

*Palaeontological*  
**Alberta** *Society*  
*Bulletin*

VOLUME 19 • NUMBER 4

[www.albertapaleo.org](http://www.albertapaleo.org)

DECEMBER 2004



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**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:
  - 1) discovery
  - 2) collection
  - 3) description
  - 4) education of the general public
  - 5) preservation of material for study and the future
- Provide information and expertise to other collectors.
- 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**  
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**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** (or **B101**, across the hall)  
**Mount Royal College: 4825 Richard Road SW, Calgary, Alberta**

**Friday, December 10, 2004 (Second Friday)**—Christmas Social. Dan Quinsey, Alberta Palaeontological Society: "*She sells sea shells: A short biography of Mary Anning.*"

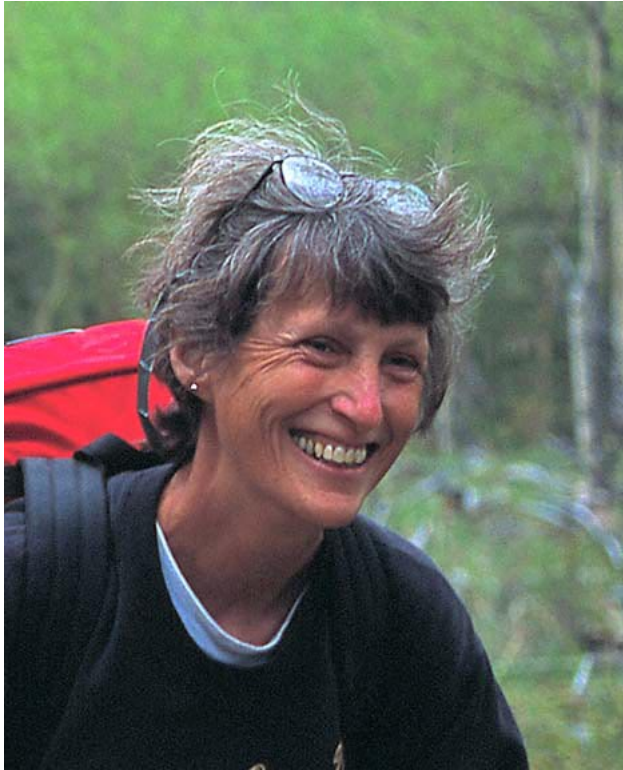
**Friday, January 21, 2005**—Dr. Gerald Oetelaar, University of Calgary: "*Darkened skies and sparkling grasses: The potential impact of the Mazama ash fall on the northern plains.*" (See page 14).

**Friday, February 25, 2005**—Patrick Druckenmiller, University of Calgary:  
"*Mega-mining for ancient marine reptiles: Plesiosaurs and ichthyosaurs from the Athabasca Oil Sands area of northeastern Alberta*"

**Saturday and Sunday, March 19 & 20, 2005**—APS 9th Annual Symposium (See Page 19).

**ON THE COVER:** Alberta Fossils—coquinoïd mudstone concretion with ammonite moulds, including *Watinoceras reesidei* Warren (large, coarse-ribbed specimen) and *Scaphites delicatulus* Warren. Kaskapau Formation, Upper Cretaceous (Turonian), Peace River district, Alberta. Magnified 2.2 times. Photo by Howard Allen.

# Palaeontology Community Mourns Loss of Dr. Betsy Nicholls



**D**r. Betsy (Elizabeth) Nicholls, an award-winning researcher with the Royal Tyrrell Museum of Palaeontology, passed away on October 18, 2004, after a prolonged and courageous battle with cancer.

Dr. Nicholls has been the marine reptile specialist at the Royal Tyrrell Museum since 1990. She was one of Alberta and Canada's most celebrated and accomplished vertebrate palaeontologists.

Betsy Nicholls was internationally known for discovering and describing new species of marine reptiles. A sampling of her career highlights includes:

- Collecting and researching the world's largest known ichthyosaur found in the Pink Mountain region of northeastern British Columbia. In 2000, Dr. Nicholls received the Rolex Award for Enterprise for her pivotal role in recovering the remains of the 23-metre-long reptile. [See Rolex advertisement in

*National Geographic Magazine*, November, 2000.]

- Collecting and studying new primitive marine reptiles from the Wapiti Lake area of northeastern British Columbia, a project that established western Canada as one of the world's most important localities for Triassic marine reptiles.

- Collecting and studying North America's oldest known plesiosaur found north of Crowsnest Pass.

Dr. Nicholls was born in Oakland, California, in 1946. At the age of 10, she moved with her family to Melbourne, Australia. She later returned to the U.S. where she completed her undergraduate studies in palaeontology at the University of California at Berkeley.

In 1969, Betsy moved to Canada with her husband, Jim, who had accepted a position with the University of Calgary. She completed her M.Sc. in biology (palaeontology) at the University of Calgary in 1972 and in 1989, after completing her thesis on marine reptiles from Morden, Manitoba, she received her Ph.D.

Throughout her fourteen years at the Tyrrell Museum, Betsy called Calgary home and made the 170 kilometre commute to Drumheller and back every day. Dr. Nicholls touched all those who were fortunate enough to have known her. She will be remembered for her tireless efforts, commitment and dedication to her work, and to the museum. She is survived by husband Jim and daughters Jennifer and Kat. At the request of her family, a private celebration of Dr. Nicholls' life was held at the museum on November 1.

*The preceding article and photo are from a RTMP press release of October 21, 2004, courtesy of Marty Eberth, RTMP Public Relations. For more information, call (403) 823-7707.*

Dr. Nicholls was a friend and former member of the Alberta Palaeontological Society. She spoke on her remarkable discoveries in 1998 (see *Bulletin*, December 1998, p. 4) and presented a poster and workshop at the 2000 APS Symposium (*Bulletin*, March 2000, p. 6).

She will be missed and fondly remembered by our members, who keenly followed the news of her discoveries and research. We offer our sincerest condolences to her family, friends and colleagues on this sad and untimely loss. – Howard Allen □

# Society Mourns Member Fred Lewis



**Fred Lewis, 1919–2004.** (Photo courtesy of Mrs. Lewis)

Members in attendance at the November 19 general meeting were saddened to learn of the death of long-time APS member Frederick W. Lewis, of Carmel, IN, USA. Fred passed away September 12, 2004, in Indianapolis, at the age of 84 years. He is survived by his wife of 54 years, Corona “Ronie” Heath Lewis, and a cousin, Dr. Paul Camwell of Calgary. A personal memorial web page dedicated to Fred may be viewed at [www.lifestorynet.com](http://www.lifestorynet.com).

Fred was born in Aylmer, Ontario, in 1919. He graduated from the University of Western Ontario in engineering. Fred and Mrs. Lewis moved from St. Thomas, Ontario to Carmel, Indiana in 1967.

The following notes from a memorial sent by Mrs. Lewis show the depth of Fred’s love of nature:

“...his one great passion was natural history. He became a volunteer at the Indiana State Museum in the natural history department. Immersed in the museum, he became treasurer of the volunteers’ organization and was often a speaker on natural history. He even organized the annual volunteer field trips. His interest led him to expand to the areas of geology, palaeontology, and fossils, especially those connected with Indiana. He participated in many digs in the state, and with his knowledge and interest, was elected President of the Friends of Mineralogy, Mid-West Chapter, and the St. Thomas, Ontario

Naturalist Club. He was also a member of the Indiana Society of Paleontology, the Alberta Palaeontological Society, the McIllwraith Field Naturalists of London, Ontario and treasurer of the Indianapolis Shell Club and the Dana Retirees of St. Thomas.”

“He was an excellent photographer and an accomplished water colour painter, having won several awards. He was also interested in the history of the Southwest and every summer for 15 years, travelled there from Canada to study and explore. In addition, Fred was very interested in dinosaurs. He travelled to the western United States to explore with his membership groups and learn about the origin of dinosaurs.”

