
Website	Vaclav Marsovsky	547-0182

† Alberta Palaeontological Advisory Committee

The Society was incorporated in 1986, as a non-profit organization formed to:

- a. Promote the science of palaeontology through study and education.
- b. Make contributions to the science by:
 - 1) Discovery
 - 2) Collection
 - 3) Description
 - 4) Education of the general public
 - 5) Preservation of material for study and the future
- c. Provide information and expertise to other collectors.

- d. Work with professionals at museums and universities to add to the palaeontological collections of the province (preserve 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

THE BULLETIN WILL BE PUBLISHED QUARTERLY: March, June, September and December. Deadline for submitting material for publication is the 15th of the month prior to publication.

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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, April 16, 2010—Vaclav Marsovsky, Alberta Palaeontological Society:
A Field Trip to the Mesozoic South Coast of England (see Page 5).

Friday, May 14, 2010—Dr. Myo Myint, consulting geologist:
Systematic Ichnology: An example of Ppsilonichnus quietis Myo Myint 2001,
exposed at the Paleogene Iwaki Formation, Shiramizu Group,
Joban Coal Field, Japan (see Page 5).

June, July, August, 2010—Field Trips (see Page 8). No meetings.

ON THE COVER: Portrait of Irene Vanderloh, courtesy of Bruce and Shannon Vanderloh; skeletal reconstruction of *Saurornitholestes langstoni* Sues, courtesy of the Royal Tyrrell Museum of Palaeontology; image of Dinosaur Provincial Park badlands, courtesy of Keith Mychaluk. All images Copyright ©, used by permission. Cover design by Howard Allen.

Notice of Annual General Meeting

By Wayne Braunberger, President

To the Members of the Alberta Palaeontological Society

Take notice that the Annual General Meeting of the Members of the Alberta Palaeontological Society (hereinafter called "The Society") will be held at Mount Royal University, room B108, on Friday the 14th day of May, 2010, at the hour of 7:30 o'clock in the evening, local time, to deal with the following business to be brought before the Meeting:

Election of the following Board positions:

1. President
2. Vice-President
3. Secretary
4. Treasurer
5. Field Trip Co-ordinator
6. Editor
7. Membership Director

Officers (President, Vice President, Secretary and Treasurer) are elected for a term of one year, whereas Directors (Field Trip Co-ordinator, Editor and Membership) are elected for a term of two years.

Also on the agenda:

- Treasurer's presentation of the Audited Statement of the financial position of The Society.
- Secretary's presentation of the Audited Statement of the books of The Society

Dated this 10th day of February, 2010, by order of the Board of Directors of The Society. □

Garren Dugan to Leave APS Board

Congratulations to APS Secretary and Librarian, Garren Dugan, who has been accepted for service with the Canadian Armed Forces. This of course will take him away from ongoing Society activities. We will miss Garren's enthusiastic contributions to the Society, and wish him the very best in his future adventures. You're doing us proud, Garren! □

APS Elections

By Dan Quinsey, Past President

"Science has never drummed up quite as effective a tranquilizing agent as a sunny spring day." —W. Earl Hall

It may still be winter, but it is not too early to be rejuvenated by sentiments of spring. Springtime is a time of growth, renewal, of new life being born, and APS elections. As you all know, our Bylaw amendments last year included some changes related to elections. To clarify, related articles are printed below:

2.2 Voting

Each Voting Member* 18 years of age or older shall be entitled to one vote at any General Meeting, Annual General Meeting, or Special Meeting of the Society. Voting for the election of the Board shall be done by secret ballot for each position of Officer or Director where more than one Member is nominated; otherwise, all Members nominated shall be elected by acclamation. All other voting shall be done by show of hands, unless a secret ballot is requested by any five Members. Such votes must be made in person and not by proxy or otherwise. The Chairperson shall cast a vote only in the event of a tie.

* Single Memberships (an individual person 18 years of age or older) of which the Member has only one vote; and Family Memberships (offered to a group of people living in one household consisting of no more than two adults 18 years of age or older and their dependants (if any) under the age of 18) of which each adult Member has one vote.

5.7 Nomination and Election of Officers and Directors

Nominations for Officers and Directors, and the offices associated with each such office, shall be made by the Past-President or by a Nominating Committee composed of a Chairperson, appointed by the Board at a properly Constituted Board Meeting, and at least one Member selected by such Chairperson with the advice and consent of the Board. The Past-President or Nominating Committee shall present a slate of nominees to the floor at the Annual General Meeting after which one final call for nominations shall be made. A professional palaeontologist may be nominated for the office of President only if an amateur palaeontologist is not nominated. All seconded nominations shall be voted upon with those nominated by the Past-President or Nominating Committee. Voting shall be done in accordance with Article 2.2. A motion to ratify the election results must be approved by the Voting Members in attendance at the Annual General Meeting to ratify the election process.

5.8 Eligibility

No Member shall be eligible to hold the office of an Officer or Director unless they have been a Member in good standing for at least one year, or by an affirmative vote of the Board at a properly Constituted Board Meeting. Members who earn a living from the

sale, trade, or barter of palaeontological resources shall not be eligible to hold the office of an Officer or Director.

5.9 Term Commencement

Term commencement of elected Officers and Directors shall be September 01 of the calendar year.

6.1 General

The Officers and Directors of the Society shall provide regular and timely reports to the Board respecting the affairs, policies, programs, and activities of the Society.

6.2 Positions

Under the provisions of Articles 5.7 and 5.8, the Society shall elect the following Officers: President, Vice-President, Secretary, and Treasurer; and the following Directors: Membership Director, Editor, Program Co-ordinator, Field Trip Co-ordinator, and (if created by the Society as described in Article 6.13) Director at Large. The position of Past-President is automatically filled by the exiting President of the Board. Directorships other than the ones listed above may be added or removed from time to time in accordance with Articles 5.1 and 6.13 by an affirmative vote of three-quarters of the Society Members present at any properly Constituted Annual General Meeting or Special Meeting.

6.3 Term

Officers shall be elected for a term of one year. Directors shall be elected for a term of two years. The term of the Past-President ends when a new President is elected. There shall be no restriction on the number of terms an Officer or Director may serve.

6.4 President

The President shall chair all Board and General Meetings of the Society. The President shall be an ex-officio member of all Committees of the Society. The President shall act as the spokesperson for the Society. The President shall approve all records of the Society. The President shall also perform all duties assigned to this office by the Board. In the absence of the President, the Vice-President shall preside in their place. In the absence of both the President and Vice-President, a Chairperson may be elected to preside by a Majority show of hands of the Voting Members present at any General Meeting.

6.5 Vice-President

In the absence of the President, the Vice-President shall chair all Board and General Meetings of the Society and perform all duties of President. The Vice-President shall also perform all duties assigned to this office by the Board.

6.6 Secretary

The Secretary shall keep the minutes of all Board Meetings, General Meetings, Special Meetings, and the Annual General Meeting of the Society. The Secretary shall make sure all notices of such meetings are sent. The Secretary shall have custody of the Official Seal of the Society. The Secretary is the only Officer who has permission to use the Official Seal of the Society. In the absence of the Secretary, the Board shall appoint an Officer or Director to perform such duties. The Secretary shall have charge of all correspondence, records, and the Official Seal of the Society. The Secretary shall also perform all duties assigned to this office by the Board.

6.7 Treasurer

The Treasurer shall receive all monies paid to the Society and shall be responsible for the deposit of same in a financial institution as directed by the Board. The Treasurer shall present a detailed account of receipts and disbursements to the Board

whenever requested. The Treasurer shall prepare for submission to the Annual General Meeting a statement of the Society's financial position detailing the Revenues, Expenses, and Inventory of the Society; and submit an audited copy of same to the Secretary for the records of the Society. The Treasurer shall file the annual return, changes in the Officers and Directors of the Society, amendments to the Bylaws and other incorporating documents with the Corporate Registry of Alberta as required by the Bylaws, the Act, or any other applicable statute. The Treasurer shall also perform all duties assigned to this office by the Board.

6.8 Past-President

The Past-President shall be responsible for the nomination of Officers and Directors at the Annual General Meeting. The Past-President shall also perform all duties assigned to this office by the Board.

6.9 Membership Director

The Membership Director shall maintain the Register of Members, and collect the annual fees or assessments levied by the Society. All such monies shall be promptly turned over to the Treasurer for deposit. The Membership Director shall also perform all duties assigned to this office by the Board.

