

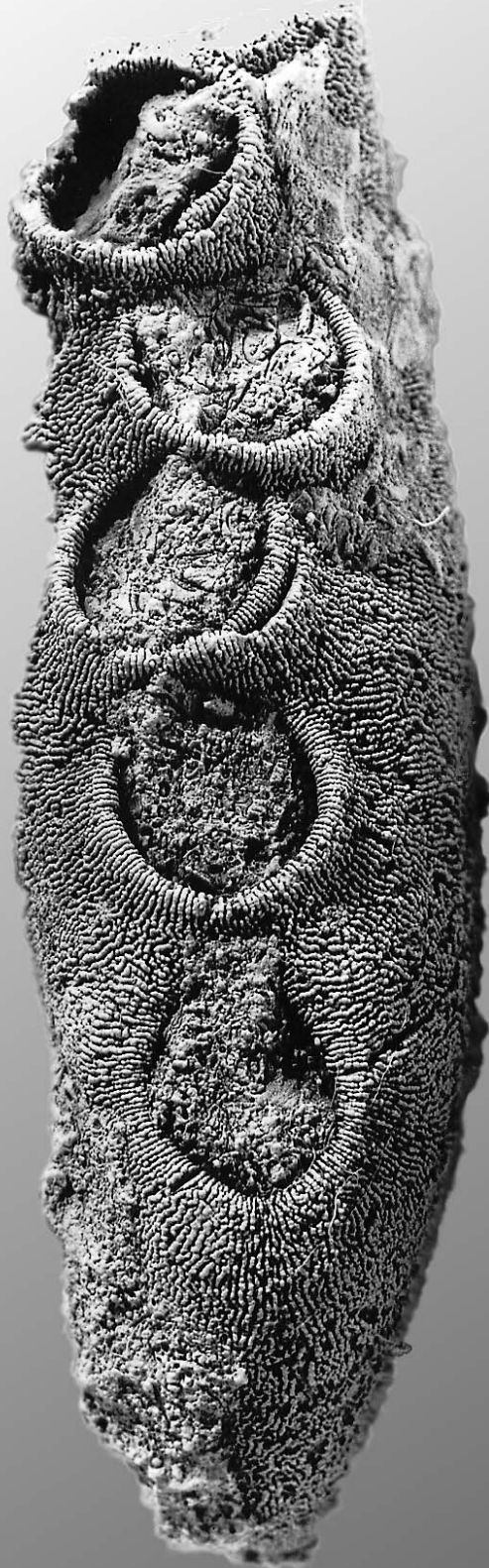
Alberta

*Palaeontological
Society
Bulletin*

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DECEMBER 2003



ALBERTA PALAEOLOGICAL SOCIETY

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† APAC is the Alberta Palaeontological Advisory Committee

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

- a. Promote the science of palaeontology through study and education.
- b. Make contributions to the science by:
 - 1) discovery
 - 2) collection
 - 3) description
 - 4) education of the general public
 - 5) preservation of material for study and the future
- c. Provide information and expertise to other collectors.
- d. Work with professionals at museums and universities to add to the palaeontological collections of the province (preserve Alberta's heritage).

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

Single membership	\$20.00 annually
Family or Institution	\$25.00 annually

THE BULLETIN WILL BE PUBLISHED QUARTERLY:

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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 12, 2003—APS Christmas Social and slide show by Vaclav Marsovsky:
"The fossils of China and Mongolia"

Friday, January 16, 2004—Paul McNeil, University of Calgary
Topic: "Mammoth tales: The story of the decline of Alberta's megafauna told from Wally's Beach, a late Pleistocene site, St. Mary Reservoir, Alberta, Canada"

Friday, February 21, 2004—Les Eliuk, Geotours Consulting. Topic: Bioerosion in Jurassic Reefs

ON THE COVER: The peculiar tabulate coral *Palaeacis elongata*, type specimen, from Lower Carboniferous (340 million years old; Mount Head Formation) rocks of the Rocky Mountain Front Ranges, Alberta. Magnified 3.2 times. Photo provided by APS member **Harvey Negrich**, discoverer of the specimen. Photo originally published by the late Dr. Alan McGugan in the *Journal of Paleontology*, Vol. 57, No. 1, p. 44, as fig. 3-D. Copyright © 1983 by The Society of Economic Paleontologists and Mineralogists and The Paleontological Society. Reprinted here by permission.

From the President

by Dan Quinsey

Merry Christmas and Happy New Year to everyone! Also, congratulations to all those members who have renewed their memberships to this date.

In September, we kicked off the “Year of the APS Volunteer” term. Our challenge was to get our non-executive members involved in various existing and new projects. Many members have come to the plate and we appreciate the enthusiasm shown.

However, there are still many members who frequent our meetings who have not come forward to volunteer. I am quite sure those members want to participate but are apprehensive because they are shy or undecided as to where their efforts would fit best.

There are a variety of projects to get involved in. The level of commitment can vary from a little as one hour to several hours over a short or long period of time. Putting your name down at this time simply indicates you have an interest in that particular project. You will be contacted when we are ready to implement each project to determine your function and level of commitment if you are still interested. Current projects are detailed below.

Once again, I would like to thank all those who have already shown their enthusiasm by volunteering.

Current Projects

Social Director Assistant (one time monthly commitment). Volunteers are needed to bring treats (reimbursable) to each general meeting. This can be a one time commitment. Contact Janice or Scotty Scott at 276-4095.

Symposium (varied levels of commitment). Several volunteers are needed to perform duties such as: setup and tear-down, sales table coverage, identification booth coverage, lunch coverage, social duties, advertising, education, planning, speakers, workshops, abstracts, posters, and more. Members are encouraged to volunteer by contacting any Board member.

Field Trip Assistant (varied levels of commitment). Field Trip Assistants will assist the Field Trip Director with organizing and supervising field trips. Contact Wayne Braunberger, 278-5154, events@albertapaleo.org.

Fund Raising Assistant (low to high levels of commitment). The Fund Raising Assistant will be asked to help as needed with various projects as well as participating in brainstorming sessions to come up with new fund raising ideas. Contact Dan Quinsey, 247-3022, president@albertapaleo.org.

Education Assistant (as needed commitment). The education assistant will be called upon as needed when assistance is needed making presentations to schools, clubs, and similar organizations. Volunteers may opt to get involved in assembling a much needed education kit and procedure manual. Contact Dan Quinsey.

Calgary Rock and Lapidary Club Show (one time annual commitment). Booth volunteers are needed to assist the public with questions and identification of fossils. Commitment can be anywhere from an hour to the entire two days in May. Contact Dan Quinsey.

Fossil Resource Project (one time commitment, 2–3 evenings). Project volunteers will create a list of resources for APS members to use for identification and information purposes. Contact Dan Quinsey.

2005–2006 20th Anniversary Committee (long term commitment). Volunteers will start the ball rolling this term by coming up with proposed special event planning. A budget will be established and monies will begin to be allocated to this event. The Fund Raising Director and Assistant may be asked to work indirectly with this committee. A sub-committee may be formed to compile information for a special publication honouring this event. Contact Dan Quinsey.

Palaeo Ranger Club (long term commitment). This is a project out-of-town members may easily be able to get involved in through e-mail. This project is in the very early planning stages. Volunteers may wish to participate in various aspects of this project such as planning and implementation and/or execution of the project. The Palaeo Ranger Club is a vision created by Dan Quinsey to get kids involved in the science of palaeontology. Contact Dan Quinsey, 247-3022 or by e-mail at president@albertapaleo.org.

If you have an idea for a project, please contact Dan Quinsey at any general meeting or call 247-3022. There are no bad ideas. Let's hear what's on your mind.

Microscope Donation

The APS received a donation of three binocular microscopes and a petrographic transmission microscope through the efforts of **Stan Stancliff** and **Imperial Oil**. The APS is very grateful for this donation

and for the enthusiasm shown by Stan in making this happen. The binocular microscopes will be made available during general meetings for those members who wish to use them.

Social Director appointment

Congratulations to the **Scott family** for volunteering to take on the appointed position of Social Director. **Janice, Scotty** and son **Jesse** are new members to the Society. Their enthusiasm is overwhelming and very welcomed. They will do a fantastic job this year. Please introduce yourself the next time you are at a meeting and welcome them into our circle.

Volunteers are needed to bring treats to the General Meetings. Contact Janice or Scotty at any meeting or call 276-4095 if you would like to volunteer or ask any questions.

Silent Table Auction: donations needed

Palaeo-related items are required for our monthly silent table auction. These items are auctioned off to members and visitors attending General Meetings in order to raise funds for various APS projects. Items donated in the past include: books, toys, jewelry, coins, collecting aids and equipment, field trip equipment, minerals, posters (but no fossils, please).

Please contact Dan Quinsey at 247-3022 if you have anything at all you think may be useful in raising funds for our Society. Arrangements can be made for pick-up of donations.

