Palæontological Society
Alberta Bulletin

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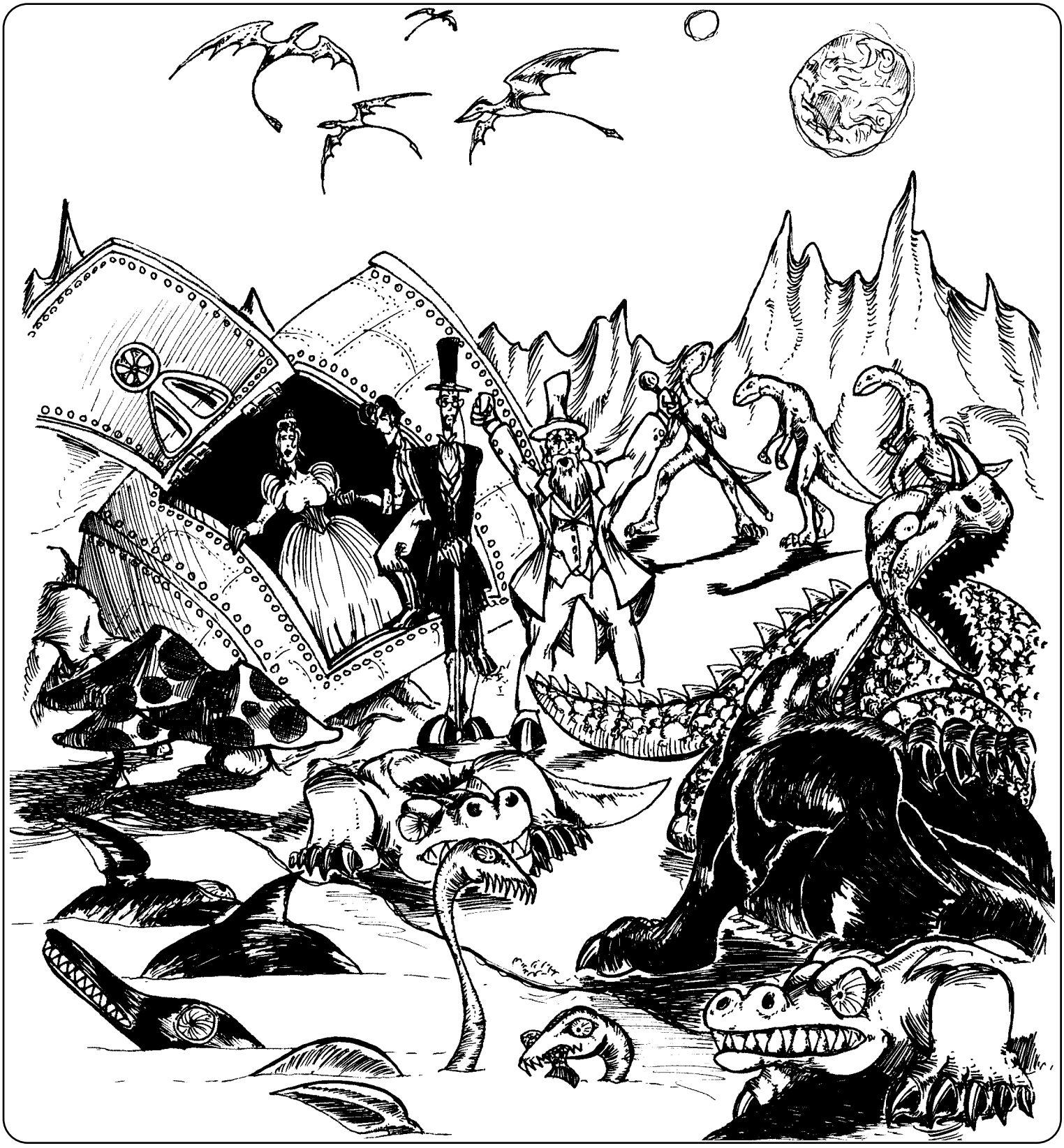

ALBERTA PALÆONTOLOGICAL SOCIETY

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

January 20, 2001—(Saturday) Fifth Annual APS Workshop and Poster Session: see Page 15.
NOTE! There will be NO regular meeting in January!
February 23, 2001—Dr. Chas Yonge: *Geology of Rat's Nest Cave*
March 16, 2001—Dr. Les Eliuk, Shell Canada: *Megalodont Clams*

ON THE COVER: "Another Trip to the Moon." Art by APS Member Cory Gross © 2000.

2000 Field Trip Reports

by Keith Mychaluk

Ghost River area, Alberta (September 16)

While conducting research for his upcoming guidebook on western Canadian fossil localities, APS member **Phil Benham** unearthed several old references to fossil sites in the Devonian-aged Yahatinda Formation west of Cochrane, Alberta.

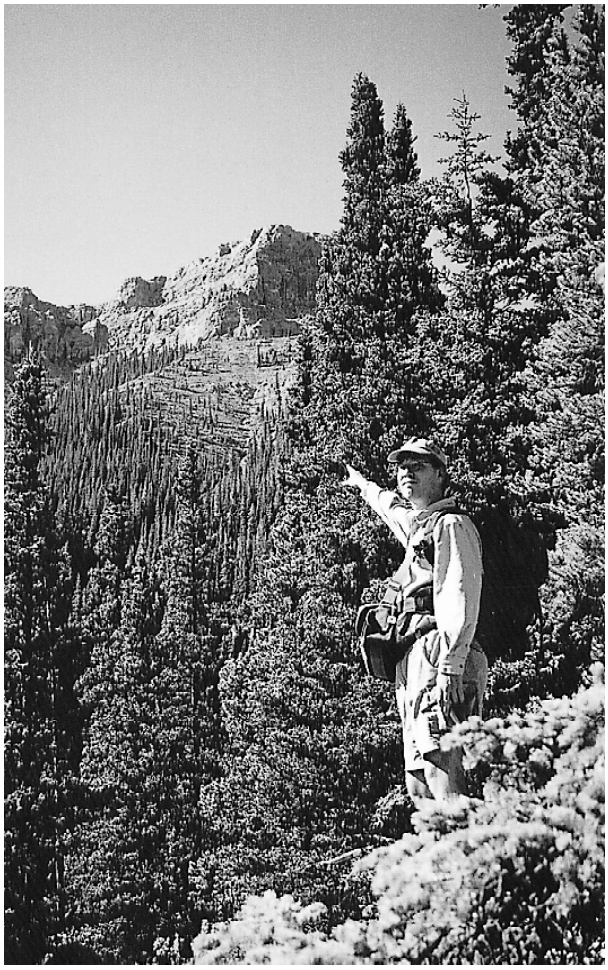
Charles Doolittle Walcott, most famous for his discovery of the Burgess Shale near Field, B.C., wrote one of these references. As part of his work, Walcott mistakenly mapped and named a new formation in the area, which he called the "Ghost River Formation." Other researchers later proved that Walcott's Ghost River Formation contained both Cambrian and Devonian-aged units, including outcrops of the Yahatinda Formation; hence Walcott's naming was dropped.

The Yahatinda Formation consists primarily of channel deposits that have cut down into (eroded) the underlying Cambrian strata. Exposures of the Yahatinda are relatively rare and in some cases contain plant and fish remains from the Devonian. Even in fossil-rich Alberta, Devonian plant remains are exceedingly rare and are only known from the Yahatinda Formation.

