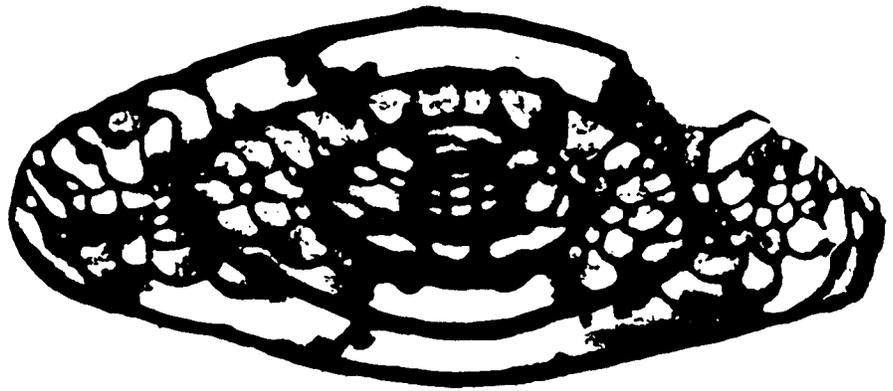
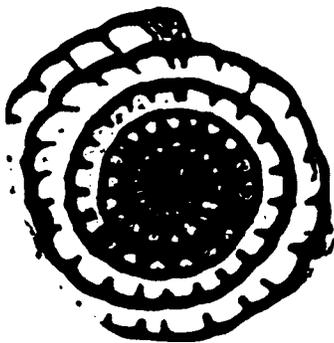
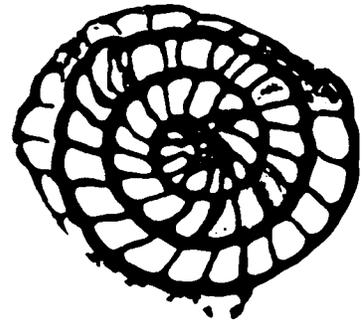
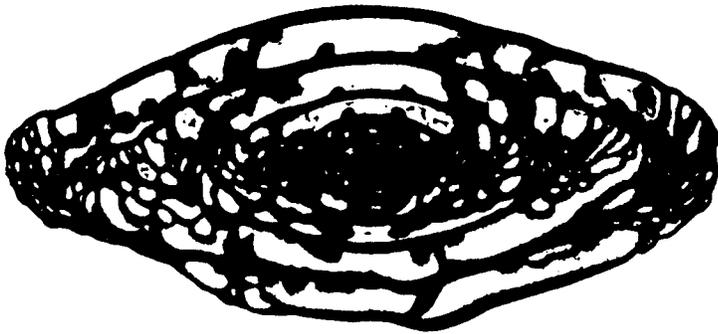


BULLETIN

VOLUME 9 NUMBER 2

JUNE 1994



ALBERTA PALAEOLOGICAL SOCIETY

OFFICERS

President	Les Adler	289-9972	Program Coordinator	Holger Hartmaier	938-5941
Vice-President	Peter Meyer	289-4135	Curator	Harvey Negrich	249-4497
Treasurer	Roger Arthurs	279-5966	Librarian	Gerry Morgan	241-0963
Secretary	Don Sabo	249-4497	Field Trip Coordinator	Les Fazekas	248-7245
Past-President	Percy Strong	242-4735	Directors at Large	Dr. David Mundy	281-3668
DIRECTORS				Wayne Braunberger	278-5154
Editor	Howard Allen	274-1858	APAC† Representative	Don Sabo	249-4497
Membership	Vaclav Marsovsky	547-0182			

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.

Single membership	\$10.00 annually
Family or Institution	\$15.00 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.

Society Mailing Address:	Material for <i>Bulletin</i> :
Alberta Palaeontological Society	Howard Allen, Editor, APS
P.O. Box 35111, Sarcee Postal Outlet	7828 Hunterslea Crescent, N.W.
Calgary, Alberta, Canada T3E 7C7	Calgary, Alberta, Canada T2K 4M2

Requests for missing issues of the *Bulletin* should be addressed to the editor.

NOTICE: Readers are advised that opinions expressed in the articles are those of the author and do not necessarily reflect the viewpoint of the Society. Except for articles marked "Copyright ©," reprinting of articles by exchange bulletins is permitted, as long as appropriate credit is given.

