Alberta Palæontological Society Bulletin

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ALBERTA PALÆONTOLOGICAL SOCIETY

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

a. Promote the science of palæontology 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 palæontological collections of the province (preserve Alberta's heritage).

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

Single membership	$15.00 annually
Family or Institution	$20.00 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 College: 4825 Richard Road SW, Calgary, Alberta

April 20, 2001—Tamaki Sato, University of Calgary:
Anatomy of an Upper Cretaceous elasmosaur from southwestern Saskatchewan.
May 25, 2001—Georgia Hoffman: *Flora of the Paskapoo Formation, Joffre area, Alberta.*

ON THE COVER: Alberta fossils—the ammonite *Clioscaphites* sp., cf. *C. montanensis* Cobban. Upper Cretaceous (Lower Santonian), Bad Heart Formation. Enlarged 2.2x. Photo by Howard Allen.
Have you got a rare, unusual, or spectacular Alberta fossil we can showcase on a future cover? Please contact the Editor!

APS Fifth Annual Symposium

by Mona Marsovsky

On Saturday, January 20, 2001, APS took over the hallway of the science wing of Mount Royal College for the day, to host its Fifth Annual Symposium. Over forty posters, one dinosaur modelling workshop and six talks enlightened the public on all aspects of palaeontology. Publicity through Global TV, CHQR Radio, Calgary Board of Education and the Canadian Society of Petroleum Geologists helped attract a large number of attendees.

The Abstracts Volume contains detailed abstracts of the talks and posters. Some presenters even included photographs in their abstracts to more fully describe their work. Several copies of the abstract volume are still available for the low cost of $8.00 each. Contact Vaclav or Mona Marsovsky (phone: (403) 547-0182, email mtrick@neotec.com or contact us via the APS website at www.albertapaleo.org) to get your copy—before they run out!

Over 100 people crammed into the B101 lecture hall to enjoy the following half-hour talks:

Len Hills (UC), Paul McNeil (UC), Brian Kooyman (UA) and Shayne Tolman (UC): A glimpse of 11,000-year-old inhabitants of Alberta.

Paul McNeil presented the latest findings from the St. Mary Reservoir, near Cardston, Alberta. The earliest evidence of horses being hunted by humans comes from this site. A horse skull shows the indentation of a blow from an axe and an arrowhead shows horse blood. Another arrowhead had traces of bison blood.

Darren H. Tanke (RTMP): Historical archaeology: Solving the mystery quarries of Drumheller and Dinosaur Provincial Park, Alberta, Canada

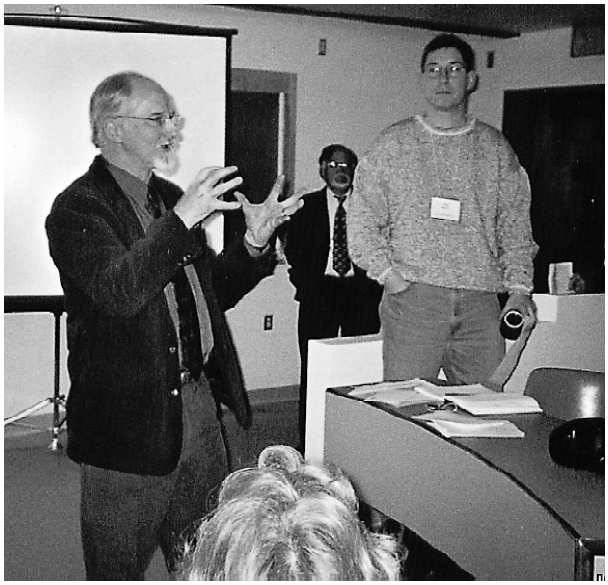
Darren Tanke described how many old quarries in Dinosaur Provincial Park were lost or mislabelled. He then showed how he and others have been using investigative techniques and deductive reasoning to "find" those old quarries.

Dr. Richard T. McCrea (UA): The distribution of vertebrate ichnotaxa from Lower Cretaceous (Albian) Gates Formation tracksites near Grande Cache, Alberta: implications for habitat preference and functional pedal morphology

At least five different kinds of dinosaurs were responsible for the tracks found in the Grande Cache coal mine. Of these, only the nodosaur's (heavy, quadrupedal dinosaur) tracks were found in all eighteen tracksites. Theropod tracks were absent from the areas which were interpreted to be boggy or swampy environments. Richard McCrea concluded that the large surface area of the nodosaur foot would allow those dinosaurs to travel in areas that the relatively small feet of theropods (big or little) could not handle. (Note that APS has a field trip to this tracksite scheduled for July 21–22, 2001.)

Dr. Brian Chatterton (UA): Cryptic behaviour in trilobites

Brian Chatterton described how trilobites may have hidden from predators.



Dr. Chatterton discusses trilobite behaviour *(Photo: Vaclav Marsovsky)*

Lisa Holmstrom (YBSF): The Burgess Shale and educational opportunities

Lisa Holmstrom described how the Yoho-Burgess Shale Foundation is trying to reach and educate teachers, students and the general public about the remarkable Burgess Shale fossils.

About 300 people jammed the Jensen Theatre to hear Dr. Philip J. Currie talk on *New Dinosaur*

Discoveries. This talk is described in detail elsewhere in this issue of the *Bulletin*.

More than fifteen participants of various ages created their own dinosaur sculptures under the guidance of Brian Cooley (artist) and Mary Ann Wilson (author) during the afternoon dinosaur modelling session.