Unfortunately for researchers and collectors alike, this formation is usually perched high atop mountains in the Alberta front ranges, making access somewhat similar to a mission to Mars. Phil's research pointed to an interesting Yahatinda locality located near Black Rock Mountain and Devil's Crag, near the east end of Lake Minnewanka. According to Phil, the site had not been visited in several decades and would be difficult to locate.

However, six adventurous APS members took up Phil's challenge and participated in the exploratory trip. **Dr. Barry Richards** of the Geological Survey of Canada also joined our group and provided many insights into the geology of the region.

The long, bumpy road into the site begins just north of Waiparous, Alberta and is only recommended for travel on a dry day in a four-wheel-drive vehicle with good clearance. Several sections of the road were rather steep and consisted of loose cobbles. After stopping a few times to get our bearings (and once to dig out Barry's stuck truck), we tried our luck at an abandoned trailhead near the river's edge. After a strenuous hike (climb?!) through dense brush, we cleared the treeline and quickly identified the reddish-coloured Yahatinda outcrop on a slope further above. Members quickly found black, carbonized plant fragments (mostly unidentifiable) sparsely scattered on silty layers within the outcrop; some splitting was required.



Way up *there*, Phil?! You've *got* to be kidding!
The path of least resistance to the Yahatinda Formation outcrop section. Photo by Keith Mychaluk.

Although hardly museum pieces, the specimens we found are very rare and unique for Alberta fossils. Barry and Phil also managed to find two separate geologic contacts, marked by pebble layers, between the Yahatinda and underlying Cambrian strata. Most members also found fossils of stromatoporoids and gastropods in the overlying, Devonian-aged Cairn/Southesk (=Leduc) Formation.

Those who participated in the trip were rewarded with spectacular views of the surrounding mountains and foothills, on what was perhaps the

most beautiful day of the year. Great work, Phil, but next time let's rent a helicopter!

Comments from the Field Trip Coordinator regarding the Onefour, Alberta field trip, July 15–16, 2000

by Keith Mychaluk

At the October general meeting an APS member mentioned to me that a staff member of the Royal Tyrrell Museum of Palæontology was "concerned" that the APS ran a field trip to the Onefour area in July of this year. The concern likely stems from a paper published in *Palaios* (1997, v. 12, p. 43–58) by David Eberth and Donald Brinkman (both of the Tyrrell) entitled, "Paleoecology of an Estuarine, Incised-Valley Fill in the Dinosaur Park Formation (Judith River Group, Upper Cretaceous) of Southern Alberta, Canada." The site discussed in Eberth and Brinkman's paper is located near Onefour, Alberta, and is of great scientific importance. In fact, within their paper, Eberth and Brinkman do not provide an exact locality description "…because of the paleontological sensitivity of this area…"

Let me assure the Tyrrell Museum that the APS did ***NOT*** visit the site(s) discussed in Eberth and Brinkman's paper. In fact, the sites visited by the APS in July were located over three miles away and certainly did not contain any exposures of the incised-valley system discussed in Eberth and Brinkman's paper. As the Field Trip Coordinator for the APS, I take great care and attention not to take the Society to restricted or sensitive sites. As a professional geologist I also greatly respect the work the Tyrrell Museum undertakes and would never knowingly jeopardize it. I hope this clears up any potential misunderstanding. ❑

APS Email contact list

As APS Programs Coordinator, I am compiling a list of member email addresses, to improve the efficiency of contacting our over 100 members about upcoming programs and other events.

Abstracts of upcoming talks, field trip sign-up forms and other information may also be emailed to members who provide their email addresses. If you haven't yet done so, please send your address to me at: **programs@albertapaleo.org**. Thanks!

– Philip Benham ❑

Field Trips Planned for 2001

by Keith Mychaluk and Philip Benham

Rat's Nest Cave, Alberta
March 10, 2001 (Saturday)

Dr. Chas Yonge, scientist and guide for Canmore Caving will be leading a trip to Rat's Nest Cave near Canmore. Spelunking experience is not required but it is important that people be in good health and not afraid of heights or enclosed spaces. There will be a rappel (with safety ropes) down a 25 m shaft. Please be honest in evaluating your ability to complete this trip: consideration of people's physical abilities will be made before final selection of trip attendees.

At the bottom of the shaft is a pile of bones from animals who have wandered in since the ice age and fallen down the hole. Besides this palæontological highlight, typical cave features will be viewed.

This full day trip costs approximately $85, with the fees covering cave clothing, equipment, guide cost and cave protection. Because of the nature of the trip, only two groups of six are allowed on the trip. Please contact Philip Benham at (403) 280-6283 or by email (**benhamp@cadvision.com**) for information or to register.

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

Several invertebrate fossil localities will be visited in the Cranbrook area. Sites will include opportunities to collect graptolites, corals and rare trilobite fragments from rock formations that are not present in Alberta. A stromatoporoid "forest" may also be visited.

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 to visit some of these sites. At this time, the coal mines are in receivership, so access in uncertain. However, other fossil sites in the area will provide opportunities to collect Palæozoic invertebrates

and Cretaceous and Tertiary-aged plant remains. An optional day (July 23) may be added to the trip. Watch the *Bulletin* for details.

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

Used as a study area for petroleum geologists for decades, 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. Exposures of the Leduc (Cairn-Southesk) and Ireton Formations are highly fossiliferous. Typical invertebrate fossils include brachiopods, corals and bryozoans. Access may require a four-wheel drive vehicle and/or a long hike. Please watch the *Bulletin* for details.

All trips cost $5.00 per membership (NOT per person). There will not be any attendance limitations to the 2001 field trips (except the Rat's Nest Cave trip). However, all members must sign-up for field trips in advance. Please watch the next *Bulletin* for these and other details. ❑

ALBERTA
PALÆONTOLOGICAL SOCIETY
CALGARY, ALBERTA

Operating Statement for 1999
(Unaudited)

JANUARY 1, 1999 TO DECEMBER 31, 1999

Revenues		**Expenditures**	
Membership	$1,490.00	Printing	$466.29
Raffle Revenues	21.50	Bank service charges	60.15
Pins	27.00	Cheques, deposit book	34.19
T-Shirts	505.00	Postage	164.60
Refreshments	87.62	P.O. Box rental	77.04
Donations	59.83	T-Shirts	1,000.00
Misc. (US Exchange)	44.23	Field trip expenses	19.23
Field Trips	195.00	Refreshment expenses	25.48
		Provincial Treasurer	8.00
		Advertising	69.55
		Speakers	970.25
		Accommodation	78.06
		Subscriptions	100.00
Total Revenues	**$2,430.18**	Total Expenditures	**$3,072.84**

Excess of expenditures over revenues: **$642.66**
The bank balance at December 31, 1999 was **$1,461.16**

—Cindy Evans, Treasurer

Program Summaries

October 20, 2000
A Worm's Eye View of the Cambrian Explosion: Unravelling Evolution and Ecology in the Trace-fossil Record, with Dr. Robert B. MacNaughton, Geological Survey of Canada

Rob MacNaughton received his B.Sc. (Honours) from the University of New Brunswick in 1990. His Ph.D. was completed at Queen's University in 1997 and dealt with the sedimentology, sequence stratigraphy, and trace fossils of the Neoproterozoic-Cambrian transition in the Mackenzie Mountains. He then spent two years as a Postdoctoral Fellow at Queen's, studying the tectonic and stratigraphic significance of the sub-Cambrian unconformity in northwestern Canada. Earlier this year, he was hired by the Geological Survey of Canada in Calgary, where he is involved in regional mapping and stratigraphy as part of the Central Foreland NATMAP project. His research interests include the early evolution of animals and animal behaviour and the application of sedimentology and stratigraphy to regional-scale problems in geology.