Fred joined the APS in 1993 and participated in DinoTour in the 1990s, where he became acquainted with other members of our Society. Over the years he submitted a number of articles and photographs to the *Bulletin*, including the breathtaking crinoid stems cover photo of the March 2003 issue, one of this editor’s personal favourites.

Fred’s enthusiasm for nature and his generosity touched all of us at the Society, and he will be fondly remembered by his friends here. We extend our sincerest sympathy to Mrs. Lewis and all of Fred’s other friends and relatives.

– Howard Allen □

## President’s Message

by Dan Quinsey

First of all, I would like to send my condolences to the families and friends of **Dr. Betsy Nicholls** and **Fred Lewis**. Their absence will be felt everywhere.

I would like to remind everyone to renew your membership early. Many of our plans revolve around membership numbers and working capital. Members who renew late affect our decisions.

We are currently working on several projects for the current and upcoming terms. This year, we will see new poster boards at our March Symposium, to

be themed “Polar Palaeontology.” On the drawing board are a number of projects for the 2005–2006 Anniversary year. One of these endeavours is a book celebrating the past 20 years of the APS as well as a new Alberta vertebrate fossil identifier with the help of APS Life Member **Hope Johnson**. It is a large project and we promise to do everything in our power to get it off the ground. We may be soliciting advance orders sometime in the future.

We are working hard to raise funds for many projects. If you have any palaeo or geological related items you would like to donate for our Silent Table Auction, please contact me.

We are also looking for mineral and fossil donations for education and CRLC booth give-away purposes. If you have any items to donate, please contact me.

Every General Meeting we award an APS member with a certificate of appreciation for going above and beyond for the Society. As a rule, I do not accept nominations for Board Members. If you would like to nominate a fellow member for this award, please contact me in writing with details describing why you think this member should receive this award.

My policy is an open door one. Please feel free to make any suggestions to any Board Member. I promise all suggestions will be considered diligently. If you feel you have hit a roadblock during this process, please let me know.

I recently took a drive to Medicine Hat to visit Hope Johnson, one of our APS Life Members. Hope Johnson’s book (coauthored by palaeontologist Dr. John Storer), “*A guide to Alberta vertebrate fossils from the age of dinosaurs*” is a beautifully illustrated field guide and is the manual of choice for many of our members.

Hope Johnson was quite friendly and a pleasure to talk with. Her home was cozy and very welcoming. It was exciting to watch her face light up as she told stories of how she was introduced to fossils and art. Oh, yes—many of her beautiful landscapes lined the walls of her home. Her passion for palaeontology is captured in both her scientific sketches and artwork.

It was quite a pleasure meeting Hope and discussing palaeontology. Her kindness and cheerful smile warmed my heart.

Dan Quinsey, President  
(403) 247-3022, [dinodan@shaw.ca](mailto:dinodan@shaw.ca) □



**Hope Johnson** with a recent water color, *Red Rock Coulee*. (Photo: Dan Quinsey)

## The APS Goes to School

In his ongoing efforts to reach out to the young people of our community, President **Dan Quinsey** visited Mrs. Gayle Natland’s Grade 3 class at Holy Family School, on October 18. Dan spent 2–3 hours with the students, who got some exciting hands-on experience with fossils and geology, as the following photo attests. The visit was prompted by twenty-five letters sent in by the students, aged 7–9, posing questions about various aspects of earth science. The APS donated some rock and fossil kits to the school. □



**Fossil enthusiasts** with President Dan Quinsey. (Photo courtesy of Mrs. Gayle Natland)

# Library Notes

by Mona Marsovsky, APS Librarian

## ***Field trip descriptions for areas outside Alberta in the APS Library***

**P**lanning a holiday? Field trip guides provide valuable information on fossil locations, geology and the fossils themselves. In addition to guides for all of the APS field trips, the APS library also includes the following field trip guides for areas outside Alberta.

### **British Columbia**

*Geology and paleontology of the Mt. Stephen trilobite beds and Burgess Shale in the Stephen Formation, Yoho National Park, British Columbia.* Canadian Society of Petroleum Geologists, Field Trip No. 1, July 12, 1997. Leader: Desmond H. Collins.

*Oyster Bay Formation at Shelter Point, B.C.* Guidebook, Field Trip #1, Fifth British Columbia Paleontological Symposium, May 4, 2003, by Graham Beard.

*Trent River Formation at Trent River site, B.C.* Guidebook, Field Trip #2, Fifth British Columbia Paleontological Symposium, May 4, 2003, by Graham Beard.

*Northumberland Formation at Collishaw Point, Hornby Island, B.C.* Guidebook, Field Trip #3, Fifth British Columbia Paleontological Symposium, May 5, 2003, by Graham Beard.

### **Saskatchewan**

*Geological road log of the Cypress Hills area of Southwestern Saskatchewan.* Saskatchewan Geological Society, 1969 Field Trip, June 20-21, 1969.

*Cypress Hills plateau, Alberta and Saskatchewan.* Guidebook, Part II, Programme, Geological Road Logs and Maps, 15th Annual Field Conference, Sept. 1965, Published by the Alberta Society of Petroleum Geologists.

### **Manitoba**

*Manitoba Paleozoic and Mesozoic of the Dawson Bay area and Manitoba Escarpment.* Geological Association of Canada and Mineralogical Association of Canada, Field Trip No. 6, Guide Book, Aug. 27-39, 1970.

### **Manitoba to Alberta**

*Quaternary geology and geomorphology between Winnipeg and the Rocky Mountains.* Field Excursion C-22, International Geological Congress, 24th session, Montreal Quebec, 1972, by N.W. Rutter and E.A. Christiansen. Guidebook editor D.J. Glass.

### **Ontario**

*Depositional environments and tectonic setting of the early Proterozoic Huronian Supergroup.* Excursion 13B, Eleventh International Congress on Sedimentology, McMaster University, Hamilton Ontario, Aug. 22-27, 1982. International Association of Sedimentologists. This describes a field trip that starts in Hamilton and travels to Sudbury, Ontario.

### **United States**

*Field trip guidebook, 62nd annual meeting, Society of Vertebrate Paleontologists, held at Norman, Oklahoma, USA, 2002.* Edited by Roger Burkhalter, Nicholas Czaplewski and Richard Lupia. This includes detailed descriptions of five field trips in Colorado, Oklahoma, New Mexico, Arkansas and Texas.

*Paleontologists tour North Dakota's internationally significant fossil sites in association with the 2003 annual meeting of the Society of Vertebrate Paleontology* by John W. Hoganson and Joseph H. Hartman. This article describes the sites visited in North Dakota on this field trip.

### **Various Locations**

Final Circular, XIV International Congress on the Carboniferous-Permian, Aug. 17-22, 1999, Calgary, Alberta. Hosted by the Department of Geology and Geophysics, University of Calgary and sponsored in part by the Canadian Society of Petroleum Geologists. This includes brief descriptions of their 21 field trips to Nova Scotia, Idaho, Alberta, B.C. and Missouri. □

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# Nature of the Variation in Pachycephalosaurid Frontoparietal Dome Histology

by Brad McFeeters, copyright © 2004

The hypothetical head-butting behaviour of Pachycephalosauridae is as widely known as the animals themselves, and has received the most attention from scientists studying the behaviour of these dinosaurs.

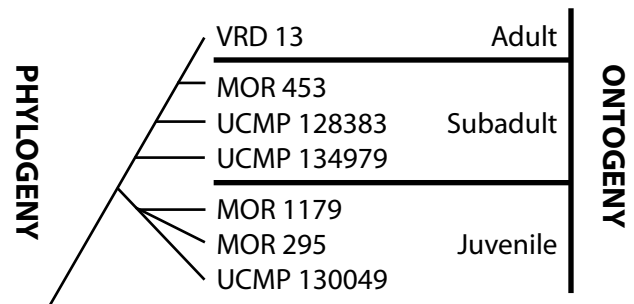
Proposed functions for the frontoparietal dome for butting include the earlier head-to-head model (Galton, 1971) and the later head-to-flank model (Carpenter, 1997).