†APAC is the Alberta Palaeontological Advisory Committee

UPCOMING APS MEETINGS

Meetings take place at **7:30 p.m.**, in Room **B108**,
Mount Royal College: 4825 Richard Way SW, Calgary, Alberta

Friday, September 16—Program to be announced: bring in your finds and photos from the summer collecting season!

ON THE COVER: Thin-sections of *Triticites* sp., a Pennsylvanian fusulinid foraminiferan. Sectioning is the only reliable way of identifying these fossils, generally the size of a grain of rice, as most types appear similar externally. Clockwise from top: longitudinal section (parallel to long-axis, cutting the centre); transverse section (right-angle to long axis, slightly off centre); tangential section (parallel to long axis, but not cutting the centre); transverse section (cutting the centre); another longitudinal section. Colony Creek Shale, Cougar Group; Lake Brownwood, Brown County, Texas. Collected by Harvey Negrich, sectioned and photographed by Howard Allen. All approximately x15.

President's Message

by Les Adler

Due to an unexpected dry spell, several members have already been out collecting fossils, while other members have travelled afar and also collected fossils. The May meeting was concerned with preparations for field trips which are described elsewhere in this *Bulletin*. **Don Sabo** represented members at a meeting of the Alberta Palaeontological Advisory Committee (APAC), while nine members took part in Dinotour 1994, across Southern Alberta and Saskatchewan.

Harvey Negrich, with the assistance of several APS members manned the rock, mineral and fossil identification booth at the Calgary Rock and Lapidary Club Show on April 30 and May 1. Club members **Mr. and Mrs. Wallace** of Temple, Texas came to Calgary for the show. Our membership is approaching 75, with more members coming in from the United States and Southern Canada.

We have made a substantial profit from the sale of T-shirts and purchased our own slide projector. [*which ran perfectly at the May meeting—thanks to Harvey Negrich for getting us a good deal at a recent auction—ed.*]

Please do not feel slighted if I have not thanked you personally for the voluntary assistance you have given our Society; I never have time to thank people individually at the meetings. So thank you everyone for the enthusiastic response you have given to the *Bulletin*, meetings and field trips. □

From the Editor...

by Howard Allen

Now that the collecting season has finally arrived, the annual ritual of trying to find fossil localities is, for many members, well underway. The dog-eared and well-thumbed pages of the various popular collecting guides once again see the light of day. Remember squashing that mosquito between pages 17 and 18, last August down along the Castle River? How about that smudge of chocolate on page 35 ...from the O-Henry bar that melted in your fingers on that scorching July day in 1977 (or was it 1976? or 78?) at the Morrin bridge badlands?

Do those old collecting sites bring back fond memories? They should, since you've probably been to them all half-a-dozen times—you and every other rockhound in the province. Did you find anything interesting last time you were there? Me neither. At least not much, and certainly nothing unexpected, or of very good quality.

Trouble is, any fossil locality that appears in

print has been well picked-over for many years. At best you might find a few new specimens that have weathered out during the spring thaw; but more than likely the guy who was there last Saturday—while you were at the mall buying socks—got the only good one. What are your chances of finding a museum-quality specimen, or an undescribed species? Pretty slim. Of finding another Burgess Shale? Zip. At many of the tired old localities you stand a much better chance of making a fine collection of beer cans or gum-wrappers.

Sounds pretty depressing, doesn't it? What's a collector to do? Give up? Hold her breath until someone publishes *The Complete Fossil-Scrounger's Guide to Alberta—Second Edition*?"

Why not find your own new sites? Now wait. Before you go rolling your eyes and dismissing this suggestion with a sarcastic "yeah...right," keep an open mind and think about it. How do you think all the old sites in the popular rockhound guides got discovered in the first place? By scientists using arcane methods known only to PhD.s? By reading ancient aboriginal texts, written on birch bark or pot-sherds? No. Believe it or not, they were found by Joe Blow, out poking around in some badlands or in a stream bed, or a road-cut, or the base of a cliff, or a mountain ridge. In some cases Mr. Blow *was* a PhD., working for the Geological Survey, but he used no more sophisticated methods than whacking open concretions with a hammer, or stubbing his toe on a fossiliferous boulder.