The following posters were presented:

Leslie Adler (APS)—*Diversity of life*

Myron Belak (ASA) and Ron Goodman (ASA) (poster only)—*Archaeological Society of Alberta, Calgary Centre*

John Birrell (APS) (poster only)—*The Biological Big Bang*

Donald Brinkman (RTMP)—*A primitive cheloniid (Late Cretaceous) from the Campanian of Alberta, Canada*

Diana Brooks (GCFTS)—*The Great Canadian Fossil Trail, La Grande Traversée Paléontologique du Canada*

The half-hour lectures were well attended (*Photo: Vaclav Marsovsky*)

Michael W. Caldwell (UA)—*Snakes with legs and the origin of snakes*

Lynne Clos (Editor)—*Fossil News: Journal of Avocational Paleontology*

Glynnis Crozier (poster only)—*Tentaculitids.*

Philip J. Currie (RTMP)—*Nomadic Expeditions, Inc., report on fieldwork in Mongolia, September 2000*

Jennifer A. Duffy (UA)—*Functional morphology of the acrotretids (Lingulata, Brachiopoda)*

Dave Eberth (RTMP) (poster only)—*Depositional history of an* Albertosaurus *bonebed & alternatives for theropod behaviour*

A good mess…er…time was had by all, at the modelling workshop (*Photo: Vaclav Marsovsky*)

Michael Eischen (Artist)—*How I make a painting of extinct animals*

Sarah Elmeligi (RTMP) and Earl Wiebe (RTMP)—*Educational programs at the Royal Tyrrell Museum*

Jillian L. Garnett (MRC)—*Fossil hydrothermal vents and cold seeps and their invertebrates*

Rick Green (CMGC)—*Canmore Museum and Geoscience Centre Geoscience Committee*

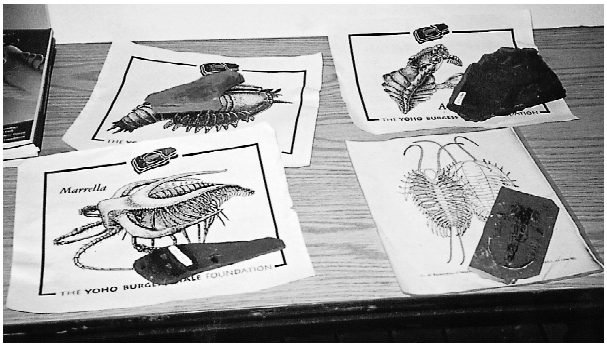
Wayne M. Haglund (MRC)—*Faunal distribution within the Drumheller Marine Tongue*

Gavin F. Hanke (UA)—*A revised interpretation of the anatomy and relationships of* Lupopsyrus pygmaeus *Bernacsek and Dineley 1977, based on new material collected from the Mackenzie Mountains, N.W.T., Canada*

Charles M. Henderson (UC) and Lisa Holmstrom (YBSF)—*The Yoho-Burgess Shale High School Research Project: communicating the scientific method to tomorrow's scientists and the general public*

Charles M. Henderson (UC), Lisa Holmstrom (YBSF), Anne Williams (YBSF), and students and teachers from Banff Community High School, Canmore Collegiate, Golden Secondary, and David Thompson Secondary (Invermere)—*Life and death in the Middle Cambrian: The Burgess Shale High School Research Project investigates the Mount Stephen trilobite beds*

Chelsea Hermus (UA), Mark Wilson (UA) and Len Hills (UC)—*A new species of* Erichalcis *from the Albian of Axel Heiberg Island, Nunavut, Canada*



Burgess shale fossils on display (*Photo: Les Adler*)

Michael P. Komarevich (IND)—*Komarevich Originals Ltd.*

Vien D. Lam (RTMP) and Michael J. Ryan (RTMP)—*The Royal Tyrrell Museum Day Digs program: public supported dinosaur research in the Drumheller Valley*

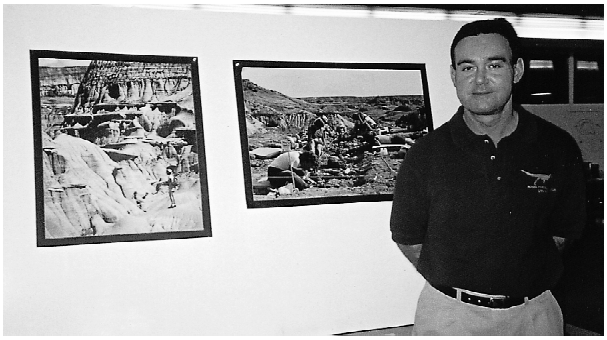
Teresa Elise MacDonald (UE)—*Late Paleocene (Tiffanian) mammal-bearing localities in superposition, from near Drumheller, Alberta*

Robert B. MacNaughton (GSC), Terrence D. Lukie (IND), Jennifer M. Cole (QU), Robert W. Dalrymple (QU), Simon J. Braddy (UB) and Derek E.G. Briggs (UB)—*Arthropod trackways from Cambro-Ordovician aeolian sandstone, Nepean Formation, southeastern Ontario: the earliest non-marine trace fossils?*

Alexander D. McCracken (GSC)—*A web-based exhibit on palaeontology in Canada*

Peter Meyer (APS) (poster only)—*Calgary Rock and Lapidary Club*

Keith Mychaluk (APS) and Philip Benham (APS) (abstract only)—*Alberta Palaeontological Society 2001 field trips*



Vien D. Lam with photos from the RTMP's "Day Digs" program (*Photo: Les Adler*)

Godfrey S. Nowlan (GSC), Roger A. Cooper (NZ) and S. Henry Williams (MU)—*Global stratotype section and point for the base of the Ordovician System at Green Point, western Newfoundland*

Roslyn Osztian (APS)—*Otoliths*

Jonathan M.G. Perry (UA)—*Breakdown of food by early fossil primates as assessed by simulated mastication*

Arndt Peterhänsel (US) and Brian R. Pratt (US)—*Phantom crinoid garden on a giant, Famennian carbonate platform (Palliser Formation, Rocky Mountains, Canada)*

Stephanie Elaine Pierce (UA)—*Reconstructing squamate phylogenetic relationships by evaluating monophyly within the Dolichosauridae*

Dr. MacNaughton gets the Hollywood treatment from the Global TV crew.
(*Photo: Vaclav Marsovsky*)

T. P. Poulton (GSC), Gerry Osborn (UC), Dixon Edwards (AGS) and Tracey Neumar (GSC)—*GeoScape Calgary*

Rob Pryor (IND), Darren H. Tanke (RTMP), Philip J. Currie (RTMP)—*Precise mapping of fossil localities in Dinosaur Provincial Park (Alberta, Canada), using advanced GPS technology*.