The most recent contribution on the subject pachycephalosaur head-butting is by Goodwin and Horner (2004), who concluded that the dome was a display structure not used in physical combat at all. Goodwin and Horner examined cross-sections of pachycephalosaur domes from several species and found that the type of radiating cranial histology previously interpreted as a head-butting adaptation (Sues, 1978) occur only in some specimens. They concluded that the radiating zone was present only in juvenile pachycephalosaurs and was greatly reduced as the individual aged, an unexpected result that disagrees with popular notions of the purpose of intraspecific head-butting contests. Some comments on Goodwin and Horner's evidence and interpretations are the subject of the present paper.

An interesting coincidence regarding the pachycephalosaurid sample studied by Goodwin and Horner is how closely their ontogenetic series (Goodwin and Horner, 2004, p. 256, table 1) mirrors their phylogenetic hypothesis (Goodwin and Horner, 2004, p. 255, fig. 2). Subadult and adult specimens are recognized only in a clade of derived pachycephalosaurs, excluding all juveniles, which belong to the genus *Stegoceras*. Goodwin and Horner initially identified the problematic UCMP 134979 as less mature than the *Stegoceras* specimen MOR 1179, but later, following histological study, reinterpreted it as histologically more mature than MOR 1179 (Goodwin and Horner, 2004, p. 256).

Figure 1 shows the ontogenetic and phylogenetic positions of the specimens, after Goodwin and Horner (2004). Although Goodwin and Horner interpreted the trend in cranial histology to be of ontogenetic significance, it could just as easily be

phylogenetic based on the specimens they studied. Rather than being characteristic of particular growth stages, the histological architecture previously identified as "subadult" or "adult" could diagnose clades of pachycephalosaurs.



**Figure 1:** Pachycephalosaurid specimens sectioned by Goodwin and Horner 2004 with their interpretations. VRD = Sierra College, Rocklin, California; MOR = Museum of the Rockies, Montana State University, Bozeman, Montana; UCMP = University of California Museum of Paleontology, Berkeley, California.

Goodwin and Horner did not publish a new cladistic analysis of Pachycephalosauridae, and their cladogram (Goodwin and Horner, 2004, p. 255, fig. 2) is attributed to Sereno (1986). This is uninformative because only two taxa (*Stegoceras* and *Pachycephalosaurus*) are shared with that analysis. Nonetheless, the interrelationships depicted by Goodwin and Horner for *Stegoceras*, *Stygimoloch*, and *Pachycephalosaurus* have been supported by all recent studies of pachycephalosaurid phylogeny (Sereno, 2000; Williamson & Carr, 2003; Sullivan, 2003). The two unnamed taxa in Goodwin and Horner's cladogram have received less attention and less consensus. Sullivan (2003, p. 195) differs from Goodwin and Horner in classifying MOR 453 provisionally in the genus *Hanssuesia*, and therefore basal to Pachycephalosaurini (*Stygimoloch* + *Pachycephalosaurus*) according to his cladogram. In either case, MOR 453 is placed among the evolutionary grade of pachycephalosaurs possessing a "subadult" cranial histology. Likewise, classifying UCMP 134979 as *Pachycephalosaurus*, as discussed but dis-

missed by Goodwin and Horner (see below), would be consistent in this interpretation with “histological architecture...characteristic of an older subadult/younger adult” (Goodwin and Horner 2004, p. 264). A critique of the conflicts in pachycephalosaurid cladograms is beyond the scope of this paper, but nothing published so far on pachycephalosaurid phylogeny appears to contradict the interpretation of a phylogenetic trend in cranial histology.

Ontogenetic assessments presented by Goodwin and Horner are sometimes inconclusive, or in conflict with other described fossil evidence. For example, VRD 13 (*Pachycephalosaurius wyomingensis*) is claimed to be the most mature specimen sectioned, representing a fully adult individual. This is based on “relative size, a fully developed frontoparietal dome, and parietosquamosal ornamentation” (Goodwin and Horner, 2004, p. 257). The size of VRD 13 may be overemphasized by comparison to pachycephalosaur species which did not grow as large as *Pachycephalosaurius*.

According to measurements in Goodwin and Horner (2004, p. 256, table 1) and Brown & Schlaikjer (1943, p. 141), VRD 13 is only about two thirds the size of AMNH 1696, the largest described *P. wyomingensis* skull. Not enough is known about size variation in *P. wyomingensis* to say whether or not this precludes VRD 13 being an adult, but the comparison points out that VRD 13 is not a particularly large example of its species. The character “fully developed frontoparietal dome” is unfortunately complex and difficult to assess, especially since this specimen has been figured only as an “ear to ear” cross-section (Goodwin and Horner, 2004, p. 259, fig. 4). Giffin (1989) observed that the development of the dome is variable in *Pachycephalosaurius* specimens of about the same length, even among smaller individuals, suggesting that dome development is not simply an indication of maturity. Finally, the well-developed parietosquamosal ornamentation of *P. wyomingensis* was probably not limited to adults. It occurs on the small squamosal ANSP 8568, referred to *P. wyomingensis* by Baird (1979), who noted that it would belong to a skull approximately one third the size of AMNH 1696 (or one half the size of VRD 13). VRD 13 is possibly the most mature specimen in Goodwin and Horner’s sample, but the evidence cited is not highly convincing.

UCMP 134979 is a particularly interesting specimen for the purpose of this review. Goodwin and Horner (2004, p. 257) first identified it as a juvenile *Pachycephalosaurius*. After examining the cross-

tion, they noted that the bone structure was like the larger, more mature specimens. According to Goodwin and Horner (2004, p. 264), this “falsifies the earlier identification of this specimen as a juvenile *Pachycephalosaurius*.” The supposed falsification is based on circular reasoning: cranial histological structure is used to determine the maturity of specimens, yet at the same time the maturity of specimens is used to determine the significance of variation in histology. For the ontogenetic trend observed by Goodwin and Horner to hold true, the relative maturity of UCMP 134979 must be modified to fit the hypothesis. If UCMP 134979 is left as a juvenile *Pachycephalosaurius*, as suggested by external morphology, its “adult” cranial histology is best interpreted as a derived phylogenetic character. There is no reason to believe that this specimen represents an unnamed new species as suggested by Goodwin and Horner (2004, p. 264).

The new phylogenetic interpretation for Goodwin and Horner’s sectioned domes suggests that derived pachycephalosaurids such as *Pachycephalosaurius* probably did not engage in head-butting behaviour, but that this behaviour may have been possible in *Stegoceras*. Head-butting may be the primitive state for Pachycephalosauridae.

Goodwin *et al.* (1998, p. 372) speculated that the variety of pachycephalosaur domes could correspond to different stages of agonistic cranial structures in mammals defined by Geist (1966). The prediction that dome function became less violent and more ritualistic as pachycephalosaurs evolved is supported by the present work. However, additional challenges to the protective value of the *Stegoceras* dome, involving the direction of physical forces into the brain, have not yet been fully demonstrated or refuted (Landry, 1995; Goodwin *et al.*, 1998).

The currently available evidence does not allow the head-butting debate to be considered solved. Although the present work disagrees with recent arguments against head-butting, no evidence is presented actually in favour of head-butting. New theories on pachycephalosaur evolution, such as a diphyletic origin of domed forms (*cf.* Bakker, pers. comm. 2004), may complicate the simplistic view of a progressive reduction in head-butting ability from *Stegoceras* to *Pachycephalosaurius*. A better understanding of the function and evolution of the pachycephalosaurid dome could be obtained through a more complete survey of cranial histology (such as sectioning adult specimens of *Stegoceras*), and further clarification of



the phylogenetic relationships.