Amateur Palaeontologist Certificate of Completion

Wayne Haglund, of the Earth Sciences Department at Mount Royal College has put together a program of several non-credit courses to provide amateur fossil collectors basic training and experience in palaeontology. At this time, eight classes are being offered over a two year period.

The program will offer a range of practical fossil collecting, preserving and identifications skills. Individuals will receive a Certificate of Completion after they have successfully completed the mandatory classes and have been approved by the Program Committee. The first class is expected to run in **January 2004**. Call (403) 440-3833 for information. □

Bookmark our website!
www.albertapaleo.org

Upcoming Programs

Friday, December 12, 2003

7:30 P.M., Room B108, Mount Royal College

The Fossils of China and Mongolia

Speaker: Vaclav Marsovsky, APS Past President

Follow the path of well-travelled amateur palaeontologists Vaclav and Mona Marsovsky as they visit a number of famous palaeontological sites in China and Mongolia. This is intended to be a general interest talk and should be of interest to all ages. The event will be held in conjunction with a cold-plate potluck meal (please bring something if you intend to partake).

Biography

Besides spending a term as president of the Alberta Palaeontological Society, Vaclav is an active member of the Society of Vertebrate Paleontologists. He also assists palaeontological research through the Royal Tyrrell Museum Cooperating Society.

Friday, January 16, 2004

7:30 P.M., Room B108, Mount Royal College

Mammoth tales: the story of the decline of Alberta's megafauna told from Wally's Beach, a late Pleistocene site, St. Mary Reservoir, Alberta, Canada

Speaker: Paul McNeil, University of Calgary

Discovered in 1996, the Wally's Beach Site (Dh-Pg-8), is an important palaeontological site and, at just over 11,000 years before present, one of the oldest archaeological sites in Canada. Located on the eastern shore of the St. Mary Reservoir in southwestern Alberta, this site marks the end of the Pleistocene, a time of retreating glaciers, the expansion of humans, and extinction of most large North American mammals. Much debate has raged over the role that these early humans played in this most recent of large extinctions. The Wally's Beach

Site provides a rare look at the interaction of man and late Pleistocene megafauna just prior their final disappearance.

The paleogeography of the site attracted both megafauna and man, resulting in a rich assemblage of skeletal remains, trackways, and human artifacts. Tracks of camel, mammoth, and horse record the behavior of these extinct animals. Looking at the size distribution of mammoth tracks, and comparing them with modern African elephants, determines their age distribution. Containing far fewer juveniles than would be expected for an expanding or stable population, these tracks provide the first evidence that a living mammoth population, coexisting with human inhabitants, was in decline. Additionally, the same site provides corroborating evidence of humans hunting megafauna (horse and bison). This suggests that humans played a significant role in the end Pleistocene extinctions in North America.

Biography

Paul McNeil received his B.Sc.Eng. from Queen's University at Kingston and is currently finishing up a Ph.D. in vertebrate palaeontology at the University of Calgary. He has worked with the Royal Tyrrell Museum of Palaeontology in Drumheller, AB, and the Yoho-Burgess Shale Foundation in Field, BC. His current research concentrates on the behaviour, taxonomy, and extinction of late Pleistocene mammals.

—Abstract and biography by Paul McNeil. □

Program Summary

November 21, 2003

Late Pleistocene Glacial Lakes McConnell and Mackenzie and the northwest outlet flood from Glacial Lake Agassiz: Their palaeoenvironments in northeast Alberta and the Northwest Territories.

Speaker: **Dr Derald Smith, University of Calgary**

Glacial Lake McConnell lasted from 11.8 to 8.3 ka BP (thousands of years before present) while occupying parts of the Great Bear, Great Slave and Athabasca Lake basins.

The retreating Laurentide ice-front formed the eastern margin, whereas low rolling hills formed the north, west and south shorelines. Three major deltas deposited at the mouths of the Liard, Peace and Athabasca rivers. Total extent of all phases of the lake was 240,000 km², while the largest extent at 10.5 ka BP was 210,000 km². Downwarping of the basin by glacial ice was the main cause of the lake, whereas sediment blockage between Jean Marie River and Fort Simpson was secondary.

Initially, glacial Lake McConnell occupied the northwest corner (Smith Arm) of the Great Bear Lake basin and discharged through the Hare Indian River outlet. By 11.5 ka BP the enlarged water body flowed out the Great Bear River, but only for a short period of time. The Mackenzie River formed the third outlet near Jean Marie River at 11 ka BP, and flow in the Great Bear River ceased until 9 ka BP. At 9.9 ka BP glacial Lake McConnell was impacted by a major flood from glacial Lake Agassiz with a peak discharge of 2–7 x 10⁶ m³/s. Flood water discharged from glacial Lake McConnell, peaking at 0.35–0.57 x 10⁶ m³/s, and receding flow continued for 30 months.

The massive influx of floodwater into glacial Lake McConnell caused an abrupt increase of discharge which enlarged the outlet channel to between 6 and 13 km wide between Fort Simpson and Jean Marie River. At 8.3 ka BP isostatic rebound ended the 3,500-year-old extensive lake, by dividing it into the Great

FOR SALE

Leitz Orthoplan-Pol, polarizing binocular research microscope, ideal for petrography & general transmission microscopy. Includes 35mm photo unit & controller, 360° rotating stage, removable mechanical stage, transmission illuminator, etc.

Excellent condition.

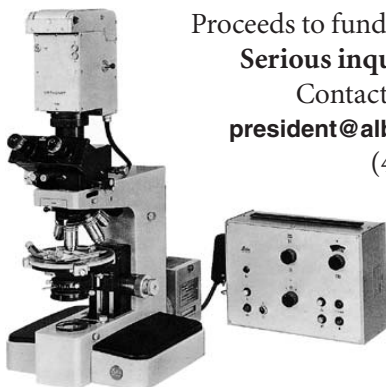
Proceeds to fund APS projects.

Serious inquiries invited.

Contact Dan Quinsey

president@albertapaleo.org

(403) 247-3022



Slave Lake and Lake Athabasca.

Glacial Lake Mackenzie, located in the middle reach of the Mackenzie Valley, extended 800 km as a long narrow lake between the Rabbitskin River, 50 km east of Fort Simpson, and the Ramparts cliffs near Fort Good Hope; part of the lake extended an additional 75 km west from the Ramparts. The lake averaged 15 km in width, but broadened to 75 km in the northern sector and 50 km near Fort Norman, and narrowed to 5 km near Wrigley. The depth was at least 80 m in the Fort Norman region and 60 m near Wrigley.

Radiocarbon ages suggest that the lake had formed in the northwest by 11,760 BP, and that the last phase of the lake occurred in the south near Camsell Bend no later than 10,290 BP. The lake formed as a result of a bedrock (limestone) barrier at the Ramparts near Fort Good Hope and glacial depression of the basin. The demise of the lake is ascribed to outlet incision into the limestone barrier, sediment filling and isostatic rebound. Differential postglacial rebound raised the Fort Simpson region at least 97 m higher than the Ramparts over the past 11,500 years.

Valley morphology and sediment in the Fort McMurray region of Alberta indicate that a catastrophic flood discharged down the lower Clearwater and Athabasca river valleys 9,900 years B.P. Geomorphic and chronologic evidence suggests that glacial Lake Agassiz (Emerson Phase) was the probable water source. As the flood incised a drainage divide located near the Alberta-Saskatchewan border, the level of glacial Lake Agassiz decreased by 46 m, discharging $2.4 \times 10^6 \text{ m}^3/\text{s}$ for at least 78 days and stabilized at 438 m above sea level in the Lake Wasekamio area.

Water at this time entered the Arctic Ocean via glacial Lake McConnell and the Mackenzie River rather than the Gulf of Mexico via the Mississippi River, as previously thought. Such a large influx of fresh water (8.6 km^3) into the Arctic at the close of the last glaciation may have had an abrupt, major influence on northern climate.

Biography

Derald Smith received his BA and M.Sc. degrees from the University of Montana in 1965 and 1966, respectively. He received his Ph.D. degree from the Johns Hopkins University in 1973. Dr. Smith has been teaching at the University of Calgary since 1971, and presently, is Professor of Geography and Director of the Earth Science Program.

– *Abstract and biography by Dr. Smith.* □

Archaeological Society of Alberta

Calgary Centre

Winter talk schedule

Meetings are held monthly at University of Calgary Earth Sciences Building, Room ES162 @ 7:30 P.M. Free program—coffee & treat provided.

Any questions or concerns please contact: **kjbraaten@shaw.ca** or Joanne at (403) 239-3970.