6.10 Editor

The Editor shall be responsible for the publication and distribution of the Society newsletter. The Editor shall also perform all duties assigned to this office by the Board.

6.11 Program Co-ordinator

The Program Co-ordinator shall be responsible for arrangement and announcement of presentations at General Meetings. The Program Co-ordinator shall also perform all duties assigned to this office by the Board.

6.12 Field Trip Co-ordinator

The Field Trip Co-ordinator shall be responsible for arrangement and announcement of field trips. The Field Trip Co-ordinator shall also perform all duties assigned to this office by the Board.

6.13 Director at Large

Any additional Directorship created by the Society shall be called the Director at Large. The Director at Large shall perform all duties assigned to this office by the Board.

As you have read above, any eligible Member may be nominated for Officer and Director positions. The positions open to nominations this year are: President, Vice-President, Treasurer, Secretary, Membership Director, Editor, and Field Trip Co-ordinator (the position of Program Co-ordinator will be serving the second year of a two-year term).

Chairperson positions are appointed by the Board and are not usually discussed during the AGM.

If you would like to discuss the possibility of serving on the APS Board of Directors, or step forward to nominate a Member or be nominated for any of the above mentioned positions, please contact myself any time by e-mail, pastpres@albertapaleo.org, or telephone (403) 247-3022. All inquiries will be held confidential.

Volunteering is the best work of life! ☐

Upcoming Events

April

Vaclav Marsovsky

Alberta Palaeontological Society Membership Director

A Field Trip to the Mesozoic South Coast of England

Friday, April 16, 2010, 7:30 P.M.

Mount Royal University, Room B108



A view of cliffs facing into the English Channel at Chapman Pool, Dorset. Cliffs in view are the dark grey Kimmeridge Clay (Upper Jurassic) with light gray Portland Group above and the white Upper Cretaceous Chalk in the far distance.

If you have an interest or want to travel to the South Coast of England to see the geology and the fossils, then this presentation is for you! The presentation will follow the route taken during a recent field trip organized by the Society of Vertebrate Paleontology. The major rock units and their fossils will be discussed with a focus on vertebrates. The presentation will cover fossils eroding from the rocks in the field, in private collections of local collectors, and on display at local public museums and heritage centres.

The rocks were initially studied by the clergy and medical practitioners-turned-geologists and palaeontologists. The “Who’s Who” of 19th Century geology and palaeontology relating to the South Coast will be covered. This presentation will show what the rocks look like and will cover the Cretaceous/Tertiary sites from the Isle of Wight and Mesozoic sites from the “Jurassic coast”. The term “Jurassic Coast”

is a bit misleading because it covers all of the Mesozoic. From the South Coast, a 155 km long section (the most interesting and worth protecting) became a UNESCO site in the year 2001. The Jurassic Coast is one of those rare sites where collecting of common fossils is encouraged and amateur fossil collectors play an important role in the science.

Biography

Vaclav Marsovsky has a degree in engineering, but like most APS members, lives two lives—one of those having a keen interest in palaeontology. Vaclav has been on the Board of the APS for over fifteen years in several administrative roles, including President. He was a major contributor to *Guide to Common Vertebrate Fossils from the Cretaceous of Alberta*, recently published by the APS. □

May

Myo Myint

Geological Consultant

Systematic Ichnology: An example of Ppsilonichnus quietis Myo Myint 2001, exposed at the Paleogene Iwaki Formation, Shiramizu Group, Joban Coal Field, Japan

Friday, May 14, 2010, 7:30 P.M.

Mount Royal University, Room B108

The palaeoichnological research for a doctoral thesis on the Paleogene Shiramizu Group, Joban Coal Field, Japan, reveals that an ichnospecies, *Ppsilonichnus quietis* is newly proposed and is characterized by an unlined vertical-to-inclined burrow ranging in diameter from 0.4 to 2.8 cm and ranging in depth from 10 cm to 2.5 m, with four different shapes of swelling (abrupt enlargement with different forms at varying intervals and/or at a terminus from an unbranched master shaft). It exhibits three intergradational architectural patterns, herein termed Type I, Type II and Type III. Type I burrows have forms of straight and curved patterns of vertical and inclined shafts. Type II have vertical inclined to oblique shafts with four different shapes of swelling at varying intervals and at the terminus. These swellings are located at obtuse angles from a master shaft and swelling series are aligned to the same direction. Type III have vertical,

inclined oblique to sinuous shafts and range in diameter from 0.4 to 1 cm with uniform average diameter of approximately 0.6 cm.



Type II burrow of *Pylonichnus quietis* Myo Myint 2001, exhibiting shoe-shaped swelling (S) and semicircular swelling (C) and simple terminus, exposed at the Iwaki Formation, Shiramizu Group, Tekura, Joban coal field, Fukushima Prefecture, Japan.

The *Pylonichnus quietis* burrows are comparable to the burrows of modern Ocypodid crabs belonging to *Ocypode* or *Uca*. Type I and Type II were constructed by adult Ocypodid crabs, but Type III by juveniles. Type I and Type III burrows are referred to ephemeral dwelling structures whereas Type II burrows indicate semi-permanent dwelling structures. The swelling and swelling terminus of Type II burrows are interpreted to reflect 1) pauses during intermittent burrowing, 2) shelter for the trace-maker for an extended period of time, 3) space utilization and 4) the position of greatest stability against gravitationally induced collapse. This structure does not demonstrate forked points for any types of branching burrow or turnarounds. Therefore, Type II burrows indicate not only semi-permanent dwelling but additional behaviors as well. The breeding burrow, expressed as expanded and distinct chambers at the terminus, and non-breeding burrows characterized by the lack of such a chamber, can be found at the same site. This is consistent with present-day structures, where both breeding and non-breeding ocypodid crabs (e.g. *Uca*) occur. In conclusion, *Pylonichnus quietis* is interpreted to represent ephemeral to semi-permanent dwelling behaviors (primary level) and breeding behavior (secondary level), probably produced by ocypodid crabs similar to *Ocypode* and/or *Uca*, employing deposit-feeding and/or scavenging modes of trophic style.

Biography

Myo Myint is a self-employed consulting geologist specialized in wellsite and operation geological activities for petroleum exploration and development in areas of the Western Canada Sedimentary Basin, and internationally. He received a Ph.D. from the University of Tsukuba, Japan, in 1997. After graduation in Japan, he moved to Singapore, working with a Japanese geological consulting firm. He migrated to Canada in 2003. He is a member of APEGGA and CSPG. □

Program Summary

Leslie Eliuk

Earth Sciences Dept., Dalhousie University, Halifax, Nova Scotia

A Tale of Two Reefs: Coral reefs versus sponge reef mounds from the Western Atlantic Jurassic-Cretaceous shelf margin

Friday, February 19, 2010

The very term “historical geology” implies stories. So this is the second in a series of tales about the fascinating ancient reefs and carbonates buried offshore Nova Scotia and southward. In this month of the Winter Olympics, it might be fun to think about what it takes to win in the watery Reefal Olympics of the Jurassic-Cretaceous seas off the North American Atlantic coast. It was a smaller ocean then but there were at least three competitors: coral reefs, sponge reef mounds and microbial mud mounds. (The microbialite tale was told in 2008.) It turns out that as usual where you compete and the conditions have a big effect on the outcome.

The Abenaki Formation carbonate platform was flanked by the Sable palaeo-delta that grew ever larger over the time span of the carbonates. Also there were changes in sea level and a different sea-water chemistry affecting the outcome. However, it may have been the fundamental differences in the palaeobiology of the reef-formers themselves that made the biggest difference. Though corals and sponges live attached to surfaces and feed on other creatures, they have major differences in the size of food and the

methods used to get it. In fact one particular group of now extinct corals called microsolenids mimicked the life style of sponges and that allowed them to live in deeper and “dirtier” waters with the sponges. Ideally, using well-exposed outcrop is the best way to “view the events” and that is where we can get insights from analogues in Europe. But offshore we will have to settle for a small amount of core and a lot of well cuttings. Both are needed in deciphering this story of competition as it may continue over a vertical kilometre of carbonate. In contrast, beneath the Venture gas field, it all happens in less than 10 m, including a miniature microbial mud mound.