"Yeah, but all those steam-banks and road cuts and mountain ridges have been checked out already, otherwise they would have appeared in *The Complete Fossil-Scrounger's Guide to Alberta—First Edition!*"

No, they *haven't* been checked out. I know this for a fact.

Just this morning, not three hours before I started writing this editorial, I decided to explore along a creek I (and thousands of other people) have driven across a dozen times before. Within half an hour I found a big chunk of concretionary mudstone packed with beautifully preserved ammonites, of at least four species. This locality does not appear in any collecting guide that I know of.

Seven days ago, I decided to check out a stream valley I'd seen on a topographic map of northwestern Alberta. Within twenty metres of a well-maintained road, I found extensive beds of Cretaceous oysters, and collected a number of near-perfect specimens. These beds also contained the shells of at least one species of mussel and several small clams. I'd never heard of this stream before, let alone seen it in a rockhound guide.

A couple of weeks ago, at another small, unpublished, and unlikely shale outcrop on the bank

of a stream I found a small concretion containing two specimens of one small ammonite species, and a complete specimen of another type I've never seen before, and so far haven't been able to identify.

Several years ago I serendipitously stumbled across some outcrops on a major Alberta river, producing some of my finest specimens of Cretaceous ammonites and pelecypods. I have never seen this site written-up in a guide.

In at least three road-cuts or construction sites in western Alberta that I've bothered to stop at, all exposing the widely occurring Paskapoo Formation (Paleocene), I've found well-preserved fossil leaves. Starting to get the picture?

A beginner's fossil book I read in my childhood contains the aphorism: *Fossils are where you find them**. Though at first reading this remark seemed obvious and somewhat stupid, it stuck in my mind and I eventually realized the truth in it. Fossils aren't confined to specific, long-ago discovered "localities" that are gradually being picked away to nothingness. Fossils are likely to be found, albeit often (but not always) in small quantities, in most outcrops of sedimentary rock you are willing to take the time to explore—and Western Canada is blessed with more square miles of rock outcrop, from Precambrian to Recent, than you can ever hope to explore. Just think of all the stream banks, gullies, mountain slopes and country road cuts that you've driven past, on the way to those picked-over sites listed in the fossil guides!

And don't just beat a path to my door, hoping I'll draw you maps to my own discoveries: I'd be doing you a disservice to send you to spots that I've already been to and removed the nicest specimens from. Better you should find your own, and experience the real thrill of making new—and possibly important—discoveries: after all, isn't that why we go fossil hunting in the first place?

PS: Bring your discoveries to the September meeting...happy hunting!

* I've gone over my old fossil books with a fine-toothed comb looking for this quotation, and I can't find it anywhere...do you recognize it? I'll give a CSPG *Geological Highway Map of Alberta* to the first person who can identify this line. —ed. □

Membership Updates

Keith Mychaluk has returned to Calgary, after completing his MBA degree at Pepperdine University in Los Angeles, CA. Keith remarks that he's glad to be back, and hopes to see everyone during the summer collecting season. Hopefully we'll have a nice summer—for a change—so Keith can maintain that California tan he was still sporting at the May meeting! □

Welcome New Members!

Dennis Kemp, Banff, AB
 Sam Richter, Calgary, AB
 Milt and Mitzi Thaler, Los Angeles, CA
 Cheryl and Marshall Thompson, Calgary, AB
 Kris Vasudevan, Calgary, AB
 Francine Vivent-Stone, Cochrane, AB
 John Zeigler Jr., Wilmington, DE

Material for the Bulletin

Please send material for the *Bulletin* to the editor's address, listed on page 1 (also note the deadline!). Written and graphic material may be submitted in a number of ways:

Pencil/Pen and Paper—handwritten manuscripts are fine; double-spaced typewritten material is best if you feel your handwriting is questionable. For drawings/sketches/artwork, pen-and-ink media reproduces best, but a dark pencil will also do. Halftone material (greys, photos) may need some trial-and-error experiments—call me to discuss.

Fax—call me first, so I can set up my fax modem to receive through my regular number (274-1858). Please use the "best" or "fine" setting on your fax machine or fax modem.