[*Biographical notes provided by R. MacNaughton*]

Abstract

The Cambrian explosion in animal diversity was one of the most fundamental events in the history of life on Earth. By the end of the Cambrian Period, all but one of the major phyla had appeared, and simple Proterozoic ecosystems had been replaced by ecosystems much like those seen today. In addition to the body-fossil record, the Cambrian explosion is also recorded by increasingly diverse assemblages of trace fossils (fossilized tracks, trails, and burrows). Because trace fossils record the activities of both hard- and soft-bodied organisms, they provide a more complete picture of ancient ecosystems than can be obtained using body fossils alone and are crucial to reconstructing the Cambrian explosion. Trace fossils are also a key tool in basal-Cambrian biostratigraphy. However, trace fossils tend to be facies-controlled and thus can display a strong environmental signal as well as an important evolutionary signal.

The Neoproterozoic-Cambrian succession in the Mackenzie Mountains of northwestern Canada provides an opportunity to unravel these issues. The succession is thick, well exposed, and contains an excellent trace-fossil record. It can be subdivided into eighteen depositional sequences, which can

be correlated throughout the study area. The sedimentary facies within the succession record a number of depositional environments, ranging from open marine to continental settings, and these facies repeat vertically from sequence to sequence. The trace-fossils can thus be studied at a facies-by-facies, sequence-by-sequence level. This analysis shows that evolution was the primary control on the order of first appearances of trace-fossil taxa in unstressed, open-marine environments. In ecologically stressed environments, such as prodelta or coastal-lagoon settings, this evolutionary signal is blurred by a significant environmental control. However, the main trace fossils used in biostratigraphy show a broad environmental tolerance, indicating that they are reliable for correlation in the basal Cambrian. Integrated research approaches such as this have great potential for unravelling outstanding questions surrounding the Cambrian explosion.

– Dr. Robert MacNaughton

Dr. MacNaughton may be contacted at:
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3303 - 33 Street NW Calgary, AB T2L 2A7
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E-mail: **romacnau@NRCan.gc.ca**

November 17, 2000
The Alberta Bonebed Project: An Update, with Dr. David Eberth, Royal Tyrrell Museum of Palæontology, Drumheller.

Abstract

Because they provide a window through which we observe biology, behaviour, and ecology of extinct organisms, massed accumulations of vertebrate fossils known as bonebeds—such as the immense dinosaur bonebeds of the Western Interior of North America—fire the imaginations of professionals and laymen alike. Every bonebed, regardless of origin, is a potentially important source of palæobiological and palæoenvironmental data.

Bonebeds can be categorized and classified in numerous ways including taxonomic content, degree of taxonomic diversity, palæoenvironmental setting, facies associations, and size of elements to name a few. Bonebeds that are strongly dominated by large fossil elements and fragments from one kind of animal are often referred to as low diversity, monospecific, monogeneric, paucitaxic, or monotaxic (e.g., the ceratopsian bonebeds of the Cretaceous of southern Alberta, Montana, and Texas). At the other end of the spectrum, bonebeds comprising large fossils from a large diversity of forms are referred to as high diversity, multispecific, multigeneric, or multitaxic. High diversity bonebeds that are dominated by small fossils and fossil fragments, 5 cm or less in maximum dimension, are often referred to as vertebrate microfossil sites. Vertebrate microfossil sites are usually more easily and cost-efficiently sampled, and thus more commonly studied than sites that yield large elements.

Low taxonomic diversity bonebeds often provide unique opportunities to develop an understanding of behaviour and demographic profiles in populations of long-extinct forms. For example, data from the numerous ceratopsid bonebeds in the Western Interior are the basis of current interpretations that (1) some ceratopsid taxa moved and lived in groups or herds during, at least, some parts of the year (2) ceratopsid herds in southern Alberta comprised thousands of individuals, (3) during the Late Cretaceous, portions of the Western Interior coastal and fluvial plain were subjected to hurricane-scale storms, or times of drought, and (4) storm- and drought-related mortality events can be recorded in the rock record. Because they are a source of palæobiological and ecological information they also tend to be a source controversy. For example the question of dinosaur growth rates among herding dinosaurs has recently brought into question. High diversity, large-fossil bonebeds and vertebrate microfossil sites typically provide less information about behaviours and demographics than do their low diversity counterparts but they are still vastly important sources of palæofaunal data, and they provide important taphonomic insight into death events, bone modification, concentrating mechanisms, and time resolution. Most recently, we have begun to study two paucitaxic bonebeds, one in Alberta and the other in Argentina, each of which yields the remains of a single taxon of carnivorous dinosaur. Data from these sites may suggest packing behaviour.

From the above considerations it is clear that bonebeds can provide important insights into the nature of ancient ecosystems. Moreover, bonebeds can provide novel insights into geological processes. For example,in studies of vertebrate microfossil assemblages stratigraphic and palæogeographic differences in the bonebed/facies associations in the Campanian nonmarine succession of Alberta and Montana have been documented that relate to changes in tectonic regime, depositional environments, climate, and sequence stratigraphic history.

– Dr. David Eberth ❑

Giant Footprints in Stone

by Samuel Richter

Vern Johnson ran his calloused right hand through his short grey hair. The "human-like" footprints mixed in with tridactyl tracks in Cretaceous limestone had him puzzled. This visit to the Dinosaur Flats part of a private ranch southwest of Fort Worth, near Glen Rose, Texas, was proving most interesting.

The raised ridge outline of a human-like footprint looked like very stiff clay had been forced out from under a sandal. He placed his size 12 right hiking boot into a footprint. The space between the outer edge of his boot and the print outline was surprisingly even. The disturbing thing was the flatness of the imprint. No human-like signs of a moving person leaving a "heel-strike" impact as the foot is placed down, no ball of the foot depression as weight is transferred from heel to toe, and no "push-off" toe marks from the force of moving forward. Whatever made these prints remains a contentious mystery.

Using the proportions of present-day people, the 38 cm long print could be made by someone 2.5 metres tall. The 55 cm print could be from someone 3.5 metres tall. Pottery clay shrinks from 5 to 15 percent when drying, without cracking, so that the actual size of these prints when made was even bigger; 55 cm could be nearer 61 cm. Scaling up today's humans to these sizes has some serious handicaps. Robert Wardlow, of the U.S., wore 47 cm-long shoes at the age of 22. In 1940, he died of a combination of flu and an infection from a leg brace injury. He was 2.7 metres tall, still growing at the time and weighed 198 kg. (1)

Near a "human" print at Dinosaur Flats is a cross-section through a tridactyl print, showing a superb example of soil compaction. Air and water need to be forced out of the soil, increasing its density, until it will support the weight put on it. The foot had sunk into the almost dry clay only a short distance but the compressed clay under it is evident. Radiating away from this are thin layers of clay which have been slightly separated from each other and bent downwards at the print by the compaction. A cross section cut along the side of a "human" footprint wouldn't destroy the print but could show if soil compaction is present, meaning it was made by something heavy.