Who wins in the Reefal Olympics of the J-K seas? Both—depending on where they are at the end of the Abenaki (see Figure 1). But if you look at the modern reefs such as those in Florida that are the direct and continuous descendant of the Abenaki, then the corals have won. If you look to the far future, we will have to wait to see whether the corals or microbialites and algae get the gold. And, if you need gas

to heat your homes, then we all win since all three reef-builders and reef types contribute to the Deep Panuke gas field to come on stream in 2010. We need to remind ourselves of the importance of former reefal organisms and their palaeobiology not just for our own interest but even for economics.

Biography

Leslie Eliuk has a University of Alberta Zoo/Geol B.Sc. (1968) and Geol M.Sc. (1969 in nine months under Prof Charlie Stelck on κ/τ palynology) and is apparently slowing down after four decades, since he is still a Ph.D. candidate at Dalhousie University, Halifax, Nova Scotia (advised by Prof. Grant Wach). He previously spent thirty years as a Shell Canada petroleum geologist, primarily concerned with carbonate reservoirs and sour gas. Then ten years consulting on and studying mainly Jurassic-Cretaceous carbonates, offshore Nova Scotia. Somehow all those years have not diminished his enthusiasm for carbonates and reefs. □

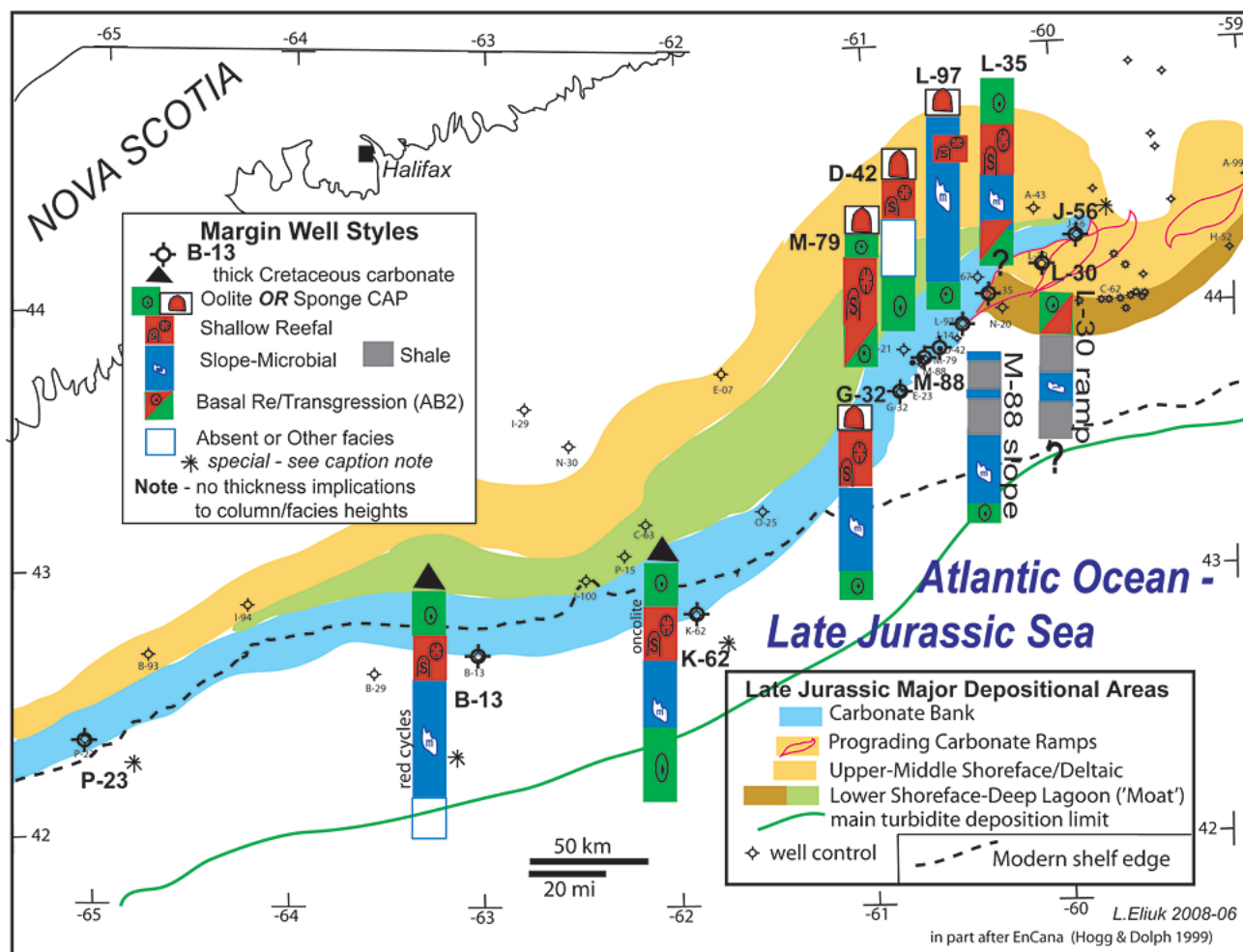


Figure 1. Simplified Abenaki Formation depositional facies and margin well styles to show parts of the sections dominated by shallow reefal facies (dominantly corals) versus sponge cap beds (dominantly lithistid sponge reef mounds and associated interbeds).

Dinos and Desserts with Dr. Phil

An evening with Dr. Phil Currie

An evening of dinosaurs with one of the world's most renowned dinosaur experts. Dr. Currie heads the palaeontology team at the University of Alberta, who are right in the thick of dinosaur research both locally and internationally. Join us as we learn about what they do, how they do it and some exciting discoveries they have had. This is the perfect evening for both the fanatic and the curious. We will start the evening with tours into our all-new *Dinosaurs Alive* exhibit and finish with a full-length presentation from Dr. Currie. At intermission we will feature a dino-mite dessert bar, cash bar and lots of hands-on fossils and artifacts.

Date: Thursday, May 13, 2010

Time: 6:30 P.M. – 7:30 P.M.—Tours of the *Dinosaurs Alive* exhibit

7:30 P.M. – 9:30 P.M.—Presentation

Location: Calgary Zoo

Cost: \$35 per person

Registration: www.calgaryzoo.com, (403) 232-9300

2010 Field Trips

By Keith Mychaluk

Our 2010 field trip lineup should have something for everyone: fossil vertebrates, invertebrates and plants. Below are brief descriptions of each trip. Further details will appear in the June *Bulletin* and on the APS website. If you have any questions, contact me by e-mail at events@albertapaleo.org.

Trip 2010-01, June 26 & 27, 2010
Medicine Hat area, Alberta

This will be a two-day trip, focusing on Cretaceous vertebrate fossils and a possible visit to an amber locality. A number of sites could be visited on Saturday and a single locality on Sunday on the way back to Calgary. All stops will require a modest hike. Weath-

er in the badlands in late June can be highly variable, so you should be prepared for any conditions. Plan on meeting in Medicine Hat at 9:00 A.M. on Saturday. There are motels/hotels and campgrounds in the area. It can be quite busy during the summer months, so you are advised to book your accommodations ahead of time. **The registration deadline is June 4, 2010.**

Trip 2010-02, July 17 & 18, 2010
Lethbridge area Ammolite mines, Alberta

We plan on visiting at least one active open-pit mine at which Cretaceous ammonites and the gemstone Ammolite are found. There may or may not be an opportunity to collect from the mine's waste piles; we will be strictly following our hosts' rules. As well, we have permission of the land owner to hike along St. Mary River for marine fossils that may have weathered out along the river banks (note, this could be a long hike). At this time, no activities are planned for Sunday, but expect a full day on Saturday. This trip will also include a tour of Korite International/Canada Fossils' preparation lab in Calgary on a separate date (likely to be in **early May**; details to follow). Plan on meeting in Lethbridge by 9:00 A.M. on Saturday. There are a number of motels/hotels and campgrounds in the area. As it can be quite busy during the summer months you are advised to book your accommodations ahead of time. **The registration deadline is July 2, 2010.**

Trip 2010-03, August 21 & 22, 2010
Grassy Mountain, Blairmore, Alberta

This trip will revisit the Grassy Mountain coal mine just north of Blairmore, in the beautiful Crowsnest Pass. On our first visit, a decade ago, club members found a variety of nice fossil plant remains from exposures of the Jurassic-Cretaceous Kootenay Group. This is a long, steep hike up an abandoned mine road in bear country; the climb will take 2 – 3 hours and should only be attempted by those in good physical condition. Activities are only formally planned for Saturday but expect a long day. Numerous motels/hotels and campgrounds are available in the Crowsnest Pass area. Plan on meeting in Blairmore at 9:00 A.M. **The registration deadline is July 30, 2010.**