January 21, 2004

Speaker: **Mr. Paul Bauman**, Managing Geophysicist, Komex International Ltd., Calgary

Intrigue, Mystery and Geophysics... Dead Sea Geoarchaeology

Abstract

Over 8 weeks in the summers of 2000, 2001 and 2002, 22 scientists and scholars including geologists, geophysicists, archaeologists, a Roman military historian, forensic anthropologists, a metallurgist, an isotope chemist, a palaeobotanist, palaeographers, and others, carried out a wide variety of investigations at three archaeological sites along the Dead Sea Rift Valley. The northernmost site is Bethsaida, an ancient seaport city constructed of basalt where Jesus of Galilee built the foundations of Christianity. A second site to the south is Qumran, where the Dead Sea Scrolls were discovered, very likely the most important archaeological find ever for the Judeo-Christian world. The southernmost site is the Cave of Letters, where the followers of the mythical Jewish rebel leader Shimon Bar Kochba took refuge from the pursuing Roman army.

Advanced geophysical techniques played a decisive role in targeting archaeologists on where to dig. Geotechnical approaches to non-explosive rock breaking allowed the archaeologists to recover artifacts below earthquake rubble. Historical geology played a decisive role in finding an ancient seaport 3 km from the shoreline. Isotope geochemistry was essential in placing finds in their proper chronological context. All this was accomplished in temperatures of greater than 50°C under tremendously difficult physical conditions

in a very unfavourable political climate. This presentation will review the ancient backdrop, the recent history of archaeological exploration, and the role of geophysical exploration at the three sites.

February 18, 2004

Speaker: **Latonia Hartery**, University of Calgary

Arctic cultures in a sub-arctic zone: Dorset Palaeoeskimo occupations in northern Newfoundland

Abstract

Dorset Palaeoeskimo sites are found as far north as Ellesmere Island and Greenland while their southernmost extent includes the island of Newfoundland.

Individuals of Dorset Palaeoeskimo culture were descended from Siberian people who crossed the Bering Strait approximately 3000–2000 B.C. After spreading out of Alaska, Early Palaeoeskimo peoples reached Greenland and Labrador by 1800 B.C. At that time, they hunted sea mammals, birds, caribou and musk ox. By 800 B.C., they became specialized marine mammal hunters; at this point archaeologists call them Dorset Palaeoeskimos.

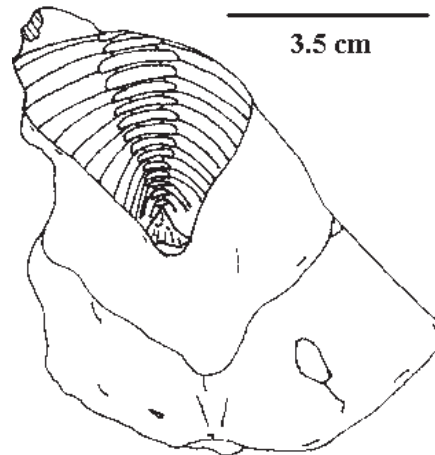
Recent excavations in Bird Cove, Newfoundland has yielded over 12 000 animal bones, the majority of which are bird remains. In addition, 5000 mollusc shells have been recovered. Sea mammal remains do exist but in remarkably smaller amounts than at other Dorset sites. These clues, along with others that will be presented in this lecture, reveal that in sub-Arctic zones, marked changes in subsistence practices occur thereby challenging the existing hypothesis that the Dorset Palaeoeskimo had an unyielding and strict reliance on sea-mammals independent of northern or southern site locations. □

“Coombs Quarry” Update 2003

by Steven Coombs

Well, it has been another season at my fossil site, but it wasn't the best one. In total I've been to my fossil site about five times, between April 18th and October 5th. I've managed to collect some impressive fossils, but very few compared to other seasons. Being busy with other things kept me away, but

I did go to Percé and found some horn corals and brachiopods of Ordovician to Silurian age. For full updates about “Coombs Quarry,” check out my website <http://stevensdinosaurs1.tripod.com> and scroll down to the left at “Barachois Fossils.” I would like to inform you all that the fossil site is much younger than I thought; it is roughly the youngest type of rock on the Gaspésie,



Steven Coombs © 2003

Trilobite specimen from Percé

which puts it between 320 and 360 million years old (Carboniferous time). Also, I must mention that the type of rock it is composed of is basically conglomerates (lower layers), and red mudrock (upper layers). Sorry for the confusion: I haven't taken any geology courses; I'm learning it by myself for now.

A little more about my website. I've begun a project which will focus on the many areas in Canada that dinosaurs can be found. At the moment Dinosaur Provincial Park is up. I've been researching a huge article about *T. rex* being both a predator and scavenger, which should be published in a *Prehistoric Times* (www.prehistoric-times.com) issue very soon. So, any *PT* subscribers or non-subscribers out there, look out for this one. I will tell you more about this and what conclusion I came to in a later *Bulletin* (I know that this debate has been talked over and over, but I couldn't resist to give my two cents!).

So that's it for now, folks, and I hope everyone had a good summer! □



Outcrop at “Coombs Quarry,” Barachois, QC

2003 Field Trip Report

Canyon Creek-Moose Mtn., Alberta
August 17, 2003

by Les Adler

Canyon Creek, Moose Mountain and Moose Dome Creek are located about 60 km WSW of Calgary. This area has to be approached with extra caution due to a continuous danger of falling rocks, rapid changes in weather conditions, changing water levels in the creeks and the occasional presence of a bear or cattle.

Shell Oil Company is producing in the area and is actively involved in further exploration with heavy duty vehicular traffic and supervises the movement of people near its facilities. Shell Oil maintains local roads in excellent condition but does not allow private vehicles past a check-point. Mountain bikes or pedestrian traffic is allowed.

The area is rich in Devonian, Carboniferous and Jurassic Period fossils, not so rich in Cretaceous Period fossils. Fossils can be legally and quickly collected, taken away and studied. Rarer fossils which are not loose can sometimes be collected with a permit. This area contains spectacular mountain scenery and is a structural geologist's delight with a huge faulted structural sedimentary dome illustrating limestone reef structures and formation contacts.

Wayne Braunberger hired a yellow school bus and driver to act as a base and provide transport to the thirty or so participants coming from British Columbia and Alberta. Special permission was obtained from Shell Oil Company to take the bus some miles past the check-point, saving miles of walking and allowing storage for fossils as they were collected.

For the most part stops were made near collecting sites from formations in chronological sequential order. In contrast to many previous trips this day was a hot one and there were no problems due to weather. Fluids had to be carried at all times. Members boarded the bus either at Calgary or near the check-point.

The bus was parked near Moose Dome Creek and the group walked downstream along Moose Dome Creek and on to Canyon Creek—which were both

almost bone dry—to an extremely rich location containing thousands of specimens of *Plicochonetes canadensis* brachiopods and many worm tracks (*Nereites missouriensis* and *Helminthopsis* sp.). Other brachiopods were also found.

A second area visited entailed a lengthy, arduous walk up a steep road to a valley containing Banff Formation brachiopods, bryozoans, crinoid fragments and gastropods. Meanwhile the author collected Banff Formation and Mount Head Formation corals such as *Syringopora* sp. and *Ekvasophyllum* sp. in Moose Dome Creek near the bus.

The bus then moved on to locations back toward the check-point to examine Shunda, Turner Valley, Pekisko and Banff Formation relationships. A stop was made to examine *Lepidodendron* specimens *in situ* at a Mount Head Formation locality. Occasionally stromatolite pieces fall into the creek. On this trip Devonian Period fossil sponges and corals which are washed into Canyon Creek were scarce.

The trip continued downstream along Canyon Creek to a set of Jurassic Period, Fernie Formation deposits containing belemnite guards and crystalline pyrite balls. Time ran out and ammonites and Cretaceous Period trace fossils were let go.

A 15-page field guide with notes, photographs, maps, table of formations, stratigraphic columns and sections and references and the bus fare return from Calgary were provided for a modest \$5 fee. □

Plant fossils from the Alexo locality

Update

by Georgia Hoffman

Since our field trip in July, the plant fossils from the Alexo site have been stored at the Geological Survey of Canada offices in Calgary. Some of the large slabs with leaf litter were trimmed or taken apart to make them easier to handle and store.

The first cataloguing session was held on the evening of October 29, despite snow, ice and miserable driving conditions. The material was unpacked, sorted, admired, and prepared for numbering.

One of the exciting finds that has been identified



APS members at the Alexo locality in July; fossil leaf specimens at the outcrop (below). Photos by Wayne Braunberger.

to date is the lily pads. They appear to be consistent with those described as *Nelumbago montanum* by McIver and Basinger (1993, p. 33–34, pl. 19, figs. 4, 6), *Nelumbium montanum* by Brown (1962, p. 69, pl. 35, figs. 2–4), and *Nelumbites protoluteus* by Bell (1949, p. 64, pl. 63, fig. 5). McIver and Basinger set up the name *Nelumbago montanum* because they felt that the older names were invalid, as explained in their publication. All three names reflect probable affinity to the extant water lily genus *Nelumbo*.