Steve Raymond (APS) (poster only)—*Alberta Dinosauria*

Sharon Sammons Cox (Artist)—*Sharon Sammons Cox, Artist*

J. T. Sankey (SDSMT) and Donald Brinkman (RTMP)—*New theropod and bird teeth from the Late Cretaceous (Campanian) Judith River Group, Alberta*

Tamaki Sato (UC) and Tim Tokaryk (RSMNH)—*Anatomy of an Upper Cretaceous elasmosaur from southwestern Saskatchewan*

Dr. Currie answers questions from the audience. The Tyrrell Museum had a large presence at the symposium. (*Photo: Les Adler*)

Daniel N. Spivak (RTMP) and Andrew G. Neuman (RTMP)—*Amateur fossil collecting in Alberta: A review of the Historical Resources Act*

Véronique Talon (US) and Brian R. Pratt (US)—*Sedimentology of the upper Frasnian (Upper Devonian) Simla Formation, west-central Alberta, Canada*

J.M. White (GSC) and D.R. Issler (GSC)—*Neogene and Quaternary climate and biostratigraphy: why should the oil and gas industry care?*

Michael Waddell (MDM) (abstract only)—*The Morden and District Museum*

Key to participant affiliations:

(ASA) Archaeological Society of Alberta; (AGS) Alberta Geological Survey; (APS) Alberta Palaeontological Society; (CMGC) Canmore Museum and Geoscience Centre; (GCFTS) The Great Canadian Fossil Trail Society; (GSC) Geological Survey of Canada; (IND) Industry; (MDM) Morden and District Museum; (MRC) Mount Royal College; (MU) Memorial University of Newfoundland; (NZ) Institute of Geological and Nuclear Sciences, New Zealand; (QU) Queen's University; (RSMNH) Royal Saskatchewan Museum of Natural History; (RTMP) Royal Tyrrell Museum of Palaeontology; (SDSMT) South Dakota School of Mines and Technology; (UA) University of Alberta; (UB) University of Bristol; (UC) University of Calgary; (UE) University of Edinburgh; (US) University of Saskatchewan; (YBSF) The Yoho-Burgess Shale Foundation.

This event was a big success thanks to the hard work and leadership of **Philip Benham** (APS Program Director), and the contributions of **Wayne Braunberger** (APS), **Vaclav Marsovsky** (APS), **Howard Allen** (APS), **Wayne Haglund** (MRC) and **John Cox** (MRC). A special thanks goes to **Mount Royal College Earth Science Department** for providing the venue, tables and chairs, and funds to offset symposium expenses. The **University of Calgary** provided the poster boards. The donation from **Shell Canada Limited** (Community Service Fund) allowed the Dinosaur Modelling Workshop to run at a reasonable cost to the participants. Shell Canada's donation also funded other aspects of the symposium. **China Rose Restaurant** provided delicious food for the symposium wrap-up. Dinner gifts for speakers were provided by **Boston Pizza**, **China Rose Restaurant**, **The Old Spaghetti Factory** and **Sakana Grill**. APS members **Dan Quinsey**, **Wendy Morrison**, **Cindy Evans**, **Mona Marsovsky** and **Kris Vasudevan** also made major contributions. ❑

Mount Royal College, again our generous hosts, provided this display of "Prehistoric Killers." (*Photo: Les Adler*)

Symposium Door Prize Winners

Crowfoot Ford oil change certificate

Monique Wisner	Saskatoon SK
Jeff Greenians	St. Albert AB
Shannon Nardei	Calgary AB
Bill Purcell	Calgary AB
Cory Gross	Calgary AB

KFC dinner

Keilan Freeman	Calgary AB
Jessica Evans	Calgary AB
Roger Deweers	Calgary AB
Evelyn Dolen	Calgary AB
Geoff Herding	Drumheller AB

Boston Pizza medium 3-topping pizza

Paul McNeil	Calgary AB
Robin Peck	Red Deer AB
Bob Kuchinski	Calgary AB

Ammonite fossil (*Placenticeras meeki*)

Ron Fortier	Calgary AB

***Origins* book**

Henry Williams	Calgary AB

Fossil collection

Caleb Brown	Red Deer AB

***Graveyard of the Dinosaurs* book & bones**

Earle Wiebe	Drumheller AB

***Investigate Dinosaurs* book & bone**

Ken Trumble	Calgary AB
Darryl Soderberg	Calgary AB
Dorothy Birrell	Calgary AB
Greg Townsend	Calgary AB

Mammals poster

Siobhan Williams	Calgary AB

Cephalopod fossil (*Orthoceras*)

A.R. Sweet	Calgary AB

CRYPTOSAURS

by Dan Quinsey

Solution to the December 2000 puzzle:

"I AM A QUADRUPEDAL HERBIVORE. MY FRIENDS CALL ME THREE HORNED FACE. I AM ABOUT SEVENTY MILLION YEARS OLD. MY WEIGHT IS ABOUT FIVE TONS AND I AM THIRTY FEET LONG. TRI TO GUESS WHO I AM. YOU WILL BE TOPS."

Answer: " TRICERATOPS"

Program Summary

December 15, 2000
Potluck Dinner and Palaeo Photo Contest

By all accounts the December meeting was well attended and lots of fun. Some of the photo contest winning entries have been posted on the APS website, at **www.albertapaleo.org**

Winner of the "Prepared Specimen" category at the December 15, 2000 photo contest: Mona Marsovsky with a jaw from the type-specimen of *Giganotosaurus carolinii*, Argentina. Photo by Vaclav Marsovsky.

January 20, 2001
Fifth Annual APS Symposium

See the preceding summary of the Symposium by Mona Marsovsky, and the lecture review by Vaclav Marsovsky, on Page 7.

February 23, 2001
The Geology of Rat's Nest Cave, with Dr Chas Yonge

As a prelude to the March 10 field trip, Dr. Yonge spoke on the geology and palaeontology of Rat's Nest Cave near Canmore, Alberta.

March 16, 2001
Big Bivalves, Algae and the Nutrient Poisoning of Reefs, with Les Eliuk, GeoTours Consulting Inc., Calgary.

Les Eliuk worked at Shell Canada Ltd. as a carbonate specialist for 30 years until his retirement. His career allowed him to study carbonate depositional systems around the world, in some of which he encountered megalodont clams. He currently operates GeoTours Consulting Inc.

[*Biographical notes provided by L. Eliuk*]

Abstract

"The actors change but the play goes on!" Hans Lowenstam has applied this metaphor to the history of fossil reefs. After the algal-rich reefs of the Precambrian to early Ordovician, coral and sponge-like groups have dominated a long-lasting reef record of numerous and varied organisms.