These raised ridge footprints are not the same as the elongated "man-prints" of the Paluxy River. Glen J. Kuban published his conclusion in 1986 that the prints in the Paluxy were made by dinosaurs. The Paluxy prints have a long history of being enhanced to make them look more human.

Stephen Jay Gould, in "Sizing Up Human Intelligence" (*Physical Anthropology* 96/97, p. 150–51), writes:

"Our skills and behaviour are finely attuned to our size. We could not be twice as tall as we are, for the kinetic energy of a fall would then be 16 to 32 times as great, and our sheer weight (increased eightfold,) would be more than our legs could support. Human giants of eight to nine feet have either died young or been crippled early by failure of joints and bones. At half our size, we could not wield a club with sufficient force to hunt large animals (for kinetic energy would decrease 16 to 32 fold); we could not impart sufficient momentum to spears and arrows; we could not cut or split wood with primitive tools or mine minerals with picks and chisels. Since these all were essential activities in our historical development, we must conclude that the path of our evolution could only have been followed by a creature very close to our size. I do not argue that we inhabit the best of all possible worlds, only that our size has limited our activities and, to a great extent, shaped our evolution."

Increased size introduces changes that are not always simple and proportional. Doubling the height of an animal while retaining the same body proportions is accompanied by an increase in body mass to eight times, while the cross-sectional area of leg bone increases by a factor of only four (height squared). This leaves the leg bones weak, undersized, and prone to breaking. The study of the consequences of a change in size is so important to engineering, that "Scaling" is considered a separate discipline. The bones of a large animal are proportionately heavier than those of a small animal. The diameter of the leg bones of a larger animal are given a disproportionate increase in size to function without failure. The reason is simple: the bones must be able to support the active weight of the larger animal, which means increasing the leg bone size with the third power of the linear dimensions. An apatosaur at 27 tonnes, and a brachiosaur at 45 tonnes, have some common characteristics, but each had the bones that were appropriate-

ly sized for them to function well.

Since 1984, a number of gigantic human-like pelvic bones have been found in China. They are believed to be over 200,000 years old. Researchers say that in comparison, human bones of today are like those of "puny pygmies." Southeast Asia has *Gigantopithecus giganteus* from about 5 million years ago and *Gigantopithecus blacki* from 400,000 years ago. E. L. Simons, in 1970, estimated *G. blacki* to have been 2.7 metres tall and to have weighed about 270 kg. Ciochon, in 1990, estimated *G. blacki* to be 3 metres tall and to weigh 540 kg. Definitely King Kong sized, but no big footprints have been found.

During the time of Egyptian Pharaohs, the land north of Egypt was noted for tribes of giants. The most famous was Goliath, from the tribe of Anikim, (meaning "long necked") who stood 3 metres tall. A muscular mercenary warrior, he wore over 70 kg of bronze body armour, good against close-range sword and spear attacks. An assistant carried his shield and spear to battle. His stabbing spear had an iron spear-point weighing 8 kg. However, as a close-quarter specialist using sword, stabbing spear and battle axe, he did not recognize that from a distance David could sling a fast moving rock into his forehead, which he had left unprotected. When he crashed unconscious to the ground, David took Goliath's sword and severed his head. As was the custom, David carried the sword and head away as trophies.

Gigantic King Og of Bashan of the Rephaim tribe, slept in a really "King Sized" iron bed: 4 metres long and 1.8 metres wide. Fertile volcanic soil made the country of Bashan the "Breadbasket of the East." It followed the east side of the Upper Jordan Valley for about 65 km, including the Golan Heights, almost to Damascus. King Og ruled over 60 cities. Being a king was perilous: about 1400 B.C., King Og was murdered. His iron bed was then put on public display (2).

These races of Neanderthal-like giants did not come from a line of scaled up present-day humans. They were properly designed for their size and function. A crashing fall would be a non-event, as animals are soft and squishy, not glass-brittle. Big football players slammed onto a hard surface, like frozen ground, quickly get up and continue playing. Col. Strapp, with his rocket sled, showed that the human body can take enormous stresses safely. People who have learned to smash bricks and boards with their bare hands show that even these high stresses are tolerable.

A short distance from Dinosaur Flats is Dinosaur Valley State Park, and the the Paluxy River trackways. Billy Paul's 4x4 splashed through the water of the Paluxy River, a tributary of the Brazos River. Vern was getting a lift to some exposed tracks on the dry side of the river. They stopped on the river bank and as they got out of the 4x4, a herd of Texas longhorn cattle, watching intently from about ninety metres away, immediately turned as one, stepped into the trees, and instantly vanished. Billy Paul had raised longhorns before becoming boss at Dinosaur Valley State Park. He said this is one of their famous characteristics. Longhorns are inherently suspicious of everything and are tough to find and round up. They are survivors.

After showing Vern what poison ivy and stinging nettles look like, he and Vern carefully made their way down to the driest part of the river bottom. The fossil prints are in a Cretaceous limestone formation, the Glen Rose Formation, dated to about 115 to 105 million years ago. This formation outcrops over much of central Texas, the result of many rises and falls of Comanchean seas. Clay can settle out only if the water is still for some time, like in a tidal flat of Glen Rose Bay. There are many exposures and some have tracks. Vern had been on the F6 Texas ranch of David Akers, where local tridactyl tracks had been used very effectively for walkways and made into interesting patio stones.

Something strange about those rear sauropod footprints caught Vern's attention.

The Park Interpretive Center has fossil tracks plus the fossil foot bones that made them on display. Three types of tracks are seen in the river bed. Most are three toed theropod prints, with long, thin toes and sharp claws; length to 51 cm, width to 43 cm, stride length of 115 to 165 cm. These are believed to be from *Acrocanthosaurus*, a 6 to 9 metre-long, two legged carnosaur. There are some three toed ornithopod footprints with thick, blunt toes, up to 61 cm long, likely from *Iguanodon*. Some sauropod tracks, rear foot prints 102 cm long by 61 cm wide are likely from a sauropod 9 to 15 metres long, with a relatively short neck and tail, known as *Pleurocoelus* (3).

Something strange about those rear sauropod footprints caught Vern's attention. Looking closely at the left rear print, he could see it hadn't landed evenly in the mud! The inside of the print on its right side—the body side—was depressed at least 30 cm deep into the mud; but the left side, 60 cm away, had barely sunk into the mud surface. The right foot had the same characteristic, with the imprint opposite to the left. These sauropods walked on their toes, like an elephant, with the fibrous heel pad absorbing some of the landing shock of the foot. The big toe is seen pressed deep into the mud at the front of the rear prints, but the little toe is just into the mud. This means the animal normally walked on dry ground with the feet landing well under its body, like a house cat. Each back foot would then land flat on the ground, with even sole pressure across the foot. When going through the mud it had spread its rear legs more widely apart (wide-tracking) for more stability. If it walked this way on hard ground, only the big toe would be supporting all its weight. Stepping on a sharp rock could result in a serious injury to the big toe.