There are some excellent specimens of foliage from the cedar-like tree *Mesocyparis borealis* (McIver and Basinger, 1993, p. 30, pl. 14, figs. 1–5), and maybe next time we'll find some cones from *M. borealis*, too. Other conifer material includes foliage and cone remains from *Metasequoia* (probably *M. occidentalis*) and *Glyptostrobus* (probably *G. europaeus*), two deciduous conifers that are related to extant *Taxodium* (Bald Cypress). An example of the *Mesocyparis* and *Metasequoia* foliage from Alexo can currently be seen on our website, in the field trip pictures.

We have leaves and seed pods from a *Cercidiphyllum*-like or *Joffrea*-like tree, but it will take a bit of reading to figure out which of several form-genus names should be used for them. There are fragments of large *Platanus* leaves, and fragments of long, parallel-veined leaves that may have come from some sort of palm. Many other leaves and seeds remain to be identified. One of the most unusual is the fan-shaped leaf that is currently appearing on our website.

Did we reach the K/T boundary at the east end of the outcrop? Dr. Art Sweet reports that the samples he took there contained no diagnostic species of angiosperm pollen, although the assemblage was rich in fern spores, as is often the case in strata just above the K/T boundary. So we don't really know at the moment, but maybe we'll have better luck next year.

Speaking of next year, there's still a lot of work to do and a lot of plant fossils waiting to

be found at Alexo, so another field trip is being planned for next July (see announcement in this newsletter). Sessions for cataloguing, fossil preparation, and leaf morphotyping will also be announced. □

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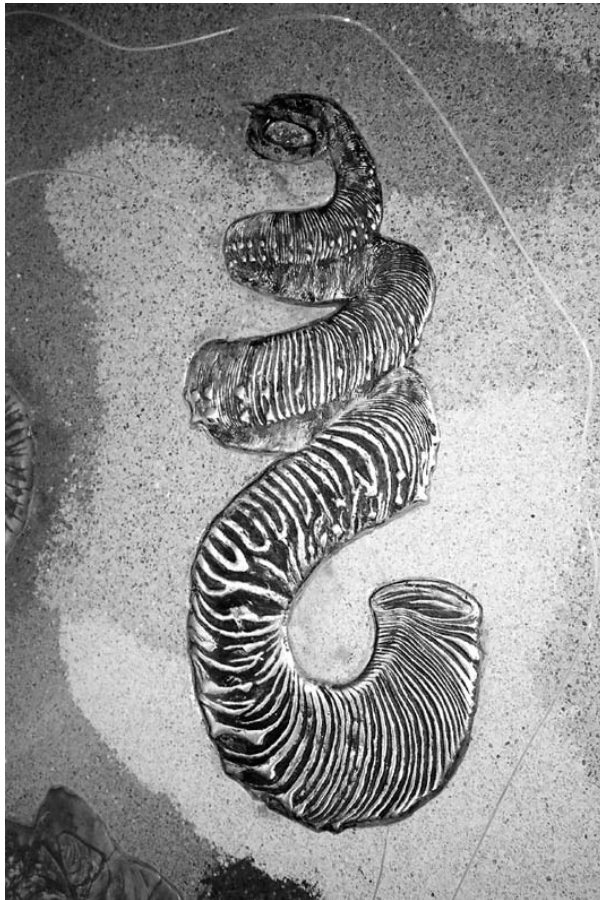
Airports, Art and Fossils

Part II

Article and photos by Philip Benham

Last year I wrote about the processes required to create bronze plates of fossils for an art instalment in the West Jet arrivals section of the Calgary International Airport. [see “Bronzed Beauties,” Sept. 2002, p. 7] In the summer of 2002 we had the opportunity to visit artist Jennifer Macklem in her studio in Kelowna. The art instalment was opened late last year and our family was able to visit the site during final installation and then during a public open house.

The palaeontological art on display in the airport consists of a floor installation (the topic of this photo-article) and an overhead display created by Brian



Heteromorph ammonite *Didymoceras*.



Visitors examine fossil bronzes set into the terrazzo floor at the Calgary International Airport.

Cooley. Brian is the author of *Make-A-Saurus*, a book on how to construct model dinosaurs, which draws on his experience making full-scale models for institutions such as the Royal Tyrrell Museum. His overhead art exhibits the evolution of flight through time from the first insects through reptilian flight, birds and mammals. His high profile sculpture of dinosaurs tearing apart luggage in the main baggage claim area has been a great promotion for the Royal Tyrrell Museum over the last few years.

Prior to the West Jet wing becoming fully operational there was an open house in which you could wander the hall at your leisure. My whole family went and we took our time getting a sense of the art work, its impact on us and the other visitors. Each bronze is set in terrazzo—an epoxy resin—with lines evoking waves or perhaps a topographic map.

We entered the hall and wandered across the floor display panels. Each floor panel represented the three realms in which ancient life thrived: the land, sea and

air. Here were installed the bronzes so carefully conceived, designed and executed.

Creatures too large to be set as a single bronze were broken into segments. Parts from some of the specimens were missing, a purposeful representation of the incompleteness of the fossil record. The detail on the skeletons, shells and flowers is incredible. In particular have a look at the rows of nodes of the hetero-

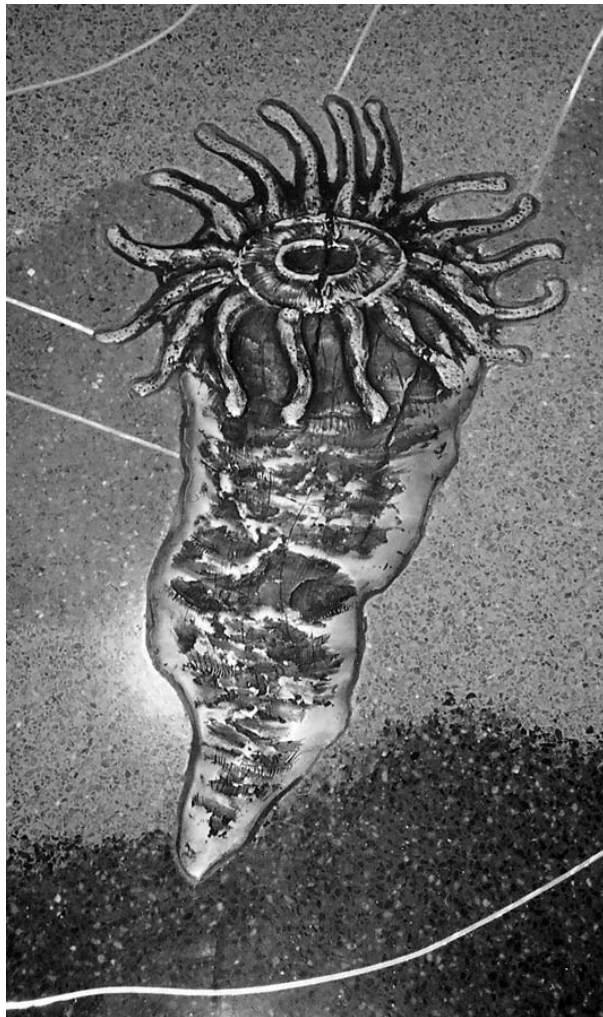


***Hesperornis* skeleton arranged in pieces, Benhams for scale. Inset: cycad, representing the plants.**

morph ammonite *Didymoceras* next time you fly West Jet. It is my personal favourite.

While we examined and photographed the art installation I noticed other people walking along, stopping and staring at the fossils by their feet. Some would get down on their haunches and stare intently, even running their fingers in the ridges and grooves of the bronzes. It became more than a visual experience; also a tactile one and an exercise in imagination. Children did this too but they weren't above turning the array of bronzes embedded along the length of the floor into a game. They would play a form of hopscotch, leaping from one fossil to another.

Good art should inspire imagination or emotions; that is my test (as an admittedly unprofessional art critic). From what I experienced personally and what I observed in the people around me I know that Jennifer Macklem has succeeded in her venture both in terms of entertainment and education. Thousands of feet will buff the art installation every day. Thousands of eyes will observe Western Canada's fossil heritage on display in bronze. Some of those will linger, some will be inspired to explore further the wonders of the past. Jennifer Macklem is now a fine arts professor at Mount Allison University in Sackville, NB. She can be proud of creating something at Calgary International Airport that is uniquely representative of Alberta and deftly ties science and art together. □



Representation of living horn coral.

Palaeo Volunteer Opportunities

by Mona Marsovsky

Microvertebrate sorting

On the afternoons of Saturday, November 1, 15 and 29, 2003, a number of APS members sorted screened matrix of the Foremost Formation (Late Cretaceous) from the Onefour area of southeastern Alberta for **Dr. Donald Brinkman's** research into palaeoclimate and palaeoenvironments. Using microscopes and hand lenses, the participants carefully picked out the fossils from the sand and mollusc shell matrix. Fossils were then generally categorized into types (e.g. turtle versus mammal versus fish). In future sessions participants will further identify and categorize the specimens.