Thanks to Rebecca Hunt for sending me a useful reference article, and Robert Bakker for discussing pachycephalosaur dome evolution.

*APS member Brad McFeeters is a student and self-described “armchair palaeontologist and amateur palaeoartist” in Woodville, Ontario. Most of his interest in fossils has focussed on dinosaurs since he first began studying them at the age of seven. He is planning on pursuing formal education in palaeontology. This is his first palaeontology article submitted for publication.*

### References

- Baird, D. 1979. The dome-headed dinosaur *Tylosteus ornatus* Leidy 1872 (Reptilia: Ornithischia: Pachycephalosauridae). *Notulae Naturae of the Academy of Natural Sciences of Philadelphia*, vol. 456, p. 1–11.
- Brown, B. and Schlaikjer, E.M. 1943. A study of the troodont dinosaurs with the description of a new genus and four new species. *Bulletin of the American Museum of Natural History*, vol. 82, no. 5, p. 115–150.
- Carpenter, K. 1997. Agonistic behavior in pachycephalosaurs (Ornithischia: Dinosauria): a new look at head-butting behaviour. *Contributions to Geology, University of Wyoming* 32: 19–25.
- Galton, P.M. 1971. A primitive dome-headed dinosaur (Ornithischia: Pachycephalosauridae) from the Lower Cretaceous of England and the function of the dome of pachycephalosaurids. *Journal of Paleontology*, vol. 45, no. 1, p. 40–47.
- Geist, V. 1966. The evolution of horn-like organs. *Behaviour*, vol. 27, p. 175–214.
- Giffin, E.B. 1989. Notes on pachycephalosaurs (Ornithischia). *Journal of Paleontology*, vol. 63, no. 4, p. 525–529.
- Goodwin, M.B., Bucholtz, E.B. and Johnson, R.E. 1998. Cranial anatomy and diagnosis of *Stygimoloch spinifer* (Ornithischia: Pachycephalosauria) with comments on cranial display structures in agonistic behavior. *Journal of Vertebrate Paleontology*, vol. 18, no. 2, p. 363–375.
- Goodwin, M.B. and Horner, J.R. 2004. Cranial histology of pachycephalosaurs (Ornithischia: Marginocephalia) reveals transitory structures inconsistent with head-butting behaviour. *Paleobiology*, vol. 30, no. 2, p. 253–267.
- Landry, S.O. 1995. *Stegoceras* not a head-butter. *American Zoologist*, vol. 35, no. 5, p. 60A.
- Sereno, P.C. 1986. Phylogeny of the bird-hipped dinosaurs (Order Ornithischia). *National Geographic Research*, vol. 2, no. 2, p. 234–256.
- Sereno, P.C. 2000. The fossil record, systematics and evolution of pachycephalosaurs and ceratopsians from Asia. *In: M.J. Benton, M.A. Shishkin, D.M. Unwin and E.N. Kurochkin (eds.) The Age of Dinosaurs in Russia and Mongolia*, p. 480–516, Cambridge University Press.
- Sues, H.-D. 1978. Functional morphology of the dome in pachycephalosaurid dinosaurs. *Neues Jahrbuch für Geologie*

und Palaontologie, Monatsheft 1978, no. 8, p. 459–472.

Sullivan, R.M. 2003. Revision of the dinosaur *Stegoceras* Lambe (Ornithischia, Pachycephalosauridae). *Journal of Vertebrate Paleontology*, vol. 23, no. 1, p. 181–207.

Williamson, T.E. and Carr, T.D. 2003. A new genus of derived pachycephalosaurian from western North America. *Journal of Vertebrate Paleontology*, vol. 22, no. 4, p. 779–801. □

# A Visit to Nova Scotia's Fundy Geological Museum

by Steven Coombs

During the October break here at college, I had the privilege of visiting the Fundy Geological Museum in Parrsboro, Nova Scotia. Upon my visit I found the museum to be very organized and well attuned to getting the information to come alive.

I paid \$3.00 for admission (since I'm a student!) The tour began with a movie, which was the usual overview of the creation of the Earth and narration about each era that the Earth has gone through. Then it talked about the dinosaurs for a brief period, but there was an emphasis on dinosaurs of Nova Scotia.

After the movie the tour of the gallery began. I was amazed at what I saw. They had an introduction to



**Plateosaurus mount** at the Fundy Museum. (Photo: Steven Coombs)

rocks and the geological processes that create them. The lab was open and you could see preparators working on the remains of a prosauropod, which can be seen on the museum's official website (updates appear weekly): <http://museum.gov.ns.ca/fgm/lab/lab.html>

Continuing on further, they had a great number of displays of Carboniferous fossils and geology. In the centre of the gallery was the huge skeletal cast of *Plateosaurus*, which was surrounded by two dioramas. These two dioramas were about the Carboniferous and the Triassic (separate of course). In the showcases were many fossils of prosauropods and

mammal-like reptiles (all of which I presume were found in the Fundy Basin). I took a lot of pictures: more can be viewed at my website, <http://stevens-dinosaurs1.tripod.com/id107.html>. Before I left, I stopped at the gift shop and picked up a book called *Dawning of the Dinosaurs* by Harry Thurston. It was well written and informative.

I had a very great time there and hope to return in the future—hopefully on a day with good weather! □

*APS member Steven Coombs is a student living in Barachois, Quebec. He is a frequent contributor to the Bulletin. –ed.*

# There's a New Palaeontological Organization in Alberta: The Palaeontological Society of the Peace (PSP)

by Sheldon Graber, Katalin Ormay, Bert Hunt and Desh Mittra

**T**he Palaeontological Society of the Peace (PSP) originated in the classroom of Professor Desh Mittra while teaching palaeo-enthusiasts the basics of dinosaur evolution as prescribed in the University of Alberta's ES 207 course material. Besides some regular college students, most of Grande Prairie's experienced dinosaur hunters and other interested professionals signed up for this evening class. A core group of six individuals from this course and two other, like-minded community members decided to formally establish a palaeo-



**Figure 1.** Founding members of the PSP with Darren Tanke on the banks of the Kakwa River. (L–R): Scarlett Hunt, Katalin Ormay, Darren Tanke, Bert Hunt, Desh Mittra, Roy Bickell, Sherry Samborski. Missing: Sheldon Graber, Walter Paszkowski. (Photo: Bert Hunt)

club in the Peace with Dr. Mittra as the founding President.

The founding members (Figure 1) and their executive positions are as follows:

**President:**

Dr. Desh Mittra, Ph.D.

**Vice-President:**

Katalin Ormay

**Secretary:** Scarlett Hunt

**Treasurer:**

Sheldon Graber, P. Geol.

**Program Coordinator:**

Dr. Bert Hunt, P. Eng.

**Members at Large:**

Sherry Samborski, P. Geol.

Walter Paszkowski

Roy Bickell



**Figure 2.** (L-R): Phil Currie, Eva Koppelhus, Desh Mittra, Sheldon Graber, Bert Hunt, Katalin Ormay, Darren Tanke, Sherry Samborski, Scarlett Hunt, after a public educational session at the Grande Prairie Regional College. (Photo: Sheldon Graber)

These founding members were pleased that three further individuals accepted honorary memberships: Al Lakusta, retired science teacher, who originally found the dinosaur bonebed along Pipestone Creek; Dr. Phil Currie and Darren Tanke, who discovered and studied the Peace Country dinosaurs the most.

The PSP was officially founded on June 30, 2004. The goals of the Society are:

- To promote the science of palaeontology in the Peace Region through study and education.
- To make contributions to the science of palaeontology by discovery, collection, curation and display, preservation of material for study, and education of the general public.
- To provide information and expertise to others with an interest in the science of palaeontology.
- To form a working bond with the professional community and to aid in the preservation of the heritage of Alberta by contribution to provincial collections.