Time for some lunch. Billy Paul drove back through the Paluxy and they returned to the Park Interpretive Center, joining the *Dinotour '95* group having a picnic lunch next to two life-sized fibreglass dinosaurs. The 21 metre long, light green *Apatosaurus* and the 13.5 metre long, brown *T. rex* were from Sinclair Oil's 1964 New York World's Fair dinosaur exhibit. Atlantic Richfield acquired these and in 1970 donated them to the Park. After enjoying the picnic lunch, Vern left for the Fort Worth Museum of Science and History, to look at more fossils.

References:

(1), (2) Encylopædia Britannica.
(3) Farlow, James O. "The Dinosaurs of Dinosaur Valley State Park" *in*: Dinosaur Valley State Park. Texas Parks and Wildlife. ❑

Bulletin on CD-ROM

Back issues of the APS *Bulletin* are now available to **members only** on a single CD-ROM disc. The disc includes all 60 issues published to date, from March 1986 to the current issue, in Abobe Acrobat™ format, readable by Windows (95 or newer) and Macintosh systems. Bulletins may be viewed onscreen and/or printed, and are searchable. Cost is $25.00 each, plus P&H. All proceeds to the Society. Contact the Editor (see Page 1). ❑

SVP 2000 Conference: Mexico City

by Mona Marsovsky

The Society of Vertebrate Paleontology held their 60th Annual Meeting on October 25–28, 2000 in Mexico City. A total of 492 palæontologists from all over the world attended. Wednesday's symposia included: "*Missing Data—Practical Problems and Theoretical Issues,*" "*Preparators' Symposium,*" "*The Great American Biotic Interchange*" (Miocene) and "*The Paleontology of Lower Vertebrates in the Twentieth Century: National and International.*" On the following three days, ten half-day technical sessions were presented in two simultaneous streams. Over 150 posters were presented.

The auction in support of SVP's scholarship funds netted US$16,600 as a result of exceedingly generous bids for most items. APS member **Mike Skrepnick** won the honourable mention for the paintings category of the Artist award for his painting of a tyrannosaur and its feathered baby.

Like all SVP conferences, this meeting also featured two or three day pre- and post-conference field trips, which included:

1. Selected late Cenozoic vertebrate localities in the states of Hidalgo and Guanajuato, Mexico (Miocene/Pliocene/Pleistocene).
2. Geology and vertebrate palæontology of southern Puebla-central Oaxaca region, Southeastern Mexico (Jurassic, Cretaceous, Tertiary plus Mt. Alban archæological site).
3. Palæontological highlights of the Mixteca Poblana in Central Mexico (Cretaceous Tlayua Quarry with preservation like the Solenhofen limestones; and a Pleistocene trackway).
4. The post-conference field trip was "Cretaceous dinosaurs from the State of Coahuila, Mexico."

At the post-conference trip, APS president **Vaclav Marsovsky** found the partial skeleton of a small crocodile and was written up in four articles in three separate local newspapers! These newspaper articles embellished the truth a bit (the crocodile became a "baby" and Vaclav was promoted

to "Doctor"—we called it a "field promotion"). The field trip was also filmed by the *Discovery Channel* to include in their program "When Dinosaurs Roamed America." Dr. Don Brinkman and Dr. David Eberth from the Royal Tyrrell Museum were interviewed. Watch for this program in a year or two.

Next year's SVP conference will be held October 3–6, 2001, in Bozeman, Montana. Members and non-members are invited to attend. Contact Vaclav or Mona Marsovsky or visit the website **www.vert.org** for details. ❑

Fossils in the News

Calgary Herald, August 22, 2000

Dinosaur footprints point to Italy-Africa connection

ROME—The discovery of a variety of Cretaceous (130-million-year-old) dinosaur footprints in southern Italy has cast doubt on palæogeographic interpretations that Italy was an archipelago of islands during Cretaceous time. The dinosaur footprints, found in chalky limestone at a quarry in the heel of Italy's "boot," are between 15 cm and 38 cm in length. Different prints have been attributed to both carnivorous and herbivorous dinosaurs, supposedly including *Iguanodon*. Geologist Dr. Alfonso Bosellini of the University of Ferrara, believes that the profusion of prints indicates that southern Italy was not an island chain, but was actually part of northern Africa, where similar footprints have been found.

The Globe and Mail, October 5, 2000

B.C. lake life form excites NASA

CACHE CREEK, British Columbia—Scuba divers exploring the depths of Pavilion Lake, in BC's interior, west of Cache Creek, have found a weird growth on the steep walls of the lake, that has aroused the interest of NASA exobiologists. Dr. John Bird, engineering science professor at Simon Fraser University, thinks that the strange coral-like growths may be living stromatolites, which are well-known microbial fossils in rocks as old as the Precambrian. Apparently there is some uncertainty as to whether these newly discovered growths were formed by the microbes, or if they were inorganic chemical growths that have been colonized by microbes. The discovery was reported in the October 5 issue of *Nature*. The interest by NASA scientists stems from speculation that if similar growths were someday found in dry lake beds on Mars, it could point strongly to the presence of once-living organisms on the red planet.

Calgary Herald, October 6, 2000

Fossil may be mud

CHARLOTTE, North Carolina—Detractors (notably Dr. Larry Martin of the University of Kansas) are casting aspersions on the recent announcement of the discovery of a fossilized dinosaur heart. [*see* Fossils in the News, *September 2000, p. 7 –ed.*] Though palæontologists at North Carolina State University maintain that the dark brown lump, found in the ribcage of a therizinosaur dubbed "Willo," is a fossilized heart, Dr. Martin and fellow skeptics suggest that it's "more likely a clump of Jurassic mud."

Calgary Herald, October 11, 2000

Scientists hit motherlode of T-Rex bones

HELL CREEK, Montana—Palæontologist Jack Horner and his crew from the Museum of the Rockies, in Bozeman, Montana, have announced the discovery of no fewer than five *T. rex* skeletons in the Hell Creek badlands, near the Fort Peck Reservoir. The skeletons, found between June and September of this year, include remains of possibly the largest specimen yet discovered—bigger than Chicago's infamous "Sue". Portions of three specimens and most of the fourth have been excavated. The balance will be recovered next year.

Calgary Herald, October 19, 2000

It's alive! Ancient bacteria revived

WEST CHESTER, Pennsylvania—Biologists at West Chester University have discovered and revived 250-million-year-old bacteria. The bacteria, genetically very similar to modern salt-loving bacilli, were found in a salt crystal recovered from Permian-aged rocks in an underground shaft in New Mexico. Under immaculately sterile lab conditions, Drs. Russell Vreeland and William Rosenzweig drilled into the salt crystal and extracted the contents of a brine inclusion. The contents were placed in a nutrient medium and incubated for three months, by which time the bacteria had revived and multiplied.

The previous record for ancient bacteria revival was 25-million-year-old organisms from the gut of an amber-encased bee. Vreeland hopes to find even older living bacteria by searching ancient salt deposits in other parts of the world.