Upcoming microvertebrate sorting sessions have been scheduled for January 10 and 24 and February 7, 2004. Sessions are held on Saturday afternoons (1 P.M. to 5 P.M.) at Mount Royal College in Room B108. Participants need to bring their own tweezers and/or fine paintbrush and hand lens or magnifying glasses. There will be a limited number of binocular microscopes available and thus if you have your own, please bring it. (Also, if you have an extension cord, please bring it for plugging in lamps.) Contact **Vaclav Marsovsky** ((403) 547-0182, vaclav@telusplanet.net) for confirmation of dates and to register (to allow Vaclav to arrange enough microscopes).

Fossil leaf sorting

On the evening of Wednesday, October 29, a few hardy APS members braved the miserable weather and roads to help **Georgia Hoffman** sort through the Paleocene fossil leaves stored at the Geological Survey of Canada (GSC). Participants unpacked fossils and started labeling them. Georgia is studying the plants living immediately after the disaster that killed off the dinosaurs (the K/T boundary). Some of the fossils were collected on the APS field trip to the site on July 20, 2003 (see article, Page 7).

Upcoming fossil leaf sorting sessions will be scheduled for January and February, 2004. Sessions will be held at the Geological Survey of Canada (3303 - 33 St NW). Contact **Vaclav Marsovsky** ((403) 547-0182,

vaclav@telusplanet.net) for dates and to register (there is limited space at the GSC).

Tyrrell Museum fossil preparation

Don Brinkman, of the Royal Tyrrell Museum, organizes fossil preparation sessions at the Field Station at Dinosaur Provincial Park (48 km NE of Brooks). The fossil preparation sessions are scheduled for Saturdays and Sundays on selected weekends. Participants can choose to attend for half a day or a full day on either or both days. Participants prepare turtle, champsosaur or crocodile specimens to aid Don Brinkman in his research into the fauna of Dinosaur Provincial Park. Contact Don Brinkman for dates and to register (toll free: 310-0000 then dial 823-7707 or don.brinkman@gov.ab.ca). □

Public Service Announcement

November 21, 2003

Tyrrell Scientists Talk about Latest Research

Drumheller—The latest information on the Royal Tyrrell Museum's scientific research is available right from the source. Saturday, January 31st, 2004, Tyrrell scientists and their colleagues present a series of popular talks and posters that highlight what's been happening in the field and the labs.

One of the featured speakers will be **Dr. Philip Currie**, head of Dinosaur Research with the Royal Tyrrell Museum. Currie's talk recounts his Antarctic expedition to Mt. Kirkpatrick, 600 kilometres from the South Pole, where remains of *Cryolophosaurus* or "frozen crested lizard," the first carnivorous dinosaur found on the continent, were collected a decade ago.

Other talks include:

Mexico Rocks: Dinosaurs, Sandflats and Magnetostratigraphy—David Eberth (PhD, Sedimentary Geology)

Vertebrates from Canada's High Arctic—Don Brinkman (PhD, Vertebrate Palaeontology)

Dinosaur Fodder: the Cretaceous Plants of Alberta —Eva Koppelhus (PhD, Palynology)

The Biogeographic Significance of Triassic Fish Fauna —Raoul Mutter (PhD, Vertebrate Palaeontology)

Ichthyosaur Flippers: Why the Notches? — Betsy Nicholls (PhD, Marine Reptiles)

Research Day begins at 10:30 A.M. Saturday, January 31st, 2004 at the Royal Tyrrell Museum, six kilometres northwest of Drumheller. Advance tickets: \$20.00 including lectures, lunch, admission to the museum and GST.

To make it a family event, the Tyrrell presents several kids activities coinciding with the lectures. Advance tickets: \$18.00 each for children ages 4 to 6 and 7 to 12. Tickets include educational activities, lunch, museum admission and GST.

Advance tickets are available by contacting the Royal Tyrrell Museum toll free at 310-0000 then (403) 823-7707 or by e-mail at tyrrell.bookings@gov.ab.ca.

Operated by Alberta Community Development, the Royal Tyrrell Museum is Canada's only museum devoted exclusively to the study and presentation of ancient life.

Contact:
Marty Eberth
Public Relations
Royal Tyrrell Museum
(403) 823-7707
marty.eberth@gov.ab.ca



Library Notes

Identifying Vertebrate Fossils

by Mona Marsovsky, APS Librarian

The following references are available in the APS library to help you identify your vertebrate fossils.

An Illustrated Guide to the Vertebrate Microfossils from the Dinosaur Park Formation by Donald

Brinkman, Royal Tyrrell Museum, 2002. Prepared for the January 27, 2002 APS workshop on vertebrate microfossils. The excellent photographs of fish, turtle, salamander, lizard, crocodile, and dinosaur teeth are very helpful in fossil identification. This is kept in the APS workshop manuals folder.

A Guide to the Mesoreptiles from the Dinosaur Park Formation of Alberta by Donald Brinkman, Royal Tyrrell Museum, 2003. Prepared for the January 18, 2003 APS workshop on mesoreptiles. More excellent photos of reptile and amphibian fossils. Kept in the APS workshop manuals folder.

A Guide to Alberta Vertebrate Fossils from the Age of Dinosaurs by Hope Johnson and John E. Storer, 1974. The excellent illustrations of Alberta Cretaceous fossils will help identify your fish, amphibian, turtle, marine reptile, crocodile, lizard, champsosaur, dinosaur and mammal fossils. We have 2 copies of this book in the library.

Microvertebrate Fossils Reference Set, by Roslyn Osztian, 2000. Actual fossils from SE Alberta (Judith River Group), all of which are identified, make up this reference set. Note: this set is NOT to be taken home.

Atlas of Fossil Man by C. Loring Brace, Harry Nelson and Noel Korn, 1971. This book traces the evolution of man and includes sketches of hominid fossils.

Studies on Cenezoic Vertebrates of Western North America by Robert W. Wilson, *et al*, 1938. Papers on Pliocene and Late Quaternary mammal fossils include photos and drawings.

Paleoecological Studies of South Florida edited by Bruce R. Wardlaw, 2001. This includes several papers on the ecology, geology and paleoecology of south Florida.

A Compendium of Fossil Marine Animal Genera by J. John Sepkoski, Jr. 2002. Lists marine animal genera and references their descriptive papers.

A Fossil Ray, Possibly Myledaphus (Elasmobranchii: Batoidea) from the Late Cretaceous Oldman Formation of Western Canada by Wann Langston Jr., National Museums of Canada Publications in Palaeontology No. 6. Detailed description of the specimen plus photos of its vertebrae.

The White River Badlands by Cleophas C. O'Harra, South Dakota School of Mines Bulletin No. 13, 1920, reprinted 1976. Pictures of mammal fossils and their localities. □

Fossils in the News

Quirks and Quarks,

CBC Radio One, September 20, 2003

Largest-ever rodent found in Venezuela

GOYA, Venezuela—Host Bob McDonald interviewed Dr. Marcelo Sánchez-Villagra from the Department of Zoology at the University of Tübingen in Germany. Researchers found a giant rodent the size of a buffalo in 8-million-year-old deposits. The new rodent, named *Phoberomys pattersoni* weighed in at about 700 kg.

The animal was semi-aquatic like the capybara is today. It is thought that these large rodents met their demise because they were easier prey than the other herbivores, the ungulates, which were faster and could outrun their predators more easily. The large predators of that time were a large marsupial cat, a three-metre tall flightless bird and a large crocodile. In the Miocene, the area was a forest with lakes. It was very humid, more so than it is today. This rodent was a herbivore, as shown by its teeth.

The fauna of South America may seem exotic because South America was like an island continent for a very long time. The isolation accounts for these bizarre forms.

For more information, refer to an article in the Sept. 19 issue of the journal *Nature*. An artist's rendering of what this animal may have looked like can be seen on the CBC website at

www.cbc.ca/quirks/archives/03-04/sep20.html#5

– Vaclav Marsovsky

Quirks and Quarks,

CBC Radio One, October 4, 2003.

Arctic beaver dam excavated

ELLESMERE ISLAND, Nunavut—Host Bob McDonald interviewed palaeontologist Dr. Richard Harington, curator emeritus of the Canadian Museum of Nature who has been excavating a site on Ellesmere Island in Canada's Arctic.

The site was found in 1961 when a dark patch of ground was found containing peat and unusual sticks that looked like they may have been chewed by beavers. The site has been interpreted as an ancient beaver pond. The site is 4 million years old (early Pliocene).

The sticks are so well preserved they can almost burn.

In the peat accumulated in the beaver pond and within the beaver dam, the remains of beaver, bear (*Ursus*), a hare-like animal (*Hypolagus*), shrew (*Arctosorex*), mouse (*Baranomys*), weasel, badger (*Arctomeles*), wolverine and other animals have been found. Also, remains of moss, seeds, shells, insects and beetles have been found.