Please note that all fees are due at the time of registration. **Non-members and unaccompanied minors will not be allowed to attend field trips.** All participants will be required to sign a release form (waiver). Detailed information will be provided to all those registered shortly after the registration deadline. I will be sending you the waiver and medical forms along with the trip information, via e-mail or Canada Post. Please ensure that your addresses are correct and legible when sending in registration forms. When you arrive at the meeting place please have the forms completed so that less time will be spent on paper work prior to the trip. **All participants are required to have their membership in good-standing and have fully completed all waiver and medical forms in order to attend the trip.** All personal information is held in confidence and is ultimately destroyed. □

Fossils in the News

Edited by Chris Marion

Science Daily—*Bird-from-dino theory of evolution challenged: Was it the other way around?* www.sciencedaily.com/releases/2010/02/100209183335.htm

BBC—*New dinosaur discovery solves evolutionary bird puzzle* news.bbc.co.uk/2/hi/science/nature/8485263.stm

Science Daily—*Poisonous prehistoric “raptor” discovered in China* www.sciencedaily.com/releases/2009/12/091221212630.htm

CBC—*Bird-like dinosaur was venomous: scientists* www.cbc.ca/technology/story/2009/12/21/tech-dinosaur-venom.html

CBC—*Rare skulls reveal new dinosaur species* www.cbc.ca/technology/story/2010/02/23/tech-dinosaur-sauropod-skulls.html

Science Now—*Slideshow: Ancient crocs with a dog-like walk* sciencenow.sciencemag.org/cgi/content/full/2009/1119/1

Science Daily—*Ancient croc relative likely food source for Titanoboa, largest snake ever known* www.sciencedaily.com/releases/2010/02/100202154408.htm

CBC—*Recent dinosaur discoveries* www.cbc.ca/photogallery/technology/2980/

Science Daily—*New species of tyrannosaur discovered in southwestern U.S.* www.sciencedaily.com/releases/2010/01/100131220341.htm

National Post—*Jurassic pigment* www.nationalpost.com/life/story.html?id=2493224

CBC—*Feathered dinosaur’s full plumage unveiled* www.cbc.ca/technology/story/2010/02/04/tech-dinosaur-feather-pattern.html

CBC—*Dinosaur had orange tail feathers: scientists* www.cbc.ca/technology/story/2010/01/27/tech-dinosaur-feather-colour.html

Science Daily—*Dinosaur extinction grounded ancient birds, new research finds* www.sciencedaily.com/releases/2010/01/100126105429.htm

Science Daily—*“Microraptors” shed light on ancient origin of bird flight* www.sciencedaily.com/releases/2010/01/100125173238.htm

(Continued on Page 19)

2010 GEM, MINERAL & FOSSIL SHOW

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Remember me:

Irene Vanderloh (1917–2009)

Alberta's First Woman Amateur Vertebrate Palaeontologist

By Darren H. Tanke*

The August 23, 2009 death of Wardlow, Alberta resident Irene Vanderloh (Anonymous, 2009; Figure 1) marks the passing of a relatively little-known woman who was active in Albertan vertebrate palaeontology beginning at a young age in the 1920s, but rising to prominence in Albertan and Canadian vertebrate palaeontology during the 1960s and 1970s in a then strongly male-dominated field.

Hers is the story of an amateur taking an enjoyable hobby and through it making several discoveries which greatly advanced our scientific knowledge of several rare dinosaurs, one new. Through her hobby, Irene found two of the most important maniraptoran



Figure 1. Irene Vanderloh (1917–2009), c. early 1950s. Image courtesy of the Vanderloh family.

dinosaur skeletons and made other significant finds in and near Dinosaur Provincial Park (DPP). Her name comes up in histories of Albertan vertebrate palaeontology or is acknowledged within scientific publications describing specimens she found (Russell, 1969b, pp. 610, 611; Sues, 1978, pp. 381, 400; Danis and Walper, 1980; Currie *et al.*, 1981; Gross, 1985, pp. 111, 112; Glut, 1997, p. 798; Gross, 1998, pp. 114–116, 118, 125; Spalding, 1999, p. 179; Humber *et al.*, 2005; Acorn, 2007, p. 133); but she and her contributions to vertebrate palaeontology are unknown to many in the present Albertan palaeontological community, especially the younger crowd. Despite this, many researchers and others certainly are familiar with some of the more important finds she made—in some cases, those finds are even used in their own research. Yet she remains a poorly known character.

In consulting vertebrate palaeontologists who were active in DPP during the years of Irene's amateur palaeontology work, the author was surprised by how many knew her, yet had only actually met



Figure 2. The fledgling Steveville town site (in background), as seen in this old postcard bearing a June 13, 1912 cancellation date; this view looks almost directly west. Although the current road has changed somewhat, in Google Earth® the vantage point for this scene is close to 50°50'15.20"N; 111°35'44.93"W. The identities of the people are unknown. Vanderloh (1990a, p. 105) records that a local man, simply identified as "Mr. Johnson," took photographs of the Steveville area in 1912 with an expensive camera and made them into postcards sold in the Steveville general store. The store is visible here as the large white building with two windows positioned immediately above the left horse's head. See also Figure 4. Image from Anonymous, 2010.

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Figure 3. Irene Vanderloh's parents Egbert "Bert" O. Coultis (September 20, 1884 – August 17, 1974) and his wife Ida Coultis (June 9, 1896 – January 21, 1976) in Calgary, July 1914.

or dealt with her once or twice when she pointed out rare finds or visited their field camps. It seems that despite her keen interest in vertebrate palaeontology, Irene only rarely interacted directly with the professional scientific community. Because of this, Irene is known to many, but not particularly well. Hopefully, this article will correct that and enlighten readers to her life, rich with local history and remarkable scientific discoveries.

Irene was born in the small town of Steveville, Alberta, on July 23, 1917 (Anonymous, 1990; Figure 2), the second oldest of ten children (seven girls, three boys) born to Bert and Ida Jane Coultis (nee Shaw¹; Figure 3) in the northwest corner of today's DPP (Anonymous, 1986b, c; Vanderloh and Coultis, 1990). Often called a town, Steveville was little more than a hamlet with a core population of about twenty, though it was an important community centre with a ferry, store, post office, dance hall, doctor,

and other amenities for the settlers arriving in the early 20th Century.

Coultis² ran the general store in Steveville (Figure 4) from 1911 to 1916 after buying the building and contents for about \$500.00. Coultis met his future spouse Ida in Steveville where she was working in the town's boarding house. The Coultises were familiar with the early Albertan dinosaur collectors such as Barnum Brown, Peter Kaisen, William E. Cutler, and all the Sternbergs, as they came to Steveville regularly for food and other supplies, blacksmith work, socializing, and their mail. The American Museum crew is also known to have stored some of their larger field equipment (boat engine) with Bert Coultis during the early phase of their work in DPP. Ida was also known to collect some fossils herself. Colwell (1968) recounts examining a small partial turtle carapace collected by Irene's mother near Steveville.

The Coultis children grew up in a badlands setting and were well aware of the Sternbergs' work collecting dinosaur fossils in their area each summer. However, it seems that her interest in fossils was not due to the Sternbergs directly, as she became interested in vertebrate palaeontology on her own at a very early age. She writes (Vanderloh, 1986, p. 143–144):

One of the greatest interests in my whole life was palaeontology. I recall my first introduction to fossils. It was a beautiful warm morning and Mother and Father were standing at the back door of the farm overlooking the badlands. They discussed a brilliant object shining out across the first coulee, which they frequently had noticed and at the spur of the moment decided to investigate it. Blanche



Figure 4. The general store at Steveville, c. 1912. Proprietor Bert Coultis stands in the doorway; the others are unidentified. This is how the store appeared to c. WWI dinosaur field workers. It was here they bought supplies and got their mail. The store was started by Steve Hall (1866–1937) in 1910; the town of Steveville was named after him. The owner of the blacksmith shop seen here was Al Henley. See also Figure 2.

[Irene's sister] and I went along. It is a tough climb even now, a lot of steep up and down. On the first bench down they showed us what were bones and what were rocks and I gathered all the bones I found en route. When my hands were full I took up the hem of my dress and had it plenty full, which certainly impeded my progress, and I fell far behind. On my complaint "Wait for me," I was advised to dump some of my treasures overboard so it would be possible to keep up, which I reluctantly did. I suppose I was 3 or 4 at the time.