Only a few exceptions to this pattern show up in the fossil reef "play" usually due to a major extinction event affecting the principle "actors"—coral and "sponge" frame builders—and allowing the "bit players" to star for a geologic moment, or the algae/microbialites to reassert their former dominance. A startling exception to this post-extinction perturbation of "classic" reef style was the rise of the rudistid clams in the mid and Late Cretaceous. Rudists apparently out-competed the modern scleractinian hermatypic corals in their own reef niche, or occupied a mysteriously vacated niche in a "non-reefal" mode due to global stresses. Their stardom was short-lived; Seilacher's "bivalvian dinosaurs" were killed off in the end-Cretaceous mass extinction.

Bivalves today are minor but interesting contributors to modern coral reefs. Impressively large tridacnid clams are very visible in tropical Indo-Pacific reefs. From their beginning in the early Palaeozoic, the megalodont bivalves have been associated with carbonate reefs. Their long-lived association with gastropods and various algae also started very early. Even the controversial idea that, like modern tridacnid bivalves and hexacorals, the megalodonts were photosymbiotic with internal algae has been applied to Silurian megalodonts. Megalodonts usually occur in near back reef and lagoon environments, their large size attributed to algal symbiosis and not just an adaptation to epifaunal life in high energy. Sometimes their success may result instead from the ability to live in more nutrient-rich conditions that would overwhelm normal reefs. Thus their withstanding stress by "clamming-up" extends more widely than to just energy-salinity-turbidity-temperature extremes. This hypothesis comes mainly from observations of the Alberta Devonian reef complexes. Common association of the clams with algae (cyanobacteria) in the form of stromatolites/thrombolites, coatings, or oncoids is interpreted to indicate greater nutrient richness. This explanation may give insights to the end Mesozoic dominance of the rudists, that arose from the megalodonts.

– *Les Eliuk* ❑

New Dinosaur Discoveries

by Vaclav Marsovsky

Lecture by Dr. Philip J. Currie at the APS Fifth Annual Symposium, Jenkins Theatre, Mount Royal College, January 20, 2001.

The one-hour lecture with many slides by Dr. Currie provided an update on the work that he and the Royal Tyrrell Museum of Palaeontology (RTMP) have been doing over the past year. Dr. Currie specializes in the study of meat-eating dinosaurs.

Dr. Currie began the lecture by stating that we are in the "Golden Age of Dinosaurs." At no time have more people been involved in dinosaur research and more dinosaur species been described than right now. The work has been carried out both domestically (in the RTMP's back yard) and internationally.

Domestic research—Red Deer River Valley

• Dry Island Buffalo Jump

Dr. Currie and crew continue to work a rediscovered site, originally found by Barnum Brown during Brown's float trip expedition down the Red Deer River in 1910. It is now called the *Albertosaurus* bone bed and has been actively excavated since 1997. About 90% of the material is *Albertosaurus* while the remaining 10% is *Hypacrosaurus*, a crested hadrosaur. Like another theropod bone bed in Argentina, what sets this one apart is that some of the bones are articulated.

Some of the information learned includes just how long and slender juvenile limb bones are. They look like bones of ornithomimids. Dr. Currie has been able to extrapolate what these young dinosaurs would have looked like: they would have been agile and gracile. Dr. Currie showed a slide of

a painting by APS member Michael Skrepnick to illustrate.

• Dinosaur Provincial Park (DPP), near Brooks

DPP continues to produce new fossil specimens every year. RTMP has now collected about twenty articulated and partial tyrannosaurid skeletons over the years. Combined with the individual tyrannosaurid bones found, that makes for a lot of material to work with for research purposes.

This past summer, crews took out two-thirds of a skull of a *Daspletosaurus*. It had been discovered in previous years but only collected now and it has proven to be in a better state of preservation than expected. Bones of *Daspletosaurus* can get as big as *T. rex*, based on a bone found near Medicine Hat.

Daspletosaurus is very similar to *Tarbosaurus,* found in Mongolia. There are two species of *Daspletosaurus* from different time periods in Alberta and a third in Montana.

Dr. Currie is working to resurrect the name "*Gorgosaurus,"* which, in his opinion, is different from *Albertosaurus.* (*Albertosaurus* from the Horseshoe Canyon Formation, and *Gorgosaurus* from the older deposits of the Dinosaur Park Formation). There are differences in the morphology of the skull.

Some of the other work taking place at DPP has been the 3-dimensional mapping of the badlands and the finding and staking of old quarries, led by Darren Tanke.

International work

• Patagonia, Argentina

Patagonia is a hot spot for research and collection of dinosaurs. The focus has been an area around the small town of Plaza Huincul. Fifty percent of dinosaur species found and named in the last twenty-five years in Argentina have been found within a 25 km radius of this community.

The Argentinean/Canadian joint project has been ongoing since 1997. It has been led by Dr. Currie and his Argentinean counterpart and main colleague, Dr. Rodolfo Coria.

It started in 1997 when the crews dug up what they thought was one disarticulated skeleton of a large meat-eating dinosaur. Further work showed that there were actually three skeletons, based on three tibia from three different animals found in the same quarry. In subsequent years, after a lot of overburden removal, a right maxilla of a large meat-eating dinosaur was found. It was identified as belonging to the carcharodontosaurid family. It is similar to *Giganotosaurus* (another carcharodontosaurid), which was found in 1994 in the same general area. This animal was as big as *Giganotosaurus*. One leg bone is actually longer than that of *Giganotosaurus* but that does not necessarily mean the entire animal was bigger. It could just be an animal with particularly long legs. More parts have to be found. There are differences in the skull: this species does not have the long snout of *Giganotosaurus*. The specimen is being compared against parts of two other carcharodontosaurids being collected in the Chubut Province (a province further south within the Patagonia region).

In the Canada/Argentina quarry, six individuals of the meat-eating dinosaur have been found. Individuals range from half grown to full grown (*T. rex* size). Juveniles have long, low skulls, unlike the deep, robust skulls of the adults. Dr. Currie can see the changes in the skulls as the animals age. The trends can be transferred to other closely related dinosaurs.