A person standing on the dam 4 million years ago would have seen a pond surrounded by trees such as birch, alder and larch, with three-toed horses and deer grazing in the grassy areas. The climate would have been like central or southern Labrador. Today, the site is in stark difference to what it was 4 million years ago. Winter temperatures on Ellesmere Island were nearly 15 °C higher and summer temperatures 10 °C higher than they are today.

Glaciers tend to obliterate everything in their paths during their advance. Dr Harington thinks the site was preserved in a pocket below the glacial gravels. To excavate the site would be a major undertaking since large glacial boulders would have to be removed off the top.

A poster on this project was presented at the 2004 meeting of the Society of Vertebrate Paleontology in St. Paul Minnesota.

– Vaclav Marsovsky

Earth Science News, September, 2003

Chin finds muscle tissue in tyrannosaurid coprolite

ONEFOUR, Alberta—Karen Chin, Jack Horner *et al* report in *Palaaios* on this remarkable specimen. The coprolite was found near Onefour, Alberta, Canada in Campanian (Late Cretaceous) rocks and measured 64 cm by 17 cm with a volume of about 6 litres. It has high concentrations of phosphorous (32.9%) and calcium (47.7%) compared to 0.96% and 2.09% in the surrounding sediment. It includes bone fragments that suggest it is from a large carnivore. *Daspletosaurus*, *Gorgosaurus* and *Aublysodon* are the candidates that lived at that time.

It included what appear to be fossilized soft tissues with two surface patterns. Some are fluted and formed by multiple layers of long, parallel fibres, suggesting muscle tissue. Others have a reticulated configuration with a web of ridges and resemble views of red blood cells in capillaries. The bone fragments (possibly from a pachycephalosaurid) throughout the coprolite are the same and indicate they are from the same prey animal.

This specimen implies that there were short gut residence times for the large masses of flesh that were ingested by this eater. The bones found within the mass are small and would have been digested with a longer residence time. The specimen was found on a sandstone unit with a shale layer over it indicating that it may have been deposited in sandy soil among rooted plants and was buried during a flood. This fossil gives a fascinating look into the life of one of our favorite animals. — Karen Nordquist, *ESCONI*

[This review first appeared in the Earth Science News, newsletter of the Earth Science Club of Northern Illinois (ESCONI), © 2003. Reproduced by permission.]

CBC News, October 21, 2003

Did dinosaurs suffer from cancer, too?

ROOTSTOWN, Ohio—In the first major survey to look for signs of cancer in dinosaur bones, a group of scientists led by radiologist Dr. Bruce Rothschild of the Northeastern Ohio Universities College of Medicine examined 10,000 fossil vertebrae from over 700 museum specimens, including ones from the Royal Tyrrell Museum, Royal Ontario Museum and Canadian Museum of Nature. The study was conducted on bones from *Stegosaurus*, *Triceratops*, *Tyrannosaurus* and hadrosaurs, but tumours were found only on the hadrosaur bones. Rothschild indicates that dino and human tumors are similar.

The worst-afflicted dinosaur genus appeared to be the 3.5-metre *Edmontosaurus*, which was the only one to show a malignant tumour. Tumours were found on nearly three percent of *Edmontosaurus* bones. The most common type of tumours seen were hemangiomas, benign tumours of the blood vessels. Studies of hadrosaur teeth and fossilized stomach contents show the dinosaurs ate cones from evergreen trees. Carcinogens in the cones may explain why they had tumours.

Rothschild's colleagues included workers from the University of Kansas Museum of Natural History and the Royal Tyrrell Museum of Palaeontology.

— Vaclav Marsovsky

CNN.com, October 24, 2003

Evidence of brain tumours in dinosaurs

CHICAGO—Scientists reported they had found what is possibly the first evidence of a brain tumour in a dinosaur, in the fossilized remains of a *Gorgosaurus* from the Two Medicine Formation (Upper Cretaceous) in western Montana's Teton County. The re-

search was conducted by veterinary pathologist Rachel Reams on a specimen discovered in 1997. A ball-shaped mass about 5 cm in diameter was found in the brain case. The tumor took up almost all of the space where the cerebrum would normally be located. The cancer may have affected the dinosaur's balance and locomotor function.

— Vaclav Marsovsky

Quirks and Quarks,

CBC Radio One, October 4, 2003

Strange tetrapod ears

CAMBRIDGE, U.K.—Bob McDonald interviewed Dr. Jennifer Clack from the University Museum at Cambridge University in England. She is an expert on the earliest vertebrates to colonize the land, commonly referred to as tetrapods. In the interview Dr. Clack discussed the strange skull of *Ichthyostega* and unique structures found on the roof of its mouth. *Ichthyostega* is considered a transitional form between a fish and a land vertebrate. *Ichthyostega* looks like a small lizard. It was a top predator during its time, as can be seen by looking at its teeth. It was adapted to life in the water, as much as 50 million years before a “walking leg” is found in the fossil record.

Ichthyostega appears early in tetrapod radiation during the Devonian (approximately 350–370 million years ago) but it already had some very specialized structures. The strange structures in the skull were described as long and tubular; others had the shape of a table tennis racket but in miniature. These bits of bone were highly problematical to interpret because no other animals have been found with similar anatomical structures before or since. The ear anatomy of other amphibians is different. The precise anatomical study could only be done by CT-scanning an uncrushed and unprepared skull. *Ichthyostega* did not leave descendants, making it difficult to study the evolution of these unique ear structures.

— Vaclav Marsovsky

BBC News Online, December 12, 2003

Size doesn't matter—age does

HEREFORDSHIRE, U.K.—In their ongoing quest to find the world's oldest penis [Bulletin, Dec. 2002, p. 26], Dr. David Siveter of the University of Leicester and colleagues have announced the discovery of the latest member of the Guinness fraternity: an ostracode (bivalved aquatic arthropod) recovered from Silurian rocks of Herefordshire County, dated at 425 million years old.

(continues...)

Candidly remarking that “We have got something we could only dream about,” Siveter and company revealed the find through a delicate “shave-and-photograph” process carried out on a sample of volcanic ash that had preserved the critter’s soft parts, and allowed a three-dimensional reconstruction of the animal’s anatomy. The ostracode, a new species, has been dubbed *Colymbosathon eplecticos*, apparently translating as: “amazing swimmer with a large penis.”
– Howard Allen

CNN.com, November 3, 2003

Did lungs give dinos a leg up?

WASHINGTON (Reuters)—University of Washington palaeontologist Dr. Peter Ward thinks he’s come up with a reason why dinosaurs overtook mammals as the dominant land animals of the Mesozoic.

Geochemical evidence indicates that atmospheric oxygen levels during the period from about 275 million to 175 million years ago (Permian through Jurassic) were very much lower than current levels. O₂ makes up 21% of the modern atmosphere, but apparently only 10% to 11% during the period in question—about the equivalent of an elevation of 4200 m above sea level in the modern world. This means that animals would have needed a very efficient breathing system to thrive under such conditions.

Modern birds, with their complicated arrangement of lungs, hollow bones and air sacs have such a system. Ward notes that birds (geese) have been seen flying over Mount Everest (approx. 9000 m), proving just how efficient they are at utilizing low levels of oxygen while carrying on the strenuous exercise of flying.

Reasoning that since birds evolved from dinosaurs, and since dinosaurs are known to have had hollow bones, Ward theorizes that dinosaurs first evolved the efficient bird-breathing system during the period of low oxygen levels at the beginning of the Mesozoic Era, and used this advantage to out-compete the relatively breathless mammal ancestors.

– Howard Allen

CNN.com, September 17, 2003

Land plants may be older than thought

BALTIMORE (AP)—Palynologists studying rock samples recovered from an oilfield core in Oman have found fossil spores contained in plant structures that push the earliest-recognized land plant remains back to 475 million years.

According to Dr. Charles Wellman of the University of Sheffield, U.K., spores of this particular plant had been well-known, but never in the context of the plant structures that bore them. A time-gap of some 50 million years between the earliest-known spores and the earliest-known land plant remains had been puzzling researchers until Wellman’s recent discovery. The spore-bearing structures are tiny, and the spores resemble those of liverworts, tiny plants that live today alongside mosses.

The search for older-still plant fossils continues, as DNA-researchers are convinced that the land plants diverged from aquatic plants (algae) about 700 million years ago.
– Howard Allen

CBC News Online, October 15, 2003

Old purple frog danced with dinosaurs

BRUSSELS—A strange, new type of frog has turned up in southern India’s Western Ghats Mountains. Described as looking “like a donut with a pointy snout,” the small purple-skinned animal (for a picture, see www.cbc.ca/stories/2003/10/15/frog_india031015) belongs to a newly described family of frogs whose closest relatives were thought to have disappeared with the dinosaurs. Its closest living relatives are found on the Seychelles islands in the western Indian Ocean. Researchers F. Bossuyt and S.D. Biju, writing in the October 16 issue of the journal *Nature*, suggest that the new purple frog family became separated from an ancestral line when the supercontinent of Gondwanaland broke up some 130 million years ago.