Given her comments above, it seems likely she met George F. Sternberg in 1921 when he was camped close to Steveville and was collecting dinosaur fossils for the University of Alberta in Edmonton. During her youth, another family friend, the local physician Dr. Winfred George Anderson, was another amateur fossil collector and no doubt a positive influence on Irene's palaeontological interests³ (Havens, 1955; Harle, 1980; Anonymous, 1984).

As she grew older, Irene became increasingly interested in palaeontology, not only as a hobby, but as a potential career. One day she told the Royal Ontario Museum's Levi Sternberg of her career plans, but sadly her ambitions were quickly shot down by him, when he tersely replied that palaeontology "wasn't for girls"⁴ (Vanderloh, 1986, p. 144). Perhaps this rebuff contributed to her remaining largely on the sidelines in what was then an overwhelmingly male-dominated profession.

As a young woman, Irene was good friends with geologist John Ower who likely enhanced her earth science knowledge. However, she did not pursue palaeontology as a hoped-for career and later became a hairdresser and did other odd jobs in the Brooks and Medicine Hat areas and lived for a time on the west coast. After a divorce, she returned to Alberta and became a rancher's wife, marrying Vic Vanderloh on July 9, 1956 (Vanderloh, 1990b) and raising two children: daughter Alberta "Trudy" Phyllis Martinyak (1944–1997, born into the previous marriage), and a son, Andrew Bruce (born 1963) who now resides with his family on the former Steveville town site.

The original Vanderloh homestead, on the edge of Steveville and later on the north bank of the Red Deer River close to the present Steveville bridge, was near the DPP badlands, so Irene frequently pursued her amateur palaeontology hobby and explored the rugged Upper Cretaceous buttes and coulees often with some of her more adventurous sisters (Anne

[1918–2000] and Dorothy [1926–2010]). In the field she acquired a keen eye for spotting fossils, especially small teeth, rare small theropod dinosaur bones and even rarer skeletons of these animals.

The 1960s and 1970s were Irene's heyday in the DPP badlands. By then she had found a compatriot, forging a close association with Hope Johnson (born 1916), another female amateur collector. The role of women in palaeontology was slowly but steadily growing during these times⁵ and Hope no doubt was a mentor to Irene.

Hope Johnson had extensive experience with Late Cretaceous fossils from Alberta, her own hobby interest beginning around 1948, especially with isolated bones of small animals or microvertebrate remains (Johnson and Storer, 1974; Alberta Palaeontological Society, 2009). Johnson was even the fossil custodian or curator in DPP during the years 1969–1970 and 1972–1973 and did extensive volunteer work there prior to those years. Vanderloh and Johnson soon became good friends and had "many excellent excursions" together in the field (Vanderloh, 1986, p. 173). It is likely that Johnson taught Vanderloh much about fossil identification during these outings and no doubt Irene shared her knowledge of the badlands, tricks to finding fossils, meetings with famous palaeontologists, and relating the rich local folklore.

In 1968 Dale A. Russell and his technician, field assistant Gilles Danis, from the National Museum of Canada (NMC, Ottawa) had their first field season in DPP. The pair arrived on July 15, frustrated with bad luck hunting for fossils in the Grande Prairie, Alberta district (Dodson, 1968). Unlike previous expeditions that had collected pretty much any good research or display specimens they could find, this summer Russell and Danis were specifically in pursuit of comparatively rare small theropod material (Cooper, 1968).

But their field season in Alberta was seemingly cursed. After six or seven weeks of field work in one of the best places on Earth for dinosaur remains, they were finding few of the desired specimens, all of which were of an isolated or incomplete nature. Technician Gilles Danis stated "We are lucky to find one bone in a whole day's work" (Cooper, 1968). Try as they may, the pair could not find the elusive associated or articulated skeleton. They mentioned their frustration to Hope Johnson who recalled Irene having found such a specimen six years earlier (Gross, 1985; Spalding, 1999). Irene took a box of associated surface-collected bone fragments to the Ottawa crew, which definitely piqued their interest. Then on August 23 (Colwell, 1968) she led them downstream



Figure 5. Early 1980s life restoration of *Troödon inequalis*. Irene's early 1960s find of this species provided many anatomical details used in this sculpture. Image from Russell and Séguin (1982).

from DPP on the north bank of the Red Deer River, and her collecting site was soon relocated.

Irene's discovery saved the day, if not the field season. The somewhat weathered small theropod skeleton was scattered over a three square-metre area. The disarticulated specimen was quickly collected late in the field season. Russell (1969a) described the specimen as "relatively excellent." Previous finds of the genus consisted of an articulated foot skeleton (Sternberg, 1932) and isolated or fragmentary bones of uncertain taxonomic placement.

Irene's find was doubly important as it allowed for the correlation and correct anatomical association of previously described and/or unidentified material. The 1968 specimen was quickly prepared and described soon after (Russell, 1969) as the holotype of *Stenonychosaurus inequalis*; though later it was found to be a junior synonym of *Troödon formosus*.

Catalogued as CMN [Canadian Museum of Nature] 12340, quarry 133, this site still produces *Troödon* material. In 1979, several phalanges were found on site (Currie, 1980, p. 27). Because of this, the old quarry is visited regularly by palaeontological crews for any

new material eroding out, over forty years after the original collection was made. It is still the best and most complete associated skeleton of a *Troödon* ever found in Alberta, though better skull material has been found subsequently (Currie, 1985; Currie and Zhao, 1993). It is one of less than half a dozen associated *Troödon* specimens found in western North America. The increased knowledge of the osteology of this then poorly-known animal was also used in the creation of an accurate skeletal and fleshed-out model (Russell and Séguin, 1982; Figure 5) of an adult *Troödon*. In acknowledging Irene's find a grateful Dale A. Russell (1969b, p. 610–611) wrote:

The major specimen described herein (NMC 12340) was discovered by Mrs. Victor Vanderloh of Cessford, Alberta, who presented the bones she had collected to the National Museum, and conducted us to the locality where they were found. Her selfless cooperation is deeply appreciated and serves as an example of how greatly a private collector can advance the progress of our understanding of past vertebrate life.



Figure 6. TMP 1973.030.0001. Pelvis and hind limbs of a subadult tyrannosaurid. The photographer's shadow is likely that of Hope Johnson. Hammer gives scale. Image courtesy of the Royal Tyrrell Museum.

Around 1973, Irene found “part of an *Albertosaurus*” which was collected by “Alberta Museum” staff (Vanderloh, 1986, p. 175). A search of Royal Tyrrell Museum of Palaeontology (TMP) records indicates that this must be TMP 1973.030.0001, the well-preserved articulated pelvis and hind limbs of a subadult tyrannosaurid,⁶ likely also the “small carnosaur” reported in Storer (1973). The pelvis of this specimen was prepared in November 1984 and displayed at the Tyrrell Museum from September 1985 to October 2007. The quarry that yielded TMP 1973.030.0001 has not been located at the time of writing, but good site coordinates, some field photographs (Figure 6) and a Hope Johnson painting of the area may help in its eventual relocation. Part of the specimen is figured in Eberth and Currie (2005, their figure 24.2 D)⁷. The entire specimen has been prepared.

Many professional vertebrate palaeontologists in Alberta would aspire to find one good small theropod skeleton during their careers, but Irene got lucky and found two. In 1974, history repeated itself when Irene's keen eyes paid off and she found her second small theropod, this time within Park boundaries near the former

Stevenville town site. This specimen was excavated in early July of that year by John Storer and a crew from the Palaeontology Department of the Provincial Museum of Alberta (PMA; now Royal Alberta Museum) in Edmonton.