In this quarry, ninety-five percent of the dinosaurs are meat-eating dinosaurs. The fossils in this formation are rare. The best explanation Dr. Currie has for this site is: "They were found together because they lived together, evidence that big meat-eating dinosaurs moved in groups." What did this mean for plant-eating dinosaurs? Perhaps pack hunting or cooperative hunting. Younger, agile individuals chasing the plant-eating dinosaurs into the jaws of the adults.

• Southern France

France is where the first dinosaur eggs were found. The site is in the centre of a town in southern France where excavations were under way to put up a new building. Part way down, Roman ruins were found. After the archeological folks finished, excavation resumed and below the level of the Roman foundations, dinosaur eggs turned up in the reddish soil. There are many similar sites in southern France where eggs have turned up. The chances are good that with so many eggs, eventually an embryo will turn up inside one of them.

There are sites where thousands of dinosaur egg shells lie on the surface. Dr. Currie stated that there is a lot of potential and that southern France could become a hot spot of dinosaur research in the coming years.

• Mongolia

Dr. Currie, Nomadic Expeditions, and a number of participants visited dinosaur sites in the southern Gobi desert. A nest of oviraptorid eggs was found at Flaming Cliffs. The group visited Bugin Tsav in the western Gobi, a sparsely populated area so barren that there are not even many goat herders in the area. Bugin Tsav is the site of

the largest number of tarbosaur skeletons ever found lying on the ground. Dr. Currie showed a slide of a mounted skeleton of a large adult *Tarbosaurus* at the museum in Ulan Baataar (capital of Mongolia). This skeleton was collected by the Russians at Bugin Tsav. Due to the remoteness of the area, the site seems to have been vandalized. There were bits of *Tarbosaurus* skull bones all over the ground plus parts of other dinosaurs. Dr. Currie showed a slide of a *Tarbosaurus* skin impression found at this site, a rarity.

At a site called Nemegt Basin, a highlight for Dr. Currie was the finding of parts of a small, elusive meat-eating dinosaur thought to be *Elmisaurus*. This small dinosaur has also been found in Alberta. There seemed to be a number of individuals of this species in this area and now that he knows where to look, Dr. Currie wants to go back to find more of it. Also found sticking out of the side of a hill were articulated feet of a juvenile *Tarbosaurus*. Chances are that a large portion of the skeleton is still inside the hill. Sizing up the foot bones indicated this individual is about 2.5 m long.

The last site visited was Kheerman Tsav. At this site, many small eggs of a Cretaceous bird, "*Gobipteryx,*" were found, as well as lizard skulls, remains of *Oviraptor* and—on the last day of the expedition—the skull of an armoured dinosaur.

In 2001, Dr. Currie, the RTMP and Nomadic Expeditions will visit the same sites to continue the unfinished work. ❑

ALBERTA
PALAEONTOLOGICAL SOCIETY
CALGARY, ALBERTA

Operating Statement for 2000
(Unaudited)

JANUARY 1 , 2000 to DECEMBER 31, 2000

Revenues		**Expenditures**	
Membership	$1,640.00	Bulletin & Postage	$1,010.63
Raffle Revenues	35.60	Bank service charges	68.95
Pins	5.50	Name tags	94.14
T-Shirts	95.00	Website	449.37
Refreshments	18.81	P.O. Box rental	77.04
Typewriter	25.00	Speaker expenses	153.92
Misc. & Credit Memos	67.73	Field trip expenses	4,446.76
Field Trips	4,310.00	Refreshment expenses	9.84
Abstracts & Bulletins	423.00		
TOTAL REVENUES	**$6,620.64**	TOTAL EXPENDITURES	**$6,310.65**

Excess of revenues over expenditures: **$309.99**
The bank balance at December 7, 2000 was **$1,523.66**

—Cindy Evans, Treasurer

The Urban Fossil Collector

by Dan Quinsey

Building a Reference Library

For the amateur fossil collector, starting a reference library can be a stressful and uncertain experience. As your collection grows, so will your desire for knowledge on various subjects.

Knowledge can be obtained through courses, networking, the Internet, and books. Evening courses are virtually non-existent. Networking with other fossil collectors through clubs and societies can be rewarding; however, the information you are usually seeking is varied and sometimes slow to obtain. The Internet has a vast amount of information if you know what you are looking for. This will not suit the amateur trying to identify a trilobite when all he knows is that he has a trilobite. When it comes to books as reference material, little else compares.

There are many books on the subject of fossils. Picking the right material to optimize your information at the lowest cost can be a difficult task. Here are some recommendations.

Determine your needs, then consult with other collectors, educational institutions, and the public library to see which books are suitable. Review the books first, if possible, to make sure the information contained within is on a level you can comprehend. Palaeontology is an evolving science; information can outdate itself quickly. Check the copyright date to see how old the text is. I have found that books updated or written within the last ten years are fairly accurate. After doing this, compile a "want" list of the books you are looking for.

You can usually find everything you are looking for in the General Science section of most bookstores. Also check the nature and anthropology sections; not every bookstore shelves books in the same manner. Do not underestimate the children's section of a bookstore. Some of my most valuable dinosaur references have been found there. Fine treasures can also be found in used bookstores. Some of these outlets are connected to a database capable of searching for hard-to-find or out of print books.

To save you some time, I have compiled a list of some books that would make a great foundation to any reference library. Remember to review these books before you buy them to see if they meet your needs.

One of the best books I have found on the general subject of prehistoric life is the *Discovery Channel Atlas of the Prehistoric World* by Douglas Palmer (ISBN 1-56331-829-6). This book has it all—what else can I say? A second text you should look for is *The Book of Life* by Stephen Jay Gould (ISBN 0-670-85375-5). This book focuses more on life on Earth, whereas Palmer's book looks at Earth in general. Also a must for your library.

Every beginner should have fossil identification books to refer to. *Fossils* by Cyril Walker and David Ward (ISBN 0-7737-2597-0) and *The Audubon Society Field Guide to North American Fossils* (ISBN 0-394-52412-8) are both excellent references. These two books will cover just about every common fossil you will encounter. They provide hundreds of colour photographs combined with concise, informative descriptions of each fossil. The next book to get would be *The Fossil Book: A Record of Prehistoric Life* by Patricia Vickers Rich, Thomas Hewitt Rich, Mildred Adams Fenton, and Carroll Lane Fenton (ISBN 0-486-29371-8). This volume is considered one of the definitive guides to fossils, and is indispensable to any collector. The latest edition is 1989. *Invertebrate Fossils* by Moore, Lalicker and Fischer (Library of Congress Catalogue Card No. 51-12632) should be your next pick. This reference was written in 1952 but is still found on almost every collector's bookshelf. The illustrations are too numerous to count. Watch the used bookstores for this one.