National Post, November 3, 2000

World's first biped runs out of the past

GERMANY—*Eudibamus cursoris*, a small, lizard-like reptile recovered from 290-million-year-old (Permian) rocks, is being proclaimed as the world's first bipedal animal. The reptile's remains, excavated from a German quarry in 1993, were sent to University of Toronto palæontologist Robert Reisz, an expert on fossil reptiles. The specimen took two years to prepare. When its anatomy was finally revealed, *Eudibamus*' hind legs were seen to be much larger than its forelegs, indicating that it probably ran on two legs, likely to evade predators—it was apparently an herbivorous reptile. The discovery is seen as further evidence that bipedalism evolved independently in several lines of animals; including dinosaurs and birds, humans, and some modern small reptiles such as the "Jesus Christ lizard" of Central America, which can run across the surface of water on its hind legs to elude enemies. *Eudibamus* belonged to a little-known group of early reptiles called bolosaurids, which died out at the end of the Permian Period. The German quarry where *Eudibamus* was found also contains a number of other fossil animals, including both predators—including the sail-backed *Dimetrodon*—and herbivores. Dr. Reisz and colleagues continue to work at the locality.

National Post, October 14, 2000

"World's biggest" dinosaur opens

DRUMHELLER—For a $2.00 admission fee, thrill-seekers can now climb up the inside of a quadruple-size model of a *Tyrannosaurus rex*. The eight-storey edifice, constructed of steel and fibreglass, was built by a Calgary amusements company with advice from palæontologists at the Tyrrell Museum. After scaling the 106 steps up to its head, visitors can admire the badlands view through the monster's gaping jaws.

Calgary Herald, November 10, 2000

New dino fossils found in Italy

MILAN—Palæontologists in northern Italy have announced the discovery of a new species of theropod dinosaur, tentatively dubbed a "saltriosaur" (named for the Saltrio area, where it was excavated). Bones of the animal were found in 1996, in a limestone quarry north of Milan, near the Swiss border. The theropod, which resembled the North American *Allosaurus*, was about eight metres long, and would have weighed almost one tonne. It lived during the Early Jurassic Period, about 200 million years ago.

Calgary Herald, November 4, 2000

Oilsands a rich find for U of C student

CALGARY—A partnership between the University of Calgary, Syncrude Canada Ltd., and the Royal Tyrrell Museum has been formed to study the fossils of Cretaceous marine reptiles recovered over the past several years from the commercially mined deposits of tar sand near Fort McMurray, Alberta. An as-yet unnamed graduate student will be chosen to work on the project, under the direction of U of C zoology professor Dr. Anthony Russell, and Dr. Elizabeth (Betsy) Nicholls of the Tyrrell Museum. Work on the research project is set to commence early in 2001.

The grapevine

Canyon Creek road closed to vehicles

KANANASKIS COUNTRY, Alberta—Now that the public uproar of three years ago has faded away [*see* Bulletin*, September 1997, p. 8, and December 1997, p. 6*], forestry officials have quietly gated the Canyon Creek road, the only practical means of entry to the popular Canyon Creek and Moose Dome valleys, west of Bragg Creek. Access now requires a mountain bike, or a five kilometre hike up the road.

National Geographic, November, 2000

Betsy Nicholls awarded Rolex prize

GENEVA, Switzerland—Tyrrell Museum marine reptile specialist Dr. Elizabeth (Betsy) Nicholls has been honoured with the prestigious Rolex Award for her work on the giant ichthyosaur skeleton discovered in northern British Columbia [*see* Bulletin, *Sept. 1999, p. 8; Dec. 1998, p. 4*]. The Swiss watchmaker instituted the award in 1976, "…to honor men and women who show an exceptional spirit of enterprise and who are undertaking projects that will touch and enrich the lives of others."

The Rolex advertising supplement goes on to say that: "Winners are given the recognition and support they need to turn their dreams into practical, working projects."

National Geographic, October, 2000

Flogging a dead *Archæoraptor*

WASHINGTON, D.C.—Sorting through the blizzard of news items generated by the now notorious case of the phony *Archæoraptor* specimen from China, your editor recommends that the best explanation by far is the analysis by investigative reporter Lewis M. Simons on pages 128–132 of the October *Geographic*. ❑

Reviews

Romancing the Bone by Jack McClintock, *Discover* magazine, June 2000.

This is an article about one woman who turned the world of palæontology on its ear.

It starts off as an elderly woman ventures into the deep forest of New Zealand in search of fossils, as she has been doing for 27 years. Her name is Joan Wiffen, and she is a 78 year-old amateur palæontologist nicknamed "Dragon Lady" by professionals.

An ordinary housewife was all she had ever been; she cleaned and cooked and took care of her family. She only learned about dinosaurs when she bought books for her children. Joan and her family were members of a rock club; they all enjoyed collecting precious stones, until one day she bought a trilobite from a little town store—then she was captivated. She started off fossil hunting (collecting belemnites and ammonites) with the enthusiasm of a child; she wanted to know all she could, and sought as much information as possible from sources as diverse as mail-order books and encyclopaedias.

Apparently, there had been fossil evidence of forests in the Jurassic and marine reptiles as well. So Joan naturally assumed there had to have been dinosaurs. She had no idea that she wasn't supposed to find dinosaurs in New Zealand, but she did. She found an old, beat-up geological map in a toy shop and that's when it began.

Her first important find was a mosasaur; since then she has collected four new species. Then in 1975 she found her first dinosaur bone: a vertebra from a smaller version of *T. rex*. Along with her theropod discovery, in 1988 Joan found an ankylosaur rib bone. Joan's other fossil discoveries include: a wing bone of a pterosaur, plesiosaur and mosasaur skulls, a sauropod rib, a hipbone of a dryosaur, and a carnosaur toe bone.

The fossils that Mrs. Wiffen has found are not as easily collected as in Alberta. They are found in boulders in the Mangahouanga stream bed, the boulders ranging in size from as small as oranges to as large as cars. Only about one stone in fifty contains fossils. There is rarely anything close to complete—mostly bits and pieces, the rare exceptions being the nearly complete skulls of a plesiosaur and a mosasaur.

Geologists theorize that New Zealand was once part of the supercontinent called Gondwana before it broke away. Apparently, palæontologists assumed that New Zealand was too small and too remote to have had large reptile predators. They thought dinosaur existence was impossible because of the land sinking and reemerging many times during its unstable history. Joan's discoveries have raised more questions than answers. How could so many large dinosaurs live on such a small island? How did they end up on this island in the first place? Were some of these animals on the island before it broke away from Gondwana?

Some professional palæontologists have discredited her discoveries, saying that these bones must have washed up on shore from Australia. But most of the scientific community has had no choice but to agree that dinosaurs roamed on the tiny island of New Zealand.

According to Joan, professionals probably found it hard to believe that it was an elderly housewife who made these amazing discoveries. What makes Mrs. Wiffen so impressive is that she has never received a research grant and has paid for all her research out of her own pocket. She has written fourteen articles on the animals that she has found, covering topics from bone histology to fossil fish. It will be interesting to see what fossil finds she makes in the future.

– Wendy Morrison

Which came onto land first—the fungi or the plants? *Quirks and Quarks*, CBC Radio interview, Nov. 18, 2000

Host Bob MacDonald interviewed Dr. Meredith Blackwell from Louisiana State University about new fossil evidence that suggests that fungi may have played a role in the coming of plants out of the water on to land.