The find was first informally reported by PMA staff to be another *Troödon* skeleton (Storer, 1974; Sues, 1978, pp. 381, 382). Remarkably, this specimen turned out to be a new small carnivorous dinosaur and became the holotype of *Saurornitholestes langstoni* (Sues, 1978). Catalogued as TMP 1974.010.0005, quarry 140, this site also continued to produce new material years later. In 2002 the site was reopened by TMP staff, including the author. The quarry was roughly tripled in size between June 24 and 29 (Currie, 2002)⁸ and a number of new skull elements and other bones secured; these have not been prepared as of the time of writing. Irene's find continues to be one of the top two *Saurornitholestes* discoveries in the province and an important comparative specimen for researchers. Portions of the fragile skeleton have been molded

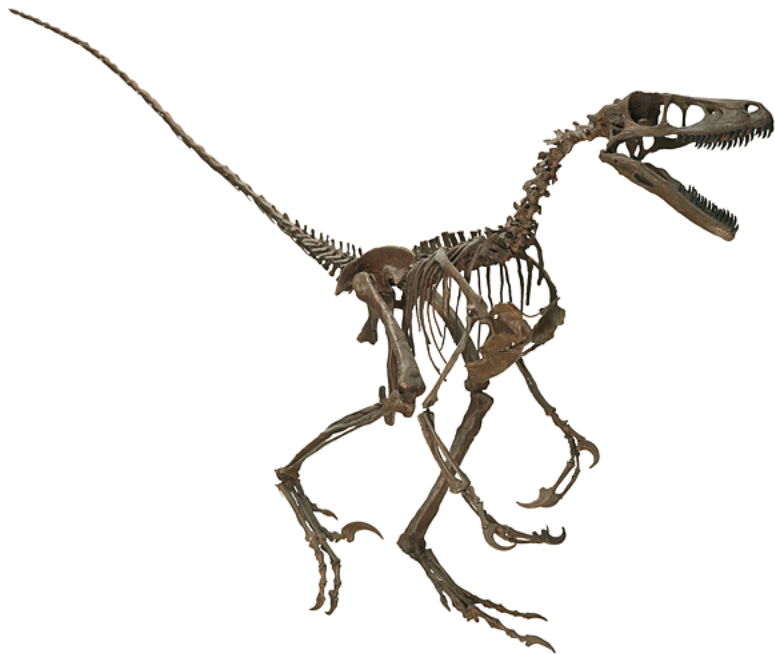


Figure 7. TMP-rendered composite cast reconstruction of the maniraptoran *Saurornitholestes langstoni*. Material and information from Irene's 1974 discovery was incorporated into this mount. Original about 1.25 m long. Image courtesy of the Royal Tyrrell Museum of Palaeontology.



Figure 8a-c. A Canadian Armed Forces helicopter⁹ lifting UALVP 16248 (quarry 136) *Centrosaurus* partial skull and scattered skeleton in the Steveville badlands of Dinosaur Provincial Park. This was the second helicopter lift of a major dinosaur specimen in Alberta. **a** (top), completed quarry, showing plaster field jackets being readied for the lift; **b** (middle), the helicopter landed atop an outcrop across from the quarry; and **c** (lower), the lift of one of the large blocks. Images courtesy of Bea McBride.

and cast into several composite skeletons (Figure 7) which have been sold to and/or displayed in a number of museums worldwide.

Another dinosaur discovery Irene may have been involved with was a good but scattered *Centrosaurus* skeleton with partial skull (UA [University of Alberta] 16248, quarry 136) collected in the Steveville badlands in 1970. Previously believed to have been found by University of Alberta staff, it was apparently known to local residents many years earlier. The quarry is not far from several of Irene's other major finds so it is possible she was involved in this discovery as well. The *Centrosaurus* was helicoptered out of the badlands in September 1970. Irene wrote an article on the event (Vanderloh, 1970; Figure 8a-c), which was the first airlift of a dinosaur from the Park. The skull, badly eroded on one side, has been mostly prepared and partially reconstructed but the rest of the postcrania remains in several large field jackets.

Currie (1979) mentions trying to relocate an *Albertosaurus* found by Irene in DPP, but it cannot be determined whether this was another tyrannosaur skeleton or the site of the one secured in 1973.



August 13, 1979 proved to be an unlucky day for Irene. While showing PMA staff one of her old fossil localities, she suffered a bad fall in the badlands, resulting in an ankle fractured in three places (Currie, 1979). This accident and a slow recovery greatly limited her subsequent days of hiking the badlands (Figure 9) and she never again explored them alone (Vanderloh, 1986, p. 179). TMP collection records document Irene donating, collecting, or co-collecting (with PMA/TMP staff) eighteen fossils for that institution, mostly of rare small theropods. This at first seems a low number but Irene had a history of only looking for the best and rarest of specimens. It is possible that some of the large DPP vertebrate collection—947 specimens—transferred to the PMA in 1979 (Danis and Walper, 1980; see TMP





Figure 9. Irene Vanderloh (right) and an unidentified man hunt for fossils near Dinosaur Provincial Park in the 1970s.

1979.014 series) was also collected by Irene during her field outings with Hope Johnson. Some of her finds may also have ended up in the glass-fronted, long wooden buildings in the DPP entrance area that displayed fossils to the visiting public (c. 1960–1980), but this is not a certainty.

Irene was also involved in the recording of local history, both palaeontological (Vanderloh, 1970, 1979) and human (Vanderloh, 1976, 1990a; Vanderloh and Coultis, 1984, 1990). In 1988, Irene and her older sister Blanche Coultis (born 1915) helped researcher Michael Klassen by relating their memories of the legendary and cantankerous rancher Hansel Gordon “Happy Jack” Jackson (1861–1942) who lived on the east side of Dinosaur Provincial Park until his death there (Klassen, 1990). She also penned the community events column for the *Brooks Bulletin* newspaper for many years, was interested in genealogy and was a member of the Order of the Eastern Star.

Later in life, Irene (Figure 10) was seriously afflicted with Alzheimer’s and then suffered a series of debilitating strokes beginning in July 2004. She spent the last five years of her life in the hospital and nursing home in Brooks, Alberta, passing away there on August 23, 2009 at the age of 92. Irene’s memorial service was held in



Figure 10. Irene Vanderloh, c. 2007.

Brooks on August 28 and some of her cremated remains were interred in the Cravath Corners Cemetery just north of DPP on October 4, 2009, with other deceased members of the Coultis family, and not far from where she grew up and spent much of her life. The rest of her ashes were scattered on the old family farm and in the badlands she so loved.

Irene’s responsible attitude as an amateur contributor to vertebrate palaeontology is one other amateur collectors should consider. Unlike some, she did not believe in collecting fossils for collecting’s sake and simply amassing and hoarding a huge private collection. Rather, she preferred a more responsible approach and to leave the specimens in the ground where they were found and take nothing, or only collect a few small samples. If she felt the fossils were particularly rare or unusual she left them alone, carefully recorded where they were found, and then contacted the proper authorities and guided them to her finds for proper attention. Through her correct actions the professional palaeontological community is grateful for Irene’s important discoveries and contributions to the field of vertebrate palaeontology. Certainly her timely maniraptoran discoveries were

critical to our increased understanding of these rare and fragile fossils. The speed at which they were collected, prepared, and described amply demonstrates the scientific significance of Irene’s discoveries.

In closing, Irene’s son Bruce Vanderloh sums up his mother’s life:

Irene was a very adventurous woman who left the farm as a young lady to live in Vancouver with another young woman cousin and even after a failed marriage, continued to live far from her family and raise her very sick daughter (who had TB) alone for many years before returning to her family’s farm at Steeveville. There she continued to raise her daughter and worked in the family store until meeting

her current husband. Even then, she made Vic wait for three years before finally agreeing to marry him, after all she was 11 years his senior and she wanted to make sure he was ready for all the responsibilities of marrying an older woman with a child—he obviously was, as they celebrated

their 50th wedding anniversary in 2006. Vic and Irene spent their early years on the V-V Ranch, just east of Steveville where Irene was a true rancher's wife. She would saddle up her horse and ride with Vic checking cows, looking after sick animals and also spent many hours feeding the hired hands. Bruce was born in 1963, 7 years after they were married, and at 47, Irene was no young mom. But Bruce was to be a constant companion for Irene as they spent many hours together while Dad worked. They hiked the badlands together, searching for fossils and bones much as she did as a young girl with her siblings. Then after Bruce grew up and got busy with his own life, Irene continued to search the badlands on her own, always thrilled when she made a new discovery. She was a very private person who loved her family and spending time with nature. She was also very interested in genealogy and made a big trip to England with some of her siblings to visit old family graves and learn more about her heritage. She also travelled to Ontario a few times to re-visit the family roots there. Her last years before she moved into the nursing home were spent on the farm and in her beloved badlands enjoying what she loved most—the fresh air and the shadowy views of the hills.