There are many books written for specific fossils. For fossil plants, *Common Fossil Plants of Western North America* by William D. Tidwell (ISBN 1-56098-758-8) is a valuable resource. Make sure you find the Second Edition. Those interested in ammonites should buy *Ammonites and the Other Cephalopods of the Pierre Seaway* by Neal L. Larson, Stephen D. Jorgensen, Robert A. Farrar, Peter L. Larson (ISBN 0-945005-25-3).

This book is easily understood and covers over 90 species of cephalopods. Trilobite hunters will want *Trilobites* by Riccardo Levi-Setti (ISBN 0-226-47452-6). This second edition provides over 200 superb photographs and is irresistible to anyone with a passion for trilobites. Fossil fishes are so varied, there are many books on the subject. The best one I have found is *The Rise of Fishes* by John A. Long (ISBN 0-8018-5438-5). This book covers 500 million years of evolution and has hundreds of photographs and illustrations. *Discovering Fossil Fishes* by John G. Maisey (ISBN 0-8050-4366-7) is also a valuable text, but the content is limited. *Fossil Atlas—Fishes* by Baensch Publishing (ISBN 1-56465-15-0 USA or ISBN 3-88244-019-8 Other Countries) is an invaluable identifier. This book is out of print and is hard to come by. Keep your eyes open. One last book to mention is *The Collector's Guide to Fossil Sharks and Rays from the Cretaceous of Texas* by Bruce J. Welton and Roger F. Farish (ISBN 0-9638394-0-3). With over 80 species identified and more than 150 illustrations, this comprehensive guide to shark teeth is a must for every collector.

For those interested in insects and amber, *The Amber Forest* by George Poinar Jr. and Roberta Poinar (ISBN 0-691-02888-5) is a fantastic book to own, if not for the information, for the striking photographs contained within.

Dinosaurs: a popular topic with hundreds if not thousands of books to choose from. The best identifier I have seen to date is *A Guide to Alberta Vertebrate Fossils From the Age of Dinosaurs* by Hope Johnson and John E. Storer (Provincial Museum of Alberta, Publication No. 4). A must for any collector. *The Encyclopedia of Dinosaurs* edited by Philip J. Currie and Kevin Padian (ISBN 0-12-226810-5) is also a must for your library. This book is expensive but pulls together so much information on dinosaurs, you would have to spend up to ten times the same amount of money to obtain the same information from other sources. Of special note, this book has over 100 authors, each contributing from his or her area of expertise. *The Complete Idiot's Guide to Dinosaurs* by Jay Stevenson and George R. McGhee (ISBN 0-02-862390-8) is a great start for any beginner. *The Macmillan Illustrated Encyclopedia of Dinosaurs and Prehistoric Animals* (ISBN 0-02-042981-9) and *The Ultimate Book of Dinosaurs* (ISBN 0-75253-759-8) are two very good volumes covering almost everything you want to know about dinosaurs. *The Handy Dinosaur Answer Book* by Thomas E. Svarney and Patricia Barnes-Svarney (ISBN 1-57859-072-8) covers more than 1,000 commonly asked questions about dinosaurs.

Many other books are available on specific dinosaur subjects. You will have to do some homework to find the right books for you. One last reference worth mentioning is *The Dinosaur Question and Answer Book* from Owl Magazine and The Dinosaur Project (ISBN 0-920775-77-2). Owl Magazine asked its readers (children): "If you

could ask any one question about dinosaurs, what would it be?" Over 11,000 questions poured in. This book answers the most commonly asked questions using information provided by scientists of the Dinosaur Project. If you want to know which dinosaur would make the best pet, or how much would it hurt if a plant-eating dinosaur bit you, you will have to buy this book.

Finally, *The Fossil Collector's Handbook* by Gerhard Lichter (ISBN 0-8069-0350-3) will get any beginner on the right track learning how to find, identify, prepare and display fossils.

In a concluding word, do not forget the Internet. It is still a great source for information. Most of the above mentioned books can lead you in the right direction when researching a particular subject. One very good search engine is www.google.com. This engine has indexed more than 1.3 billion web pages. Try narrowing your search by using the directory and selecting "science" then "earth sciences" and so on. Good luck. Good hunting. Good reading. ❑

Hunters and Collectors

by Mark Farmer

I've been an APS member for the last two or three years, and in that time I've noticed something about fossil collectors in the club: they seem to fall into one of two categories, which I call "hunters" and "collectors."

The hunters appear to enjoy collecting mainly for the thrill of the hunt, just like any game hunter. They are inevitably the first out of the blocks on field trips, and seem to come back with packs bursting at the seams. The sizes of their collections are truly impressive: some are so big, they have to be housed in crates, sheds or even bungalows!

Then there are the collectors, who don't seem to be in quite the same rush. Most take things at a slower pace. I often see them writing down notes as they collect, such as the formation or matrix a specimen is found in or its position. Collectors aren't the kind to go scrambling over a scree slope just to beat everyone else to the good stuff.

I've noticed that hunters don't always discriminate in their finds. When I look at what they're picking up, there's a lot of shattered bone which would require a forensic pathologist to reconstruct, badly-weathered pieces, incomplete fossils, dime-a-dozen specimens…The quality often isn't there, but the quantity sure is.

Collectors are usually a little more discriminating. They don't seem to pick things up just because they can. I see them throw most of their finds back on the ground because they just aren't that interesting, like a fisherman who knows it's not worth keeping every small fry. Collectors know what they're after, maybe because a specimen isn't in their collection, or it's of special interest to them. It might mean a smaller collection, it also means a more interesting one.

I've seen how these two types curate their collections. Often, the only attempt hunters make at organization is to put things in boxes or drawers, bones heaped on bones. The collectors seem to take more care with their finds, making some effort to mount a lot of specimens and label them. These fossils are usually cleaned, they're pleasing to look at and they can be shown off to people. By contrast, the backlog of unidentified, unlabelled, unprepared specimens in many hunters' basements makes the Tyrrell's warehouse look small.