This working relationship with different professional and educational communities is highlighted by the fact that several members of the PSP are also part of the Pipestone Creek Dinosaur Interpretive Centre Steering Committee. The museum development can rely on these individuals for technical advice.

Another link that the PSP has established this summer is with the Royal Tyrrell Museum (Figure 2). This working relationship enabled PSP members to spend time and learn from RTM palaeontologists Dr. Phil Currie and Dr. Eva Koppelhus, RTM technician Darren Tanke and also Dr. Greg Erickson from Florida State University. During the 2004 field season, PSP members learned from these palaeontologists many valuable field techniques such as recognizing promising outcrops and identifying dinosaur bones and other fossils (Figure 3).

Under their guidance and supervision, PSP

members also helped with collecting. From these activities PSP members were able to gain invaluable palaeontology knowledge that can be used to aid RTM exploration in future field seasons.

The PSP is very fortunate to have the support of the Grande Prairie Regional College. The College and its President, Mr. James Henderson, support the activities of the Society by hosting the public educational sessions, providing transportation, and hosting the Society's website on the college's server. We are grateful to have Mr. Henderson on our team.

The PSP conducted an active exploration program in conjunction with the RTM. (For a description of the RTM's expeditions and dinosaur palaeontology of the Peace Country see Tanke, 2004.) In line with the Society's goals, PSP members actively explored for new dinosaur localities in the wider area of Grande Prairie. Tips from community members were followed up and members tried to relocate old and lost quarries. Known sites will be visited and reviewed regularly to make new discoveries, as well as to ensure security of these areas. Since the PSP is trying to oversee a very large geographic area (Grande Cache, Peace River, Tumbler Ridge, Manning), members can look forward to many busy field seasons.

Another important facet of the PSP is that it is trying to be a first contact for the members of the larger community to come forward when they make fossil discoveries in the area. Our "dino phone" number is (780) 539-2222. PSP members can ensure that fossil finds won't go undocumented. They can determine the importance of the finds and can make sure that in accordance with the province's Historical Resources Act, the proper authorities will be notified. Recovered fossils will be properly catalogued and stored at the Royal Tyrrell Museum, the Grande Prairie



**Figure 3.** Exploring in the Kleskun Hills area: Desh Mittra, Katalin Ormay, Darren Tanke, Sheldon Graber. (Photo: Bert Hunt)

Regional College, or the Grande Prairie Museum.

The PSP had an active educational program during its first year. The PSP executive invited RTM palaeontologists and other experts in the area to give public lectures to the local community. Highlights of this summer speaker-series were Darren Tanke's talk on the importance of relocating old, lost quarries in the Dinosaur Provincial Park area; Dr. Phil Currie's presentation on the history of dinosaur hunting in western Canada; Dr. Eva Koppelhus' talk

During the first season of its existence the PSP has had some important accomplishments:

With its activities and public educational sessions the PSP considerably raised the profile of palaeontology in the area. Local (*Daily Herald Tribune*), provincial (*Edmonton Journal*) and other newspapers ran stories of the importance of the Peace Country dinosaurs, both in the scientific and economic sense (Johnsrude, 2004; Talbot, 2004). The PSP's activities were highlighted and the public encouraged to become involved. The PSP successfully established a link to the Dinosaur Museum Steering Committee.

Last but certainly not least, a successful field season has to be mentioned. In conjunction with the RTM, and working side-by-side with RTM experts, the PSP took part in some important discoveries.

Various members of the PSP helped RTM personnel in the field in the Grande Prairie region:

- Members took part in collecting and screening matrix for microfossils.
- They helped Dr. Currie to re-open and re-examine the hadrosaur



**Figure 4.** Desh Mittra and Bert Hunt with members of the APS at the Wapiti River bonebed site (L-R): Desh Mittra, Mona Marsovsky, Elsie Patmore, Sam Richter, Dave Patmore, Vaclav Marsovsky, Bert Hunt, Leslie Adler. Inset: fragmentary skull in eroded boulder. (Photo: Katalin Ormay)

on palaeobotany; and Dr. Greg Erickson's lecture on *Tyrannosaurus rex*. Later in the fall Rich McCrea and Lisa Buckley gave a talk on footprint and dinosaur bone discoveries in the Tumbler Ridge, BC area. All of these presentations were extremely well received in the community. The PSP plans to continue with this tradition of inviting world-class palaeontologists for public education and local fossil prospecting.

An educational field trip was organized to visit Tumbler Ridge, where Rich McCrea, Lisa Buckley and Dr. Charles Helm showed the town's fossil exhibit, the newly established Dinosaur Research Center and the fossil site along Quality Creek. The PSP also welcomed members of the Alberta Palaeontological Society on their field trip to northwestern Alberta. They were shown pachyrhinosaur bonebed sites on the Wapiti River and a hadrosaur quarry on the Red Willow River (Figure 4).

quarry on the Red Willow River.

- They helped to locate and collect amber at a site on the Red Willow River.
- They helped with the reconnaissance and collecting of several sites, such as the Pinto Creek, Kakwa River, Wapiti River, Red Willow River, plus the Dunvegan, Spirit River and Saddle Hills areas. With these activities numerous bone localities were discovered, including a tyrannosaur femur, numerous hadrosaur bones and footprints, and ornithomimid bones. A new ceratopsian footprint was discovered and collected (Figure 5).

The PSP is planning to continue with these activities. Educational sessions are planned for the more than twenty new members. Lectures are scheduled on fossils in general and dinosaur bones in particular, the geology of the Peace Region, dinosaur anatomy and evolution, field techniques and con-

duct, just to mention a few. Our goal is to keep the public informed, educated and interested in the palaeontology of the Peace. The PSP is actively encouraging new memberships and will continue to work with the scientists of the Royal Tyrrell Museum and the Provincial Museum of Alberta.



**Figure 5.** Sheldon Graber, Greg Erickson and Bert Hunt help collect the ceratopsian footprint. (Photo: Katalin Ormay)

### Bibliography

- Johnsrude, L. 2004. Dinosaur fever grips Grande Prairie. *Edmonton Journal*, August 3, 2004.
- Talbot, N. 2004. Digging dinosaurs. *Daily Herald Tribune*, July 14, 2004.
- \_\_\_\_\_. 2004. Dino finds exciting for new society. *Daily Herald Tribune*, July 22, 2004.
- \_\_\_\_\_. 2004. Walk with the dinosaurs. *Daily Herald Tribune*, July 22, 2004.
- \_\_\_\_\_. 2004. From wasteland to hot spot. *Daily Herald Tribune*, July 22, 2004.
- \_\_\_\_\_. 2004. Fossil finds abound. *Daily Herald Tribune*, July 23, 2004.
- \_\_\_\_\_. 2004. They were what they ate. *Daily Herald Tribune*, July 27, 2004.
- \_\_\_\_\_. 2004. Rare dinosaur footprint discovered south of GP. *Daily Herald Tribune*, July 27, 2004.
- \_\_\_\_\_. 2004. The patience of paleontology. *Daily Herald Tribune*, July 30, 2004.
- \_\_\_\_\_. 2004. "A slow process." *Daily Herald Tribune*, July 30, 2004.
- \_\_\_\_\_. 2004. T-Rex "lived fast, died young." *Daily Herald Tribune*, August 12, 2004.
- \_\_\_\_\_. 2004. Laying the ground rules. *Daily Herald Tribune*, September 3, 2004.
- \_\_\_\_\_. 2004. Meet "Grande Prairie's dinosaur." *Daily Herald Tribune*, September 10, 2004.
- Tanke, D. H. 2004. Mosquitoes and Mud: The 2003 Royal Tyrrell Museum of Palaeontology Expedition to the Grande Prairie Region (Northwestern Alberta, Canada). *Alberta Palaeontological Society Bulletin*, v.19 no. 2, p. 3-31. □

# Field Trips 2005

by Wayne Braunberger

Several field trips are in the planning stages for this coming summer. A wide variety of trips are offered so there should be something for everyone.