Acknowledgments

The author thanks the following for biographical information on Irene Vanderloh: Michael Klassen, Sheryl McBride (Drumheller); and Bruce and Shannon Vanderloh, Wardlaw, Alberta, for information on Irene and for figures 1, 3–4, 9, 10; Hope Johnson (Medicine Hat, Alberta); and Bea McBride for figures 8a–c. Thanks also to Sue Sabrowski (TMP) for figure 7. Major Richard Leblanc and Captain John Low of the Canadian Armed Forces provided helicopter information. Patty Ralrick and Jane Danis reviewed the manuscript; the latter also contributed discussions on the unfortunately frowned-upon role of women in Albertan vertebrate palaeontology in the 1960s.

Notes on the text

1. Ida's father (Irene's grandfather) Ambrose Shaw (1861–1933) would have been well-known to the early field palaeontologists working in DPP as he was the ferryman at Steveville from about 1912–1930 (Anonymous, 1986a). Long prior to this he freighted goods from Manitoba to Rocky Mountain House, Alberta, for several years beginning in 1883 and then travelled home by boat, a trip of several thousand miles downriver, including the Red Deer River and thus passing through today's DPP. This makes him among the first white men recorded to have passed through the Dinosaur Park area long ago. Ambrose was an avid amateur fossil collector himself and kept a small

collection of fossils on the ferry and a table display at the ferry house which he showed to travelers who crossed the river.

2. Bert Coultis also started the *Brooks Bulletin* newspaper in 1910 and was its first editor. He helped Barnum Brown and Henry Fairfield Osborn (both AMNH) prospect for fossils when they were in DPP in 1911 (Colwell, 1966).

3. Anderson (1881–1966) was the first proponent of making the Steveville badlands a protected Provincial Park (Anonymous, 1954; Havens, 1955; Sandgathe, 1970; Harle, 1980; Anonymous, 1984). He began promoting the idea that the area should be made into a park as early as 1915, but it did not happen until 1955. The Sternberg/Anderson Theater in the DPP Field Station is named partly in his honour.

4. The year of this conversation is unrecorded, but is presumed to have occurred when Irene was a "girl" aged roughly 5 to 15 (1922–1932). Levi Sternberg worked in the Park in 1926, 1927 and 1930.

5. Jane Colwell (Danis) was the first woman with an academic background to do vertebrate palaeontology work in Alberta; she started with the University of Alberta (Edmonton) in 1965 and her field season was in DPP in 1966.

6. Some articulated posterior dorsals and anterior caudal vertebrae were also preserved. It appears that the rest of the animal had eroded away.

7. In that paper the specimen is misidentified as a tyrannosaur shoulder and forelimb.

8. Photographs of the maniraptoran quarries can be seen in Humber *et al.*, 2005. Quarry 240 as figured on the CD-ROM is actually Irene's *Saurornitholestes* site (quarry 140) as it appeared during renewed quarrying operations in 2002.

9. The helicopter is a CH-113A Voyageur, number 10408 of the 450 Heavy Transport Squadron based in Edmonton. It last flew in 2004. Later renumbered as 11308, the machine was used at CFB Borden, Ontario (2004–2009) as a non-flying instructional airframe. Today the machine is at CFB Greenwood in Nova Scotia and will become a museum display there in the summer of 2010.

References

- Acorn, J. 2007. Deep Alberta: Fossil facts and dinosaur digs. University of Alberta Press, Edmonton.
- Alberta Palaeontological Society. 2009. Guide to common vertebrate fossils from the Cretaceous of Alberta. Alberta Palaeontological Society, Calgary, 234 pp.
- Anonymous. 1984. Dr. W.G. Anderson. In *Youngstown memories across the years—1909–1983*. Holmes Printing, Medicine Hat, Alberta, pp. 662–663.

- Anonymous. 1986a. Mr. and Mrs. Ambrose Shaw. *In* The Coultis connection. By the descendants of the Steveville pioneers—Coultis, Davies and Shaw. Colin Bate Books, Lethbridge, pp. 27–32.
- _____. 1986b. Mr. and Mrs. E.O. Coultis. *In* The Coultis connection. By the descendants of the Steveville pioneers—Coultis, Davies and Shaw. Colin Bate Books, Lethbridge, pp. 33–38.
- _____. 1986c. Mother and Father—Bert and Ida Coultis. *In* The Coultis connection. By the descendants of the Steveville pioneers—Coultis, Davies and Shaw. Colin Bate Books, Lethbridge, pp. 47–57.
- _____. 1990. Register of births. Registration district of Steveville. *In* Echoes from this, our land 1909–1990. *Edited by* L. Kemski. Berry Creek Historical Society, Cessford, Alberta, pp. 903–906.
- _____. 2009. Obituaries: Vanderloh. Brooks Bulletin online. Available from <http://www.brooksbulletin.com/default.aspx?pageid=243&contentarchiveid=3110> [accessed March 2010].
- _____. 2010. Peel's Prairie Provinces. Available from <http://peel.library.ualberta.ca/index.html> [accessed March 2010].
- Colwell, J.M. 1966. Field notes. Copy on file in library of the Royal Tyrrell Museum of Palaeontology, Drumheller, Alberta.
- _____. 1968. Field notes. Copy on file in library of the Royal Tyrrell Museum of Palaeontology, Drumheller, Alberta.
- Cooper, C. 1968. Alberta hunt starts for special “Dinny.” (Un sourced newspaper clipping, possibly Brooks Bulletin, September, 1968).
- Currie, P.J. 1979. Field notes. On file in library of the Royal Tyrrell Museum of Palaeontology, Drumheller, Alberta.
- _____. 1980. Mesozoic vertebrate life in Alberta and British Columbia. *Mesozoic Vertebrate Life*, 1: 27–40.
- _____. 1985. Cranial anatomy of *Stenonychosaurus inequalis* (Saurischia, Theropoda) and its bearing on the origin of birds. *Canadian Journal of Earth Sciences*, 22: 1643–1658.
- _____. 2002. Field notes. On file in library of the Royal Tyrrell Museum of Palaeontology, Drumheller, Alberta.
- _____, Danis, J., Dodson, P. and Russell, D.A. 1981. Report on field work in Dinosaur Provincial Park, 1980. On file in library of Royal Tyrrell Museum of Palaeontology, Drumheller, 223 pp.
- _____ and Zhao, X.J. 1993. A new troödontid (Dinosauria, Theropoda) braincase from the Judith River Formation (Campanian) of Alberta. *Canadian Journal of Earth Sciences*, 30: 2231–2247.
- Danis, J. and Walper, J. 1980. Dinosaur Provincial Park paleontological research project. Copy on file in library of Royal Tyrrell Museum of Palaeontology, Drumheller, Alberta, 166 pp.
- Dodson, P. 1968. Field notes. Copy on file in library of Royal Tyrrell Museum of Palaeontology, Drumheller, Alberta.
- Eberth, D.A. and Currie, P.J. 2005. Vertebrate taphonomy and taphonomic modes. *In* Dinosaur Provincial Park, a spectacular ancient ecosystem revealed. *Edited by* P.J. Currie and E.B. Koppelhus. Indiana University Press, Bloomington, pp. 453–477.
- Glut, D.F. 1997. *Saurornitholestes*. *In* Dinosaur: The encyclopedia. McFarland & Company, Inc., Jefferson, North Carolina, pp. 798–800.
- Gross, R. 1985. Dinosaur country: Unearthing the badlands' prehistoric past. Western Producer Prairie Books, Saskatoon.
- _____. 1998. Dinosaur country: Unearthing the Alberta badlands. Badlands Books, Wardlow, Alberta.
- Harle, G.L. 1980. The doctor and the dinosaurs. *Heritage Magazine*, 8: 18–19.
- Havens, J. 1955. Prairie doctor. *The Brooks Bulletin*, Thursday, August 11, 1955.
- Humber, J., Spencer, B., Currie, P.J. and Koppelhus, E.B. 2005. Site survey data file on: Dinosaur Provincial Park—GPS survey, GIS mapping, and site pictures. CD-ROM *In* Dinosaur Provincial Park, a spectacular ancient ecosystem revealed. *Edited by* P.J. Currie and E.B. Koppelhus. Indiana University Press, Bloomington.
- Johnson, H. and Storer, J.E. 1974. A guide to Alberta vertebrate fossils from the age of dinosaurs. Provincial Museum of Alberta, Publication No. 4.
- Klassen, M. 1990. “Hell ain't a mile off”: The journals of Happy Jack. *Alberta History*, 38(2): 1–12.
- Russell, D.A. 1969a. News from members: Canada, Museum of Natural Sciences, Ottawa. *Society of Vertebrate Paleontology, News Bulletin*, 85: 10–11.
- _____. 1969b. A new specimen of *Stenonychosaurus* from the Oldman Formation (Cretaceous) of Alberta. *Canadian Journal of Earth Sciences*, 6: 595–612.
- _____ and Séguin, R. 1982. Reconstructions of the small Cretaceous theropod *Stenonychosaurus inequalis* and a hypothetical dinosauroid. *Syllogeus*, 37: 1–43.
- Sandgathe, R.L. 1970. Our country doctor. *Brooks Bulletin*, Brooks, Alberta.
- Spalding, D.A.E. 1999. Into the dinosaurs' graveyard: Canadian digs and discoveries. Doubleday Canada, Toronto.
- Sternberg, C.M. 1932. Two new theropod dinosaurs from the Belly River Formation of Alberta. *Canadian Field-Naturalist*, 46: 99–105.
- Storer, J.E. News from members: Canada, Provincial Museum of Alberta, Edmonton. *Society of Vertebrate Paleontology, News Bulletin*, 99: 7–8.
- _____. 1974. News from members: Canada, Provincial Museum of Alberta, Edmonton. *Society of Vertebrate Paleontology, News Bulletin*, 102: 7.
- Sues, H.-D. 1978. A new small theropod dinosaur from the Judith River Formation (Campanian) of Alberta, Canada. *Zoological Journal of the Linnaean Society*, 62: 381–400.
- Vanderloh, I. 1970. Helicopter assists dinosaur removal from burial ground. *Brooks Bulletin*, September 17, 1970.
- _____. 1976. Pioneer's daughter relates early history of Steveville. *Brooks Bulletin*, Wednesday, May 26, 1976.
- _____. 1979. The Steveville badlands. *In* Spurs and shovels along the Royal Line. M.I.P. Historical Book Society, Patricia, Alberta, pp. 198–201.
- _____. 1986. Story of Irene Coultis Vanderloh. *In* The Coultis Connection. By the descendants of the Steveville Pioneers—Coultis, Davies and Shaw. Colin Bate Books, Lethbridge, pp. 143–167.
- _____. 1990a. Homesteaders who lived in the bend. *In* Echoes from this, our land, 1909–1990. *Edited by* L. Kemski. Berry Creek Historical Society, Cessford, Alberta, pp. 101–107.
- _____. 1990b. Vic and Irene Vanderloh (9-22-12), Reverse Lazy V Bar Lazy V. *In* Echoes from this, our land, 1909–1990. *Edited by* L. Kemski. Berry Creek Historical Society, Cessford, Alberta, pp. 129–130.
- _____ and Coultis, B. 1984. Mr. and Mrs. E.O. Coultis. *In* Youngstown Memories Across the Years, 1909–1983. Holmes Printing, Medicine Hat, Alberta, pp. 656–657.
- _____ and _____. 1990. Mr. and Mrs. E.O. Coultis (34-21-12). *In* Echoes from this, our land, 1909–1990. *Edited by* L. Kemski. Berry Creek Historical Society, Cessford, Alberta, pp. 92–93. □