I only realized the difference between hunters and collectors when I was working at the Tyrrell Museum. I volunteered there a few days over the summer, including work in their preparation lab. One day I looked up from my toil at the material around me, paused, and for the first time really appreciated the incredible specimens I was surrounded by: a nearly-complete juvenile *Albertosaurus*, the skull of the largest icthyosaur ever discovered, a fossil mammal and a nearly-complete ceratopsian skull.

I thought to myself "How many people get a chance to do this kind of work?" I knew I was never going to take a single bone out of there and call it my own. They'd never be mine—I had to let them go at the end of the day. But how many people will ever get to handle and work pieces like those, which might be displayed in front of hundreds of thousands of visitors? How many will ever get to handle that kind of specimen?

It struck me then, what the palaeontology game is all about: collection, not kleptomania. It's not about who has the most fossils; it's about preparing them, studying them, sharing them and educating people about them. In the end, it doesn't matter how many you have. It matters what you do with them.

Owning stacks and stacks of specimens might be impressive in and of itself—I can't say. But what can be done with them? The vast majority are

never going to be studied, never going to be examined, never going to be enjoyed. Is the joy of ownership that great? Do people go to sleep at night feeling warm and fuzzy because they have a small mountain of material they're never going to look at again?

It's a fair question, not an accusation. No one can make people give up their collection, nor would they want to. I'd just like to see more people ask themselves what they get out of collecting. I'd like to see more people in the APS switch from hunting to collecting. They might enjoy it. ❑

Society Elections

by Wayne Braunberger

Our annual Alberta Palaeontological Society elections will be held at the May general meeting. At the present time the following positions are open: President, Vice-president, Secretary, Treasurer, Program Coordinator, Social Director, and Education Director. All executive positions are one-year terms commencing September 1, 2001, with the Program Coordinator and Social Director positions being two-year terms. The Education Director position is a one-year term. Directorships are generally two-year terms; however, due to **Mark Farmer** moving east, the second year remains on the two-year term for the Education directorship. If you are interested in any of the positions or would like more information please contact myself or any member of the board. ❑

The APS Fossil Collection

by Wayne Braunberger

As most of you are aware the Society maintains a small fossil collection for display and education purposes. **Ron Fortier**, our curator, is kind enough to allow the collection to be stored in his home. If anyone would like to view the collection please make arrangements with Ron and he will be more than happy to accommodate you.

We are always pleased to accept donations to the collection. Over the past few years we have not actively solicited donations due to space constraints but we now have more room to curate specimens and would gladly accept any donations.

If you donate specimens we do request that you provide us with the following information: locality, formation, age, genus and species (if known), collection date, and any references. The most important information is the locality data. Ideally we would like UTM coordinates and topographic map name, along with a short description of the site. This basic information adds considerable scientific value to the specimen and is the type of information that if not provided can, in most cases, never be acquired.

On the back page of this issue of the *Bulletin* there is an example of the Specimen Data Sheet that the Society uses. You can photocopy this page, or use it as a template for designing your own. We would encourage all members to record this type of information for each specimen in their collection as it greatly increases the value and usefulness of the material both now and in the future. ❑

2001 Palaeontology Tours

by Mona Marsovsky

Nomadic Expeditions, Mongolia

Explore and dig for dinosaurs in the Flaming Cliffs and Nemegt Basin of the Gobi Desert in Mongolia. This tour will include prospecting plus excavation of a juvenile *Tarbosaurus* skeleton. The tour will be led by Dr. Philip Currie, Dr. Badamgarav and Dr. Eva Koppelhus.

• **Dinosaurs of the Gobi** (12 days)
September 10–21, 2001 or September 17–28, 2001.
From US$3,500 per person.

• **Ultimate Dinosaur Adventure** (19 days)
September 10–28, 2001
From US$4,245 per person.

Prices include accommodation, all meals and all travel within Mongolia.
Contact: toll-free, 1-800-998-6634
email: **info@NomadicExpeditions.com**

Royal Tyrrell Museum, Drumheller Alberta

• **Field Experience**—dig and prospect Late Cretaceous sites with Dr. Don Brinkman of the Royal Tyrrell Museum.

Itinerary:
June 10–July 1, 2001, Manyberries—excavate a dinosaur and prospect for marine turtles and marine reptiles.

July 15–August 26, 2001, Dinosaur Provincial Park—open several dinosaur quarries, including two theropod sites and a new horned dinosaur bone bed.

Prices:
One week: CDN$800 (US$650) per person. Two weeks: CDN$1500 (US$1200) per person. Third and subsequent weeks: CDN$600 (US$500) per week per person. A 10% discount is offered to previous participants of the Field Experience program. Fee includes accommodation, meals and work-related supplies plus one adult membership in the Royal Tyrrell Museum Cooperating Society. Sessions begin and end on Sunday. Participants must be 18 years of age and should be in good physical condition.

Contact:
Becky Kowalchuk, **fieldexp@tyrrellmuseum.com**
Phone: In Alberta, toll-free 310-0000, ask for (403) 823-7707. In North America, 1-888-440-4240.

• **Day Digs**—help excavate the Fox Coulee juvenile hadrosaur bone bed for a day. Vien Lam is the program coordinator. Weekends only—June 2–24, 2001. Daily—June 30–September 3, 2001.

Prices: Adult: CDN$85, Youth: CDN$55, includes lunch, admission to the museum and behind the scenes tour.

• **Dig Watch**—for those who prefer to supervise, take a couple of hours to observe the Day Digs volunteers excavate the Fox Coulee juvenile hadrosaur bone bed. Dig Watch is conducted daily June 30 to September 3, 2001 at 10 A.M., 12 P.M. and 2 P.M. **Prices:** Adult: CDN$12, Youth: CDN$8 (age 7–17), Under 6: free; Family: CDN$30

Contact:
Royal Tyrrell Museum. In Alberta, toll-free 310-0000, ask for (403) 823-7707. Elsewhere in North America, 1-888-440-4240.