For more information please contact Wayne Braunberger at (403) 278-5154 or by email at [events@albertapaleo.org](mailto:events@albertapaleo.org)

At this time not all dates or locations have been confirmed. Full details for all trips will be published in the March *Bulletin*. Information will also be available on the Society's website: [www.albertapaleo.org](http://www.albertapaleo.org) and at the monthly meetings.

### Dates

Field trip dates for this year are:

**June 18 and 19, 2005**

**July 16 and 17, 2005**

**August 20 and 21, 2005**

Please note that these dates are tentative.

### Trip Participant Responsibilities

- It is understood that risk is inherent to some degree in outdoor activities. Before registering for a trip please ensure you understand the risks involved and are prepared to accept them.
- As a participant you are responsible for your own safety and equipment at all times.
- Inform the trip leader of any medical conditions they should be aware of in an emergency.
- Ensure that your previous experience, ability and fitness level are adequate for the trip.

### Trip Localities

At this time trips are being planned to the following locations: Manyberries/southeastern Alberta, Crowsnest Pass area, and the Cadomin area. Also in the works is a children's field trip. The Ghost River trip (cancelled last year) will be scheduled for sometime in July or August: dates will be announced. This trip may be a two day trip due to the difficulty in accessing the area. If you have any suggestions for locations please let me know as soon as possible. Dates and locations will be confirmed in the March *Bulletin*. □

# The Monroe Dinosaur Tracks Discovery

by Garnet Fraser, photos by Bryan Monroe  
Copyright © 2004.

In the summer of 2000, Bryan Monroe had been looking for animals with binoculars. Then, not seeing any, he scanned some snow for tracks. There were no tracks on the snow, but to his surprise he noticed a series of tracks above the snow in solid rock.

Bryan's brother Keith had dropped us off by floatplane for ten days of backpacking and hunting. It was our second trip together and my fourth visit to Kakwa Provincial Park, 125 km east of Prince George, BC.

From our vantage point, we could see only a dozen tracks and no great detail. For the next three years, we kept quiet about the fossilized trackway. We were afraid that the tracks would bring numerous visitors, leading to trail construction, ecological impacts, harm to the tracks, and conflicts between user groups. It has been park policy to prohibit hunting in parts of the park that attract non-hunting visitors.

It was not until 2003 that Bryan and I noticed good-quality tracks on the cliff, which gave us the idea that there might be natural casts in the debris below. Walking under the cliff, we found large slabs covered with tracks, casts, plant material, ripple marks, and fresh-water clams.

As our excitement grew, we collected geological



**Natural cast** of two small overlapping tracks with thick toes. Scale in centimetres.

maps and everything we could find about dinosaur tracks, until we realized that we had to revisit the site with a palaeontologist. We knew we would need more gear than we could carry, which meant a helicopter, and significant expense.

We looked into, and abandoned, several ideas for funding. Numerous e-mails and months of correspondence led us to Bob Campbell, a palaeontologist and curator of The Exploration Place Museum in Prince George. Canadian Helicopters (Garry Thomsen) donated most of the helicopter time, which meant that Bryan and I could afford the remaining expenses. Greg McAuley



**Thin toes** of a small theropod that stepped in a soft substrate. The mark behind the footprint may have been caused by a dragging toe, but the author believes it resulted from the metatarsals and dew-claw of the hind-foot being pressed into the mud to increase flotation. The scale is in centimetres.

(registered Mountain Guide) volunteered his time and equipment to help us with the technical mountaineering. There were significant challenges, including placement of anchors for rock climbing and falling rock.

In 2004, Bob, Greg, Bryan and I had the trip of a lifetime. In under four days, we found several hundred dinosaur tracks from many layers, including tracks that may have been made by sauropods or very large ankylosaurs (*Tetrapodosaurus*). There were various shapes of biped and quadruped tracks, ranging from a few centimetres to over 60 cm in length, including parallel trackways. A large quadruped formed the longest trackway, at least 32 paces in a row. Bryan adapted his taxidermy methods for geltrate casting with great success. We managed a large plastic tracing and a latex peel despite cold, wet weather. Plant material included numerous ferns and cycads. We still need help to identify some of the plant material.

The Monroe Tracksite is in the Gorman Creek Formation, estimated by Stott (1998) to be

Valanginian and possibly early Hauterivian (Early Cretaceous). By the new 2004 timescale ([www.stratigraphy.org/geowhen/index.html](http://www.stratigraphy.org/geowhen/index.html)), the middle of the Valanginian is about 138 million years old. That is about 3.5 million years older than current estimates from the Geological Survey of Canada time chart (Okulitch, 1995).

A set of parallel theropod trackways from last year is now gone—smashed, buried or flipped over by falling debris. Car-sized slabs fell thundering down while we were there, probably uncovering new tracks, and destroying others. I suppose that hundreds of tracks will appear and be destroyed here on a regular basis for a long time. Most of what is now exposed has been seen only through telescopic lenses.

Clichés about tips of icebergs and unanswered questions apply, but suffice it to say that we are eager to go back. We are working closely with BC Parks to plan the next expedition. If you're interested, please call me at (250) 562-1912 or email [garnetfraser@shaw.ca](mailto:garnetfraser@shaw.ca)

#### References

- Stott, D.F. 1998. Fernie Formation and Minnes Group (Jurassic and lowermost Cretaceous), Northern Rocky Mountain foothills, Alberta and British Columbia. Geological Survey of Canada, Bulletin 516, 516 p.
- Okulitch, A.V. 1995. Geological time chart. Geological Survey of Canada, Open File 3040.

*Garnet Fraser is a family physician in Prince George, BC. He has been an enthusiastic student of palaeontology since his participation in the dinosaur trackway discovery. He writes that he spends a lot of time hunting and exploring in the mountains—he has since found another track site in the Wapiti Formation, near Tumbler Ridge, BC. □*

## Upcoming Talks

Friday, January 21, 2005, 7:30 P.M. Room B108.

***Darkened skies and sparkling grasses: The potential impact of the Mazama ash fall on the Northern Plains***

Speaker: **Dr. Gerald A. Oetelaar**  
**University of Calgary**

#### Abstract

Mazama ash has long served as an important chronostratigraphic marker for geologists and archaeologists working in southern Alberta. Despite the thickness and widespread distribution of the tephra, few of these researchers have examined the potential impact of the ash fall on the plant, animal and human communities of the area. To some extent, this failure to explore the consequences of such natural disasters reflects the paucity of historical documentation and the lack of current research on the impacts of volcanic eruptions on human communities.

The 1980 eruption of Mount St. Helens has prompted a renewed interest in the study of volcanoes, including their impacts on climate, plants, animals, and humans. This talk explores the potential impact of the Mazama ash fall on the climate, ecology and human populations of the northern Plains in light of this current research.

#### Biography

Dr. Gerald Oetelaar is an Associate Professor in the Department of Archaeology at the University of Calgary. He received his BA from the University of Calgary, his MA from Simon Fraser University, and his PhD from Southern Illinois University in Carbondale. His current research interests centre on landscape evolution during the Holocene and First Nations' perceptions and uses of the northern Plains.

## CSPG Palaeo Division Noon Hour Talk

Shell Centre, 4th floor, 400-4 Avenue SW,  
Calgary, Jan. 26, 2005, 12:00 P.M. to 1:00 P.M.

(Audience members are requested check with Shell front security desk for room access instructions).