Previous fossil evidence indicates that plants came out of the water about 460 million years ago. These plants, however, were puny and had no roots to take up nutrients and no circulatory system. Early land plants were the bryophytes, of which liverworts and mosses are examples. Researchers have been puzzled about how the plants invaded land—land where the soil did not have much, if any, organic material.

There may now be an answer to this question, based on the recent discovery of a fossil fungus from the same time period (460 million years ago: Ordovician). The fossil fungus was recognized by its diagnostic morphology. (Unfortunately the interview was not long enough to go into what that morphology was).

Now that scientists know there were fungi at the same time the plants were coming out of the water, they have formulated a hypothesis speculating that there may have been a symbiotic relationship between fungi and plants. Plants would best be able to invade the land if they were associated with fungi: the plants would get water and phosphorous out of this arrangement, and the fungus would get carbon that the plant produces by photosynthesis.

– Vaclav Marsovsky

Dinosaur Impressions: Postcards from a Palæontologist by Philippe Taquet, translated by Kevin Padian. Cambridge University Press, 1998. ISBN 0-521-58372-1. CDN$28.00

Dr. Taquet is the former director of the National Museum of Natural History in Paris. At age 24 he said "yes" to the question "do you take palæontology as your spouse and promise to serve her faithfully for the rest of your days?" This resulted in about thirty years of work, taking him to Niger in Africa, Morocco, the Gobi Desert, Laos, North America and Europe. He arranged financing with politicians and obtained personnel for French dinosaur expeditions to several remote but productive areas.

Philippe Taquet writes mostly in French but he is very well read in English. This book is a firsthand account of the expeditions, written from a uniquely thoughtful European perspective on dinosaur theories and reptilian relationships, along with wry humour and many lively anecdotes.

Each chapter gives the feeling of having received a postcard ("Wish you were here!") as he describes the unusual events that happened at each dig. The last chapter was written with Dr. Kevin Padian of Berkeley, California, bringing the theories up to 1998.

The bibliography at the back contains 170 references. I enjoyed the book as did several other palæontologists, who said: "A rich global dinosaur hunt"; "New and varied places far from the beaten path"; "Elegantly translated"; "Lively, vivid, bracingly enthusiastic."

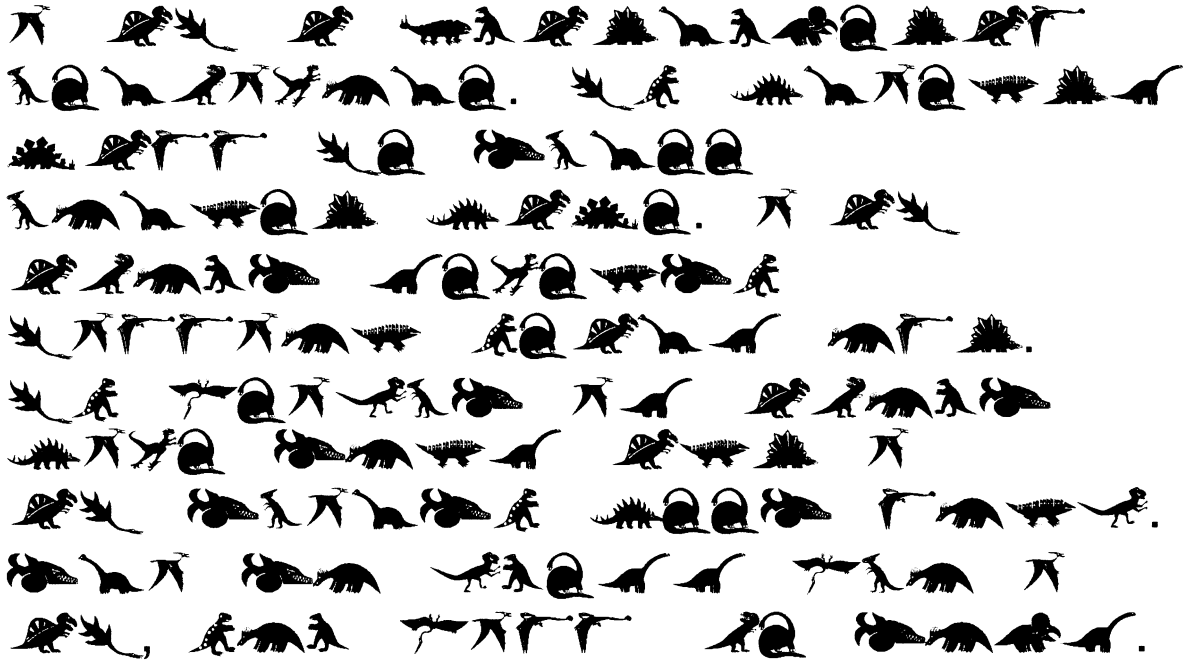
Thanks to Philip Benham for saving me $28.

– Les Adler ❑

CRYPTOSAURS by Dan Quinsey

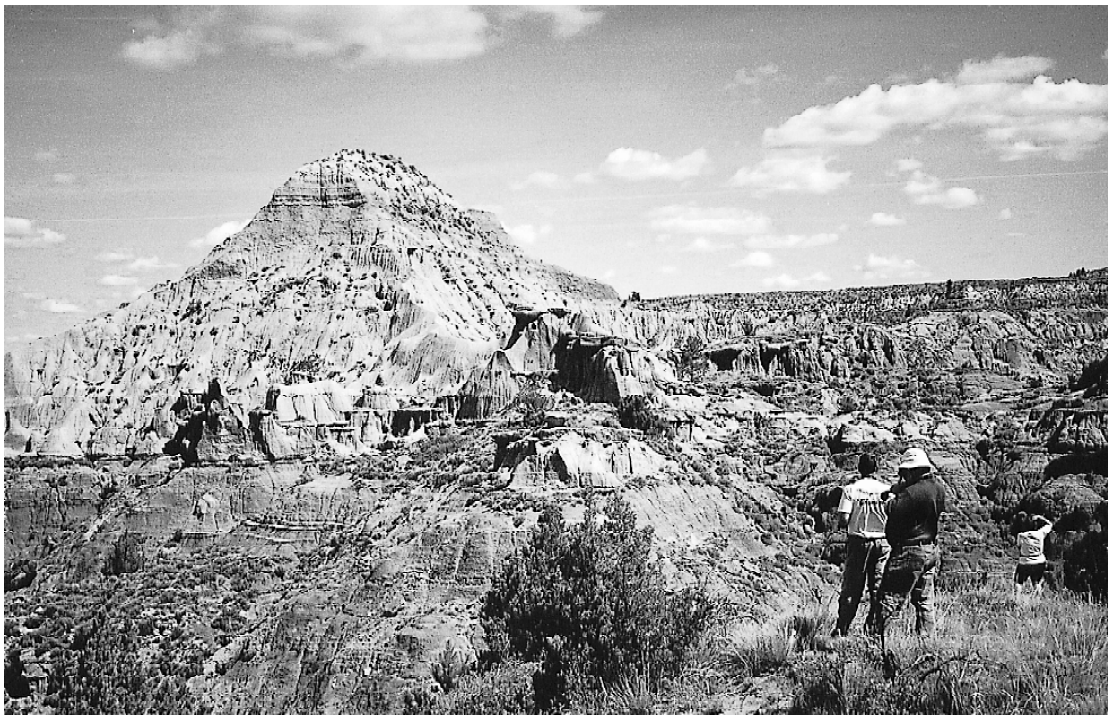
The object of Cryptosaurs is to decode the message below and find the answer using the clues provided. Each letter of the alphabet has been replaced with a "dino." Identical "dinos" represent the same letter…solution in the next Bulletin!