Pony Express Digs with Florida Museum of Natural History

Dig three species of 18 million-year-old fossil horses at the Thomas Farm sinkhole in northern Florida, under the guidance of Dr. Bruce MacFadden, author of a book on fossil horses.

The Thomas Farm Dig: US$200 (for ages 16 and older). Session 1, April 19–22, 2001 Session 2, April 26–29, 2001.

Family Day at Thomas Farm: US$45 (for ages 8 and older) May 5, 2001.

The Palaeontology Lab Session: Prepare fossils from the Thomas Farm sinkhole for a weekend (for ages 16 and older); US$150.

The Western Fossil Hunt: US$1200 South Dakota and NW Nebraska; 30 million-year-old mammals (for ages 16 and older); June 16–23, 2001.

Contact: Florida Museum of Natural History, Erika Simons. Phone: (352) 846-2000 ext. 255. Email: **esimons@flmnh.ufl.edu**

Pembina Gorge, N.D. Fossil Dig

You are invited to participate in a scientific fossil excavation taking place this July in northeastern North Dakota. Four State agencies are co-sponsoring this year's fossil dig in the pristine Pembina Gorge, seven miles west of Walhalla:

- The North Dakota Geological Survey
- The North Dakota Parks and Recreation Department
- The North Dakota Department of Tourism
- The North Dakota Fish and Game Department

The dig will be led by Dr. John Hoganson, palaeontologist with the North Dakota Geological Survey and Johnathan Campbell, the Survey's Fossil Preparator. This year's dig will be held from Saturday, July 14, through Monday, July 23. You may join us for one, two, three or even all ten days of the dig! Here are the exact dates:

Three-Day Dig:
Saturday, Sunday, Monday (July 14, 15, 16)

Two-Day Digs:
Wednesday and Thursday (July 18 and 19)
Saturday and Sunday (July 21 and 22)

One-Day Digs:
Monday and Friday (July 17 and 20)

Family Day Dig:
Monday (July 23)

To find out how you can search for 80 million-year-old fossils, just click on to our web page, at: **www.state.nd.us/ndfossils/dig/pembina.html**

All registration information is available through our web page. Be sure to sign the guest book at the bottom of the North Dakota Geological Survey's new award-winning Paleontology website; click on

to their home page from the dig web page. This year's fossil dig is being coordinated by:

SOLI'S PEMBINA GORGE TOURS
Melanie Thornberg, Proprietor
Box 400, Walhalla, North Dakota 58282 USA
email: **walhallafossildig@hotmail.com**
Phone: 1-701-549-2627 ❑

Upcoming Events of Interest to APS Members

by Philip Benham

Fourth BC Paleontological Symposium

May 10–14, 2001, Kamloops, BC.

This event includes several days of talks, posters, a day of workshops (Eocene fossil fish and insect identification) and field trips to locales like McAbee, Quilchena, Sabiston and Paul Lake. Registration fee is $75 prior to April 1 and includes some meals.

For additional information contact:
Ken Klein, Chair,
Fourth BC Paleontological Symposium
Dept. of Physical Sciences and Engineering,
University College of the Cariboo,
P.O. Box 3010, Kamloops, BC, V2C 5N3
Phone 250-828-5414, fax 250-828-5450.
Email: **kenneth_klein@telus.net** or
keklein@cariboo.bc.ca

Canadian Quaternary Association Annual Meeting 2001

August 20–24

This group will meet to present talks and posters on Ice Age geological and palaeontological matters. There are also field trips offered. One trip of note is: Quaternary Volcanism, Vertebrate Palaeontology, Archaeology, and Scenic Yukon River Tour, Fort Selkirk Area, which will be held on August 18–19.

For information:
www.beringia.com/canqua/index.htm

Yukon Beringia Interpretive Centre
Box 2703
Whitehorse, Yukon, Y1A 2C6
Phone: (867) 667-8855, fax: (867) 667-8854.
Email: **beringia@gov.yk.ca**

The Great Norman Wells Fossil Hunt

The NWT town of Norman Wells puts on a fossil event every summer with a helicopter flight prize to the finder of the best fossil. The organizers are able to help with arrangements and locations.

For more information contact:
info@normanwells.com ❑

APS Field Trips Planned for 2001

by Keith Mychaluk

Cranbrook area, British Columbia
June 23–24, 2001 (Saturday and Sunday)

Several invertebrate fossil localities will be visited in the Cranbrook area.

Grande Cache, Alberta
July 21–22, 2001 (Saturday and Sunday)

Open-pit coal mines in the Grande Cache area have revealed astounding dinosaur trackway sites. Richard McCrea, who is studying these occurrences, is attempting to gain access for the APS. This trip is still being negotiated, so dates are tentative. Watch the June *Bulletin* for details.

Hummingbird Reef/Cripple Creek, Alberta
August 18–19, 2001 (Saturday and Sunday)

The Hummingbird Reef/Cripple Creek area (near Ram River Falls, west of Rocky Mountain House) is one of the most spectacular Devonian-aged reef complexes in Alberta. Access may require a four-wheel drive vehicle and/or a long hike.

For information or to register, contact Keith Mychaluk: (403) 228-3211, email: mychaluk@telusplanet.net. All trips cost $5.00 per membership (*not* per person). There will not be any attendance limitations to the 2001 field trips ; However, all members MUST sign-up for field trips in advance. Please watch the June *Bulletin* for these and other details. ❑

SPECIMEN SHEET

FOR THE

ALBERTA PALAEONTOLOGICAL SOCIETY

SPECIMEN #	DATE
GENERAL DESC.	
KINGDOM PHYLUM SUBPHYLUM CLASS SUBCLASS ORDER SUBORDER	SUPERFAMILY FAMILY GENUS SPECIES SUBSPECIES COMMON
LOCALITY: DLS ☐ MGS ☐ LAT.LONG ☐	LOC. # QUARRY #
LOCATION REMARKS	MAP # MAP NAME
ALT.	PERIOD EPOCH AGE
GROUP FORMATION	ENVIRONMENT
MEMBER HORIZON ROCK TYPE	ORIENTATION & ASSOC. MAT.
COLLECTOR	COLLECTION DATE
COLLECTION REMARKS	
DIMENSIONS	
SPECIMEN REMARKS	
ACQUISITION MODE (DONOR)	
PUBLICATIONS	
GENERAL REMARKS	