***The Immiugak A-06 gas chimney in the Beaufort Sea—Direct evidence of hydrocarbon migration preserved in microfossils.***

Speaker: **Dr Dave McNeil, GSC**

#### Abstract

The Gulf *et al.* Immiugak A-06 well, drilled in the offshore Tertiary fold belt of the west-central Beaufort Sea, penetrated 3800 m of marine to terrestrial strata of Late Cenozoic to Early Eocene age (Iperk, Mackenzie Bay, Kugmallit, Richards, and Taglu

sequences). The well is situated on a northwest-southeast aligned, shale-cored anticline, which has been breached by vertically migrating hydrocarbons. Syndepositional growth of the diapiric anticline occurred from the Eocene to the Early Pliocene. An apparent gas chimney occurs in Oligocene-Miocene strata (Kugmallit and Mackenzie Bay sequences) at the crest of the structure. The gas chimney may extend to the top of the sedimentary succession, suggesting gas migration via the Iperk Sequence to the seafloor. An overpressured zone occurs below 1300–1500 m, within the Eocene Richards and Taglu sequences, based on well log interpretations.

Benthic foraminifera from cuttings of the A-06 well clearly show evidence of migrating hydrocarbons (bitumen) and other fluids and chemical reactions (dissolution and precipitation of silica). Additionally, mineral grains recovered from the well cuttings appear to indicate carbonate mineralization characteristic of hydrocarbon-related diagenesis within a gas chimney environment.

The microfossil analysis indicates that the main phase of hydrocarbon migration passed through Oligocene and Miocene strata immediately above the overpressured zone. Pliocene-Pleistocene foraminifera of the Iperk Sequence show little or no diagenetic alteration. Additionally, foraminifera in the shale/mud and coaly section (Richards to Taglu Sequence) in the lower part of the well show essentially normal burial diagenetic trends.

Thermal maturity, determined by Rock-Eval, vitrinite reflectance (%Ro), and FCI (Foraminiferal Colouration Index), indicate that Taglu strata are within the early oil generation window (e.g., ~0.60% Ro;  $T_{max}$  up to 436° C, and FCI up to 5.9).

### Biography

Dave McNeil (PhD, University of Saskatchewan) is a micropalaeontologist with the Geological Survey of Canada. His main areas of research are Cenozoic and Mesozoic microfossils in the Beaufort-Mackenzie and Western Canada sedimentary basins. His expertise is on benthic “forams” used for regional biostratigraphy and sequence stratigraphic analysis. An innovative sideline to his primary biostratigraphic work is the analysis of burial diagenetic effects on microfossils and the assessment of thermal maturity based on colour changes in agglutinated foraminifera. Dr. McNeil’s interpretation of the Immiugak A-06 well relies heavily on contributions from numerous colleagues at the Geological Survey of Canada. □

# Microfossil Sorting Project

by Mona Marsovsky

**O**n November 20, 2004, thirteen APS members met at Room B108 in Mount Royal College to search for fossils in the soil samples gathered by **Dr. Donald Brinkman** of the Royal Tyrrell Museum of Palaeontology (RTMP). The samples came from a location across the river from Dry Island Provincial Park in the Late Cretaceous middle Scollard Fm.

Using the three microscopes owned by APS and several borrowed from Mount Royal College (thank you, John Cox!), members sifted through the samples, finding gar scales, fish teeth and other vertebrate fossils. With Don’s assistance, fossils were then labelled. Dr. Brinkman then took the fossils to the RTMP where he will be comparing the fossil types and abundance with a sample taken from the lower part of the Scollard Formation. □

Upcoming microfossil sorting seminars are scheduled for Saturday December 4, 2004, January 8, 2005 and January 22, 2005. All three sessions will take place from 1 P.M. to 3 P.M. in Room B108 at Mount Royal College. Please register at least a week in advance with Mona Marsovsky (403) 547-0182, [vaclav@telusplanet.net](mailto:vaclav@telusplanet.net), so we can make sure we have enough microscopes. Please bring a pen (to label your samples) and tweezers and/or a tiny paint brush to manipulate the tiny fossils. If you have a microscope, please bring it.

## Fossils in the News

*Calgary Herald*, October 19, 2004

### “First” big dino fossils found in far north

BYLOT ISLAND, Nunavut—This article relates the discovery by Hans Larsson, of McGill University, of the fragmentary remains of a large theropod dinosaur, probably a tyrannosaur, in Late Cretaceous rocks of Bylot Island, north of Baffin Island. The



bone fragments, found in the summer of 2003, are allegedly the first theropod bones found this far north (in contradiction of its own headline, the article goes on to mention that hadrosaur bones had been found on Bylot in 1997).

Larsson's team tried to one-up themselves this year by combing the even more northerly Axel Heiberg Island for dinosaur fossils. Sadly, Larsson admits, "...despite 30 days of prospecting in perfect weather, we didn't find a single trace of dinosaur fossils".

[Our own **Phil Benham**, who did his Master's thesis work on Bylot Island—see *Bulletin*, March 2000—reports that dinosaur fossils were found there as early as 1987; he spent time searching for more in 1988. –ed.]

*Science*, July 23, 2004

### **Saving ancient footprints**

BIRMINGHAM, Alabama—A "good news" story reports the success of a group of determined amateur palaeontologists in saving a world-class tracksite from the bulldozer. As reported previously (see *Bulletin*, December 2003), members of the Alabama Palaeontological Society lobbied state legislators to save the 310 million-year-old site, which was under threat from a federal statute requiring the reclamation of all disused mine properties. The Alabama Department of Conservation and Natural Resources was finally persuaded to take possession of the site and assume legal liability. The amateurs then raised \$30,000 to settle a private land claim. See <http://bama.ua.edu/~rbuta/aps/aps.html> for details.

*Science*, September 3, 2004

### **Newly hatched dinosaur babies hit the ground running**

BOCA RATON, Florida—Findings presented at the 7th International Congress on Vertebrate Morphology by a team of palaeontologists from the UK, Czech Republic and others (including APS member **Eric Snively**, of the University of Calgary, who is cited in the article) show that infant therizinosaurs were probably able to fend for themselves immediately after hatching from the egg.

Detailed examination of fossil eggs from China, painstakingly prepared by British preparator Terry Manning, allowed the researchers to determine the degree of development of bones and teeth while the dinosaurs were still embryos. One characteristic seen in the embryonic teeth was that the youngest embryos had teeth similar to their meat-eating theropod

ancestors, but by the time the embryos were ready to hatch, the teeth had become more like those of the (presumed) plant-eating adult therizinosaurs. For more details, see <http://www.stonecompany.com/dinoeggs/study/manning.html>

*Calgary Herald*, November 18, 2004

### **Marine "dinosaur" bore live young**

CHINA—Canadian palaeontologist Xiao-chun Wu of the Canadian Museum of Nature, Ottawa, has collaborated with Chinese workers in describing the "unbelievable" remains of baby keichosaurs—Triassic marine ancestors of plesiosaurs (not "dinosaurs" as the article's headline proclaims). The exquisitely preserved, fully-articulated babies, each about 25 cm in length, were found a decade ago in mainland China, inside the skeletal remains of their mothers (three inside one pregnant keichosaur, four in another). The discovery allows researchers to confidently distinguish female *vs.* male skeletal features, and to confirm that keichosaurs (and presumably their descendants) gave birth to live young. Wu's paper appears in the November 18, 2004 edition of *Nature*.

*Calgary Herald*, October 28, 2004

### **Ancient hobbit lived with modern man**

FLORES, Indonesia—A flurry of excitement has accompanied the announcement, by Australian researchers, of the discovery of bones of a species of miniature humans. The fossils, dubbed *Homo floresiensis* were found in a cave excavation and described in the October 28 issue of *Nature*. "Flores Man" would have stood about a metre tall, had a brain the size of a grapefruit, and used "toy-sized" tools to hunt and butcher giant rats and pygmy elephants.

Since the bones have been dated to as recently as 12,000 years ago, it is apparent that the little people were contemporaries of *Homo sapiens* and probably interacted with "us". The research team stresses that bones of a number of similar-sized individuals have been unearthed, and they don't simply represent a pygmy race of *Homo sapiens*, or pathological dwarfs. Much is made in the article of the possibility that this tiny species may explain the widespread mythology in modern cultures of elves, leprechauns and the like.