Clue: "SAUR" = 



Field Trips, Summer 2000!

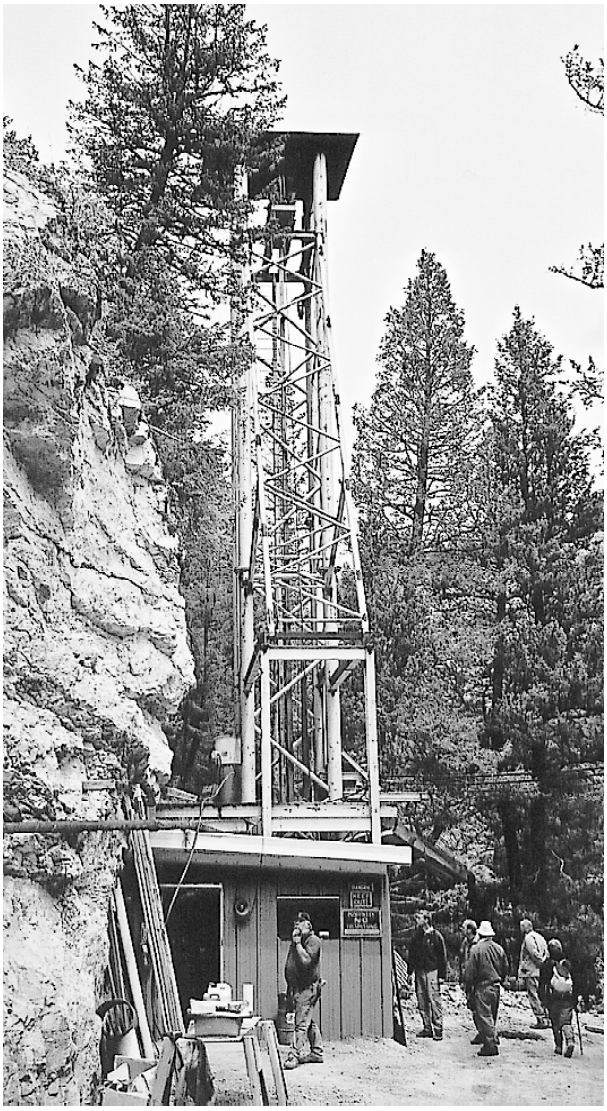
— photos by Keith Mychaluk —



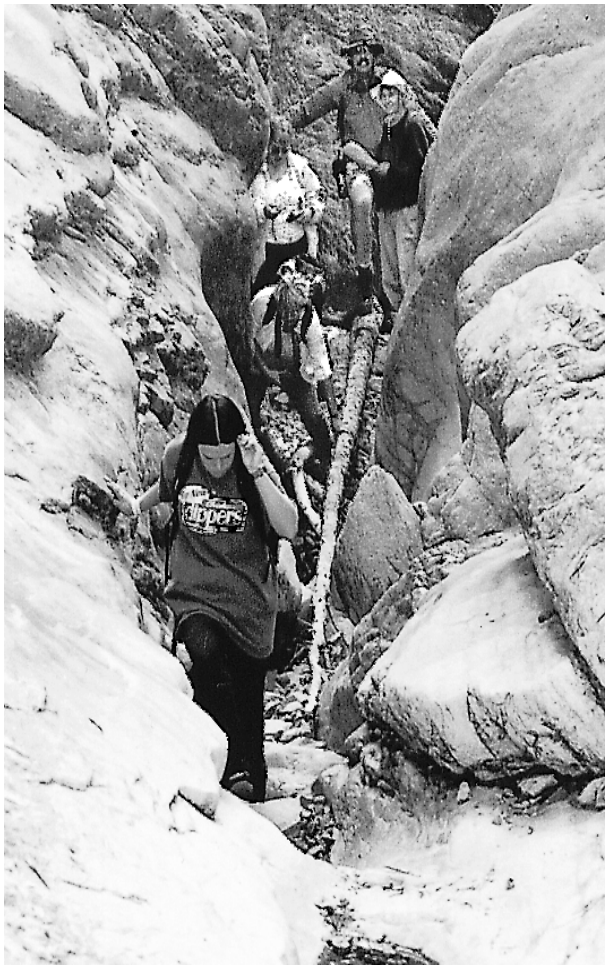
June—Upper Cretaceous Hell Creek Fm. badlands at Makoshika State Park, Montana

An orthocone cephalopod, Palliser Formation (Upper Devonian), Jura Creek—August

A drizzly day on the Mt. Stephen upper trilobite beds—August



Vortex Sapphire Mine, Yogo Gulch, Montana—June



August—APS Everest team attacks the notorious Khumbu icefall…Not!! Actually, Jura Creek canyon, near Exshaw, Alberta

ALBERTA PALÆONTOLOGICAL SOCIETY

Fifth Annual Symposium

in conjunction with the Mount Royal College Geology Department

Saturday, January 20, 2001, 10:00 A.M. – 4:00 P.M.

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

SPEAKERS

10:00 A.M. Dr. Len Hills, University of Calgary: **Ice Age Mammals and Ancient Man: The St. Mary's Site**

10:30 A.M. Darren Tanke, Royal Tyrrell Museum: **Historical Archaeology: Solving the Mystery Quarries of Drumheller and Dinosaur Provincial Park, Alberta, Canada**

11:00 A.M. Richard McCrea, University of Alberta: **The Distribution of Vertebrate Ichnotaxa from Lower Cretaceous (Albian) Gates Formation Tracksites near Grande Cache, Alberta: Implications for Habitat Preference and Functional Pedal Morphology**

11:30 A.M. Dr. Brian Chatterton, University of Alberta: **Cryptic Behaviour of Trilobites**

12:00 P.M. Lisa Holmstrom, Yoho-Burgess Shale Foundation: **The Burgess Shale and Educational Opportunities**

12:30 P.M. Lunch Break

1:00 P.M. Dr. Philip Currie, Royal Tyrrell Museum: **New Dinosaur Discoveries**

WORKSHOP

2:00 – 5:00 P.M. Sculptor Brian Cooley and Mary Ann Wilson, authors of *Make-A-Saurus* will lead a **dinosaur-modelling workshop** designed for families. The workshop has a limited number of seats—please phone (number below) or email to reserve a spot. Cost for the workshop is **$15** per model to cover material costs.

POSTER DISPLAY

- 10:00 A.M. to 4:00 P.M. display of posters on palæontological topics by Western Canadian Universities, Museums, the Geological Survey of Canada, local businesses, natural history clubs, artists and amateur palæontologists.
- APS will have a fossil identification booth set up so that the general public can bring specimens in and ask questions.

INFORMATION

For more information, or to reserve a spot in the modelling workshop, please contact:
Philip Benham, APS Technical Program Director, phone: (403) 691-3343
email: **programs@albertapaleo.org** APS website: **www.albertapaleo.org**

Free Admission — Public Welcome!