Fossils in the News

(Continued from Page 9)

Drumheller Mail—*Oldest patient scanned at Drumheller Health Centre* drumhellermail.com/index.php?option=com_content&view=article&id=8229:oldest-patient-scanned-at-drumheller-health-centre&catid=13:headline-news&Itemid=156

CBC—*Model shows how 4-winged dinosaur could glide: Microraptor “a very successful glider”* www.cbc.ca/technology/story/2010/01/26/tech-dinosaur-four-winged-glider.html

Drumheller Online—*Tyrrell scientists solve 150 million year old mystery* drumhelleronline.com/index.php?option=com_content&task=view&id=1334&Itemid=66

National Geographic—*Dinosaur “death pits” created by giant’s footprints?* news.nationalgeographic.com/news/2010/01/100119-dinosaur-fossil-death-pits-footprints/ for more pictures, see also news.nationalgeographic.com/news/2010/01/photogalleries/100119-dinosaur-death-pit-pictures/#025647_600x450.jpg

CBC—*Alligators breathe like birds, scientists find* www.cbc.ca/technology/story/2010/01/18/tech-biology-alligator-lungs.html

CBC—*Discovery of early meat-eating dinosaur redraws family tree* www.cbc.ca/technology/story/2009/12/10/tech-dinosaur-species-tawa.html

CBC—*Croc ancestors found in Sahara* www.cbc.ca/technology/story/2009/11/19/tech-fossil-crocsc.html

CBC—*Dinosaurs were warm-blooded runners, skeletons hint* www.cbc.ca/technology/story/2009/11/12/tech-dinosaur-warm-blooded.html

Science Daily—*“Earth claw”: new species of vegetarian dinosaur close to common ancestor of gigantic sauropods* www.sciencedaily.com/releases/2009/11/091111151237.htm

Science Daily—*Portable 3-D laser technology preserves Texas dinosaur’s rare footprint* www.sciencedaily.com/releases/2009/11/091104101623.htm

Science daily—*Extinct moa rewrites New Zealand’s history* www.sciencedaily.com/releases/2009/11/091118092633.htm

CBC—*DNA links caribou migration to volcanic eruption* www.cbc.ca/technology/story/2010/02/23/tech-caribou-dna-ancient.html

BBC—*Scientists sequence genome of giant extinct cattle* news.bbc.co.uk/2/hi/uk_news/scotland/highlands_and_islands/8516598.stm

Science Daily—*Why did mammals survive the K/T extinction?* www.sciencedaily.com/releases/2010/01/100131221348.htm

National Geographic—*Goat lived like a reptile—a first* news.nationalgeographic.com/news/2009/11/091116-goat-reptile-island-majorca.html

Science Daily—*Ancient origins of modern opossum revealed* www.sciencedaily.com/releases/2009/12/091215202320.htm

Science Daily—*Fossil shelved for a century reworks carnivore family tree: Limbs changes understanding of early carnivore locomotion* www.sciencedaily.com/releases/2009/12/091222122021.htm

National Geographic—*Prehistoric pygmy sea cow discovered in Madagascar* news.nationalgeographic.com/news/2009/12/091212-pygmy-sea-cow.html

Science Daily—*Ancient DNA from dirt, not fossilized bones, shows late survival of woolly mammoth and other ice age megafauna* www.sciencedaily.com/releases/2009/12/091214151946.htm

Science Daily—*DNA sheds new light on horse evolution* www.sciencedaily.com/releases/2009/12/091210092001.htm

CBC—*Newfoundland fossils show evidence of early muscle* www.cbc.ca/technology/story/2010/02/17/tech-fossil-animal-muscle.html

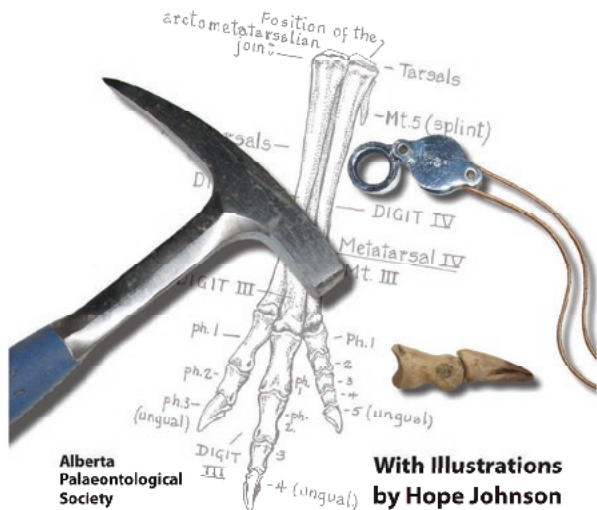
Thanks to Georgia Hoffman, Phil Benham, and Mike Dooley for sending links. These links and more can be found on the APS website at www.albertapaleo.org thanks to Vaclav Marsovsky. □

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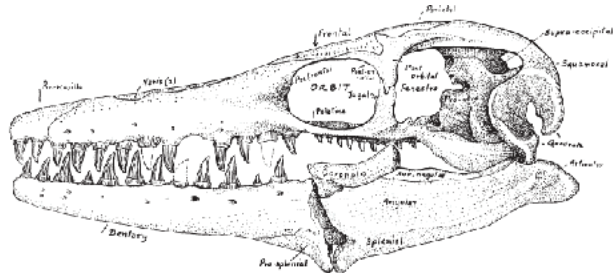
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