[Thanks to Georgia Hoffman and Phil Benham for sending in clippings –ed.] □

# Some Helpful Hints for Poster Presenters...

by Dan Quinsey  
2005 Symposium poster coordinator

## Definition:

A poster is a visual medium to express results of one's research work on a topic she or he has chosen to study or to provide an overview of a researched topic.

## Who should do a poster?

Anyone who has an interest in sharing the work that she or he has done and who likes feedback from the audience (or attendees) on the work should consider doing a poster.

## What should be considered for a poster?

Any topic that ties in with palaeontology can be considered for a poster.

## Why posters?

Oral or written presentations are mechanisms to convey past and recent developments in a field of study that is essential to the investigator. An effective written presentation is a poster presentation.

## What is a poster?

A poster is something that you pin up on a board. The dimensions of a poster can vary. It can be anywhere from 2' x 3' to 4' x 8'. It contains text and figures relevant to one's work. It follows the same pattern as any scientific article that appears in a journal.

One typical format:

- Title, Author(s), Affiliation
- Summary
- Introduction—Reasons behind the work
- General information
- Geographical location of where the fossils were found
- Description and interpretation
- Conclusions
- References

Dedicate a box to each of the above categories. Within the box, include the text and figures relevant to that category. Number the boxes in such a way that the reader can follow from one box to the other in the sequence the presenter wishes.

The structure of the above framework changes from topic to topic.

## How does one make a poster?

A few years ago, posters were made with primitive computer tools and extensive drafting (lots of physical labour). The most commonly used computer tool was a word processor. Today, with powerful graphics and word processing tools, a poster can be made entirely using a computer. The final poster image gets printed on a colour printer...but remember, *you don't need a computer to do a poster!*

## What about the visual presentation?

Whatever the size of the poster, when a viewer sees it from a metre or more away, the letter (or font) size must be large enough that the text can be easily read. Also, figures should be reasonably large. Think about when the eye doctor wants you to read off his "poster" of letters and numbers from a distance. Adding colours makes a difference to the poster and can lure viewers to your poster or drive them away.

# And Abstract Writers!

by Howard Allen, editor

## What's an abstract?

An abstract is a condensed version of your research (poster) that captures all the main points, from introduction to conclusion; it can be anywhere from one paragraph to two or three pages; but the emphasis is on shortness. For the purposes of our Symposium, illustrations are more than welcome for inclusion.

## How do you want it?

Electronic submission (email) is preferred, but you can send or deliver a paper copy (my address is on Page 1). When emailing a file, PLEASE include your name in the file name (**Smith abstract.doc**). You can imagine what it's like to get 60 or 80 files all named **APS abstract.doc!** More info on the next page.

*Good luck, and have fun!*

# APS Ninth Annual Symposium

(continued from back page)

## The Symposium

The symposium is a two-day event with lectures, posters and showcase displays on Saturday, March 19 and workshops on Sunday, March 20. Saturday programs are free and open to the general public. No registration is required to attend the Saturday activities. Due to limited space, Sunday workshop participants will be required to register and pay a moderate fee for workshop manuals. Saturday events will be centered in the lower level hall at Mount Royal College (for address see back page).

## Call for Posters

The Society invites you to display a poster at our Symposium. The Symposium will feature presentations from a mix of avocational and professional palaeontologists from all over Western Canada. Invitations have been sent to APS members, staff and students of universities, natural history clubs, museums, institutions, industry and artists. Our aim is to showcase palaeontology to the general public and to foster closer relations between the APS and the above groups. There is no fee to submit a poster and abstract. We plan to encourage families to bring fossils to our identification booth. For the kids, we have videos and an activity table.

## Instructions for Posters/Displays

A table and stand with a 4x8-foot poster board will be supplied to each presenter. Presenters should bring stick pins or tape for attaching posters. If you have special requirements such as electricity to operate a display or a larger display area, please identify your requirements upon submission of a request for space. We request that poster presenters be set up by 9:00 A.M. Saturday, March 19. During the day a poster session period will be specified. Please be available at least during this time for discussion of your exhibit. To submit a poster contact Dan Quinsey, [president@albertapaleo.org](mailto:president@albertapaleo.org), (403) 247-3022. The deadline for requests for poster space is February 1, 2005.

## Symposium Abstract Volume

A symposium abstract volume will be published. It will be sold at a price to cover publication costs. Speakers and poster presenters are asked to submit an abstract to the editor. Abstracts can be one paragraph to 3 pages in length (1 page being standard). Exceptions will be made for specific requests. The abstract may include photos and/or diagrams, but please note that the abstract volume will be printed in black and white. Specific instructions and examples can be obtained from our website: [www.albertapaleo.org/abstractguidelines.pdf](http://www.albertapaleo.org/abstractguidelines.pdf) or from the editor, Howard Allen, [editor@albertapaleo.org](mailto:editor@albertapaleo.org), (403) 862-3330. Deadline for submission of abstracts is February 1, 2005.

## Two Workshops—Sunday, March 20

Tentative topics for the Sunday workshops are “**Palaeontology of Ice Age Mammals**” with instructor Jim Burns and others, of the Provincial Museum of Alberta; and “**The Evolution of Mammalian Dentitions near the Cretaceous-Tertiary Boundary**” with instructor Michael Webb of Imperial Oil Limited. Details on the course content, location and fees are to be announced. Workshop information will also be posted on the APS website: [www.albertapaleo.org](http://www.albertapaleo.org). Limit: 20 participants. Be sure to register early. Registration deadline is March 7, 2005. To sign up contact Vaclav Marsovsky at (403) 547-0182 or [vaclav@telusplanet.net](mailto:vaclav@telusplanet.net). Cheques should be made payable to Alberta Palaeontological Society. Payment may be handed to Vaclav or mailed to the Society’s mailing address: P.O. Box 35111 Sarcee Postal Outlet, Calgary, AB, T3E 7C7.

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# POLAR PALÆONTOLOGY

## Alberta Palaeontological Society Ninth Annual Symposium

**Saturday & Sunday, March 19 & 20, 2005**

**Mount Royal College Science Wing (Lower Level)  
4825 Richard Road SW, Calgary, Alberta**

**Held jointly with the Mount Royal College Department of Earth Sciences  
and Canadian Society of Petroleum Geologists, Palaeontology Division**

**All lectures and poster displays are free to the public!**

**(Lectures and poster viewing on Saturday March 19 only—workshops held on Sunday)**

### **SATURDAY, MARCH 19 SPEAKER SCHEDULE**

**All lectures to be held in Jenkins Theatre, Mount Royal College**

- ❖ *The RTMP expedition to Antarctica (A real world field experience—a modern day expedition to the Antarctic)*—Kevin Kruger, Continental Rocktell.
- ❖ *Cold-water conodonts from tropical limestone; the Early Ordovician edge of North America exposed on Ellesmere Island*—Keith Dewing and Godfrey Nowlan, Geological Survey of Canada.
- ❖ *Fossil vertebrate tracks of western Canada*—Richard McCrea, Peace Region Palaeontology Research Centre.
- ❖ *Cretaceous vertebrates from Axel Heiberg Island*—Don Brinkman, Royal Tyrrell Museum of Palaeontology.
- ❖ *Hadrosaurs of Axel Heiberg Island*—Len Hills, University of Calgary.
- ❖ *The Late Cretaceous pachyrhinosaur bonebed near Grande Prairie, Alberta*—Darren Tanke, Royal Tyrrell Museum of Palaeontology.
- ❖ *Late Pleistocene megafauna of Alberta*—Jim Burns, Provincial Museum of Alberta.
- ❖ *Keynote Talk: Ice Age faunas of eastern Beringia*—John Storer, Yukon Beringia Centre.

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