– Howard Allen

Science News, August 8, 2003

Amateurs fight to save trackways

BIRMINGHAM, Alabama—In a clash between science and government bureaucracy, a group of amateur palaeontologists is resorting to lobbying and legal moves to save a priceless fossil resource. An extremely rich and well-preserved deposit of Carboniferous-age (310 million years old) trackways exposed in an abandoned open-pit coal mine is the target of a U.S. federal environmental law requiring the restoration of all disused mine properties.

The exposed trackways include traces of amphibians, millipedes, horseshoe crabs and possibly reptiles, and has received the attention of fossil track experts worldwide.

First alerted to the site by the mine owner’s grandson, the Alabama Paleontological Society (APS) alert-

ed professional palaeontologists and began a massive collection of track-bearing slabs. The amateur society members this year hosted a scientific conference on the tracksite and are preparing a published monograph of the fossil tracks.

Despite donation of part of the strip mine by its owners, the state is insistent on bulldozing the site, partly at the behest of a local landowner, over "safety concerns." Meanwhile, having captured the attention of a friendly state politician who introduced a bill to have the site protected, the amateurs are hoping their lobbying efforts might result in an eleventh-hour reprieve for the site.

For details of the tracksite and photographs, log on to www.bama.ua.edu/~rbuta/monograph.

—Howard Allen □

[Thanks to Phil Benham and Georgia Hoffman who submitted articles for review.]

SVP 2003: St. Paul, Minnesota

by Mona Marsovsky

The annual meeting of the Society of Vertebrate Paleontology (SVP) was held this year in St. Paul, Minnesota from October 15 to 18, 2003.

The pre-symposium three-day field trip traveled to North Dakota. Over twenty-five participants visited North Dakota's Late Cretaceous (Hell Creek), Paleocene (Fort Union), Eocene (Chadron) and Oligocene (Brule) fossil localities plus the North Dakota Heritage Center in Bismark and the Pioneer Trails Museum in Bowman, in the southwest part of North Dakota. We visited two different K/T boundary locations and had opportunities to search for fossils in the badlands. Thankfully there was no snow or rain, only a biting wind.

The following four special symposia sessions were held on Wednesday, October 15:

- *Evolutionary Transitions Among Vertebrates.*
- *Preparators' Symposium.*
- *High-latitude Mesozoic and Cenozoic vertebrates: Evolution, paleoclimate and paleogeography.*

• *Biom mineralization: Patterns, processes and analysis of modern and fossil vertebrate skeletal tissues.*

This was followed by three days of technical sessions, featuring three simultaneous sessions each day and two sets of posters, with over 220 posters in total. Attendees came from all over the world, including Canada, Japan, Germany, France, China, U.K., Korea, Mexico and the USA.

The Wednesday night "Welcome Reception" was held at the new Science Museum of Minnesota, just a few blocks away from the conference. This museum has an astonishing number of hands-on scientific displays (including building your own AC circuit and running your own steam engine) plus a palaeo lab that features a large window for viewing by the public and extensive fossil displays.

Friday night's silent and live auction netted US\$18,825 for SVP's education scholarship fund. At the awards reception/banquet on the final evening of the conference, numerous awards were presented. Jennifer Scott of the University of Saskatchewan won both the Patterson award supporting student field work and the student poster award for her poster entitled: *Diagenesis and the paleoecological analysis of a Late Pleistocene footprint site in the Baringo-Bogoria Basin, Kenya Rift Valley*. Life membership was awarded to Dick Harrington of the Canadian Museum of Nature in Ottawa for his work on ice age vertebrates in Alaska, Greenland and Canada.

The next SVP annual meeting is scheduled for November 3 to 6, 2004 in Denver, Colorado. □

A Visit With Leonardo

by Vaclav Marsovsky

Leonardo, the mummy dinosaur, ranks among the most spectacular discoveries in vertebrate palaeontology in recent years. Leonardo was discovered in the badlands of Montana in the Judith River Formation near the town of Malta in 2002.

On Aug 16, 2003 Mona and I visited the field station in Malta to view the fossil and to meet with the curator of the Judith River Foundation, Nate Murphy. The

field station opened only this spring (2003). The museum is in a converted car garage so in terms of size it is not very big; however, the fossils on display are outstanding. Picture-taking is not allowed currently pending the publication of articles about the dinosaur discoveries.

What we saw was a complete articulated skeleton of a duckbill dinosaur (*Brachylophosaurus*) which has been named Leonardo. On the surface is what appears to be the texture of the skin impression on various parts of the body. Where the gut cavity would be located in life, remains of plants have been found. Dr. Dennis Braman of the RTMP has done a preliminary assessment of the pollens found in the gut cavity and has reported his findings to Nate Murphy. The pollens are those of the usual Cretaceous plant groups, such as ferns, cycads, gymnosperms and angiosperms. Part of the gut cavity has been opened up and a person can see actual bits of plants. A debate is taking place on whether the plant material is the food of the dinosaur still in the digestive tract or plant debris that had been washed in during deposition.

Recently, this fossil has made it to the Guinness Book of Records as the best-preserved dinosaur. The mummy still requires more preparation—for example the beak of the animal is still hidden behind sand. For those visiting Malta, there are four spectacular specimens on display. Three at the field station and one at the Phillips County Museum a few blocks away.

At the field station

The articulated *Brachylophosaurus canadensis* named Roberta is roughly prepared and the surface preparation of the bones with air abrasive has yet to be done. A tail of another unidentified hadrosaur is articulated from the pelvis all the way to the last vertebrae at the tip. This specimen also has a fabulously preserved lattice work of ossified tendons with the classic, textbook meshing of the tendons.

At the Phillips County Museum

The fourth specimen, Elvis, is a fully grown articulated hadrosaur (another *Brachylophosaurus*) which is beautifully preserved. The specimen is lying on its right side and is displayed exactly as found preserved in 3-D. The chest cavity is round as it was in life. (Unfortunately picture-taking was also not allowed in this museum).

There is a lineup of scientists waiting to study these specimens. An article on Leonardo the mummy is in publication in the prestigious journal *Nature* and may be out by the time APS members read this article. APS

executive members have asked Nate Murphy to speak at the **APS 2004 Symposium** to tell us more about the dinosaur mummy.

[Photos of all the specimens discussed in Vaclav's article can be seen at www.montanadinosaur digs.com.] □

Reviews

Dragon hunter: Roy Chapman Andrews and the central Asiatic expeditions

by Charles Gallenkamp, 2001. Penguin Group, 344 pages, \$43.99. ISBN 0-670-89093-6

Dragon Hunter traces the life of Roy Chapman Andrews from his birth in 1884 to his death in 1960. This book is an excellent summary of the work of Andrews, pieced together from Andrews' eleven books and numerous other publications. This well-written and exciting book is not a palaeontology book, but rather a biography that provides an excellent background for the events in Roy Chapman Andrews' life.

Chapman was an explorer and a zoologist, rather than a paleontologist. He collected zoological specimens for the American Museum of Natural History in New York City, including an extensive collection of whales that required him to travel to the west coast of the USA, British Columbia, the Phillippines, Japan and Korea. Using his expertise and fame as an explorer of an uncharted area of Korea, Andrews then organized, raised funds for and led the Central Asiatic Expeditions. The Central Asiatic Expeditions explored the Gobi Desert of Mongolia in 1922, 1923 and 1925. The expeditions of 1928 and 1930 explored the Gobi Desert of China (Inner Mongolia). An excellent map on the inside cover of this book helps the reader follow the progress of each of the five expeditions.

Although the Central Asiatic Expeditions did not fulfill their goal of finding hominid fossils in Asia to prove Henry Fairfield Osborn's theory that placed Central Asia as the birthplace of mammals and humans, the Expeditions found the first documented dinosaur eggs, a wealth of Cretaceous dinosaur, lizard and mammal fossils and fossils from the Eocene, Oligocene, Pliocene and Pleistocene. All of this was achieved while battling with a civil war in China, Mongolian Communist red tape, the Chinese Cultural Society (who tried to prevent the removal of any fossils

from China), sandstorms, snowstorms, intense heat and bandits. I recommend this book to everyone.

– *Mona Marsovsky*

Rex appeal: The amazing story of Sue, the dinosaur that changed science, the law and my life by Peter Larson and Kristin Donnan, 2002.

Invisible Cities Press, Montpelier, Vermont, 404 pages, \$40.95. ISBN 1-931229-07-4

Rex appeal describes the discovery and excavation of Sue, the *T. rex*, by Peter Larson and his co-workers at the Black Hills Institute. The Black Hills Institute is a family business that excavates and sells fossils, creates and sells casts of fossils and even constructs traveling fossil displays from their museum/store in Hill City, South Dakota. Rex appeal follows the convoluted trail of Sue, including the seizure by the FBI, the legal battle over custody, the auction and Sue's final home. The judge ruled that Sue was "real estate" and thus belonged to the land owner, Maurice Williams. The land owner actually got paid twice, namely \$5000 from Peter Larson to collect Sue and then 7.6 million dollars from the auction of Sue. The landowner didn't pay Peter Larson's expenses (approximately \$200,000) incurred while excavating and preparing Sue. The legal wrangling, however, was only beginning as federal agents invented numerous charges against Peter Larson and the Black Hills Institute, including excavating fossils on federal lands without a permit, improper declarations on custom forms and a "conspiracy" to smuggle fossils out of Peru. They were found innocent of nearly all of these charges, but it was not enough to avoid heavy fines and two years of jail time for Peter Larson as a result of the rulings of what appeared to be a biased, unfair judge.

Interspersed with this compelling story is a complete background of *T. rex*, including the history of all of the *T. rex* skeletons found to date (including those excavated by the Black Hills Institute—Stan, Duffy, Fox Lady, Steven, E.D. Cope and Bucky). Diagrams summarize which bones were recovered for each dinosaur found. Numerous photos of excavation sites and specimens help explain the text. *T. rex*'s life is discussed in detail, including hunting, sexual dimorphism, mating, nesting, growth, family life and extinction, using the latest evidence and theories.

The book also explores the politics of who should be allowed to collect fossils: government institutions or private companies/amateurs. It also delves into the

ethics of selling fossils as a way to support scientific research.

This book is a must-have for *T. rex* aficionados; all the *T. rex* finds and current theories are located in a single volume. I would recommend this book to anyone who appreciates an exciting tale and the latest information on one of the world's favorite dinosaurs.

– *Mona Marsovsky* □

APS Field Trips 2004

by Wayne Braunberger

Several field trips are planned for this 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. 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 and at the monthly meetings.

Please note that all fees are due at the time of registration. Non-members and unaccompanied minors will not be allowed to attend field trips. All participants will be required to read and sign a release form.

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.**

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Trip 2004-1: Badlands, SE Alberta Saturday & Sunday, June 26–27

This trip is still in the planning stages. It is anticipated that stops will be made between Sandy Point on the South Saskatchewan River and Onefour. Exact locations have not yet been determined. Full details of the itinerary will be published in the March *Bulletin*.

Accommodations

As with all APS trips accommodations are the responsibility of trip participants. Motels/hotels and campgrounds are available in the Medicine Hat area.

Driving Conditions

Allow at least 3–4 hours driving time from the Calgary city limits to Medicine Hat. Travel will be on pavement with short stretches on gravel and trails.

Potential Hazards

Red Deer River, steep slopes, sinkholes, falling rocks, ticks, rattlesnakes.

Cost

\$5.00 per field guide. There is no attendance limit for this trip. **Registration deadline is June 18, 2004.**

Trip 2004-2a: Alexo, Alberta Saturday & Sunday, July 17–18

Day 1: Saturday, July 17, 10:00 A.M.; **Day 2:** Sunday, July 18, 9:00 A.M.

Meet at the Alexo turnoff, which is located on the south side of Highway 11. We will then drive/hike to a post-Cretaceous plant locality. **Georgia Hoffman** will once again lead us on this trip to an exceptionally prolific plant locality. Plans are to have a backhoe expose more of the outcrop so that more detailed work may be done.

Accommodations

Motel accommodation is available at the David Thompson Resort and Nordegg. A full service campground is also at the David Thompson Resort and there are numerous forestry campgrounds in the area.

Driving Conditions

Allow at least 3 hours to drive to Alexo. Travel will be on paved roads with very short stretches of gravel.

Potential Hazards

Steep slopes, falling rocks, bears.

Cost

\$5.00 per field guide. There is no attendance limit for this trip. **Registration deadline is July 9, 2004.**

Trip 2004-2b: North Saskatchewan River, South of Alexo, Alberta Sunday, July 18

For those looking for a challenge, an exploratory trip will be made to a Cretaceous/Jurassic invertebrate site approximately 10 km to the south of the plant locality. Travel will be by foot and/or mountain bike as the road is no longer driveable by standard vehicles. You (and your bike!) should be in good physical condition to take part and be prepared for a very long day. If interested please contact me for details. This is an ideal opportunity for participants to learn the trials and tribulations involved in finding a site.

Trip 2004-3: Limestone Mountain, Alberta Saturday & Sunday, August 21–22

This trip is in the planning stages and the locality may change. Dates are firm.

Cost

\$5.00 per field guide. No attendance limit for this trip. **Registration deadline is August 13, 2003.**

Tumbler Ridge, British Columbia July 1–5 (dates are tentative)

Richard McCrea of the University of Alberta will be working in the Tumbler Ridge area this summer. He has graciously volunteered to take time from his schedule to lead a 2–3 day trip to various sites that he has been working on in the area. At this time the dates and itinerary have not been confirmed. If you are interested in this trip please contact me and I will forward information as it becomes available. Please signify your interest early.

Ghost River Area, Alberta Sept. 2004, dates to be announced

A trip is proposed to the Ghost River area to follow up on the Devonian trip that was made in September of 2000 [*Bulletin, Dec. 2000*]. If you are interested in this trip please contact me for further details. □

APS Eighth Annual Symposium (continued from back page)

The Symposium

The symposium is a two-day event with lectures, posters and showcase displays on Saturday, March 20 and workshops on Sunday, March 21. 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 20. 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, (403) 247-3022. **The deadline for requests for poster space is February 1, 2004.**

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 or from the editor, Howard Allen, editor@albertapaleo.org, (403) 862-3330. **Deadline for submission of abstracts is February 1, 2004.**

Two Workshops—Sunday, March 21

9:00 a.m. – 12:00 p.m. *Plant Morphology*—Instructor: Georgia Hoffman. Location: Geological Survey of Canada, 3303 - 33 St. NW, Calgary.

Learn to categorize plant fossils into morphotypes based on leaf structure. Participants will practice their new skills using Paleocene leaf fossils. **Fee: \$15.00. Limit: 20 participants.**

1:00 p.m. – 4:00 p.m. *Jaw Form and Function : Adaptive Radiation of the Mammalian Masticatory Apparatus*—Instructor: Dr. Anthony Russell. Location: University of Calgary (building and room to be announced)

This workshop will focus on muscles, bones and joints as they relate to jaw form and function. This is a hands-on workshop, including dissection. **Those who do not wish to dissect carcasses should not enroll. Fee: \$15.00. Limit: 20 participants.**

Be sure to register early. Registration deadline is March 7, 2004. To sign up contact Vaclav Marsovsky at (403) 547-0182 or 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 (see Page 1 of this *Bulletin*).

Unwrapping the Past

Alberta Palaeontological Society Eighth Annual Symposium Saturday & Sunday, March 20 & 21, 2004

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, Paleontology Division

All lectures and poster displays are free to the public!

SATURDAY, MARCH 20 SPEAKER SCHEDULE

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

- 9:30 – 10:00 a.m. *Sauropod Dinosaurs were the Colossal Corks of the Mesozoic*
Don Henderson, University of Calgary
- 10:00 – 10:30 a.m. *New Technologies Challenge Old Views on the Evolution of Reptilian Dental Morphology and Histology*—Lisa Budney, University of Alberta
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- 10:30 – 10:45 a.m. *Coffee break*
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- 10:45 – 11:15 a.m. *Discovery of William E. Cutler's Winter 1919–1920 Fieldcamp, Dinosaur Provincial Park, Alberta*—Darren Tanke, Royal Tyrrell Museum
- Special Presentation**
- 11:15 – 12:15 p.m. *African Dinosaurs Unearthed: The Tendaguru Expeditions*—Gerhard Maier, ESSO
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- 12:15 – 2:00 p.m. *Lunch Break & Poster Session*—Presenters to be available for discussion
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- 2:00 – 2:30 p.m. *Approaches in Vocalizing the Science of Palaeontology to the Public of All Ages*
Marisa Gilbert, University of Alberta
- 2:30 – 3:00 p.m. *Excavating British Columbia's First Dinosaurs, and Other Palaeontological Projects in the Tumbler Ridge Area*—Richard McCrea, University of Alberta and Lisa G. Buckley, South Dakota School of Mines and Technology
- 3:00 – 3:30 p.m. *Revising the Edmonton Group: A Framework for Assessing Biostratigraphy and Climate Change*—David Eberth, Royal Tyrrell Museum
- Keynote Talk**
- 3:30 – 4:30 p.m. *Leonardo, the Mummified Dinosaur*—Nate Murphy, Director of Vertebrate Paleontology, Phillips County Museum, Montana

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