Computer Floppy Disk—3.5" only, any density. Please include a hard-copy printout of your work. **Macintosh**: I can open most popular word processor file formats (MacWrite, Wordperfect, MS Word, Clarisworks, Write Now); if in doubt, also include a copy of the file saved in Text format (choose "Text" or "Plain Text" from the pop-up menu in your "Save As..." dialog box).

IBM Compatible: Save your work in Text or ASCII format (most word processors have a "Save to ASCII" or similar command). For computer graphics formats, please call me.

Modem—I just got a modem that will handle speeds up to 14,400 bps (V.32bis), but I haven't quite figured it out yet! Please call for more info. □

Program Summaries

March 18, 1994: *Geological Structure of the Canadian Rockies, by Gordon Holland*

The speaker for this meeting was Gordon Holland, an experienced retired geologist formerly employed by Imperial Oil in Calgary.

When a person first becomes interested in collecting fossils he finds locations by trial and error; later he finds someone who knows productive locations. Later he finds a geologist who uses geological knowledge to pinpoint locations and save time. Gordon Holland is such a geologist.

Gordon dealt with the route along the Trans-Canada Highway west from Calgary by showing a video to give the experience of travelling by car westwards from Calgary. This way you could see the strata and notice the geological faults. Also there were sets of maps with the geological periods marked in different colours and the major faults clearly delineated. Gordon then related the cross-sections to the theory of tectonic continental drifting. The Pacific Coast of British Columbia is part of an active subduction zone where the ocean rocks are slowly moving eastwards under the North American continent. Cross-sections show the situation 100 million years ago, 50 million years ago, 30 million years ago and the situation today where you have a series of piggy-back thrust faults resting against a gentle syncline. The McConnell Thrust Fault is at the boundary of the Canadian Rockies and the faulted Foothills Belt west of Calgary. The faults appear as arcs in plan view. The Rockies moved eastward along a glide plane about 25 million years ago. For about 22 million years the Rockies were rounded by erosion. Continental glaciers covered the area and then rapid erosion took place resulting in the current dramatic landscape to our west. The high mountains are resistant Palaeozoic limestones while the valleys are in soft Mesozoic shales.

Gordon also described the mineral deposits that may be found in these rocks. The practical result is that you look for corals, crinoids, bryozoans and brachiopods in the mountains and dinosaurs, ammonites and fossil plants usually in the valleys.

—Les Adler

April 22, 1994: *The Canada-China Dinosaur Project, with Dr. Donald Brinkman*

The April meeting featured Dr. Don Brinkman of the Royal Tyrrell Museum of Palaeontology, at Drumheller. Don showed us maps of northern China including portions of Mongolia where he spent a number of summers exploring for fossil dinosaurs and turtles with the Canada-China Dinosaur Project. He described the problems—

climatic, physical, palaeontological and political—which slowed down activities.

We enjoyed the scenery and rock outcrops. His main interest is the evolution of turtles through time and the relationships between various turtle families. Don has collected fossil turtles of the Cretaceous Period in Asia and North America. Comparing turtles and their families with photos and graphs he showed that the spread of turtles during the Cretaceous Period was far more diversified in the later than in the earlier Cretaceous. Examples of past and present turtles may be seen at the Royal Tyrrell Museum and at the museum's Field Station in Dinosaur Provincial Park, northwest of Brooks, Alberta.

—Les Adler □

Dinosaurs on the Internet

by Heather Whitehead

Probably most of you have read or heard about the Internet, a part of the “information highway.” The Internet is a network of networks of linked computers, allowing individuals and educational institutions, businesses and government agencies to communicate and exchange information without long-distance charges or the need for paper or stamps. Nobody “controls” the Internet—in fact, nobody would be able to. The Internet is what its users have made it, and one of the fascinating features to evolve is Internet “newsgroups,” also called “bulletin boards,” “discussion groups,” or “lists.”

Newsgroups are forums for discussion on a particular topic or subject area. Some newsgroups are silly, some are ultra-serious, many are educational, some are probably offensive. Membership in a newsgroup is open to anyone with access to an Internet connection; new members often “lurk” and just read the messages for a while before trying to “post” their own thoughts and questions. Certain rules of “netiquette” apply—like any human undertaking, a bit of courtesy and sensitivity go a long way toward preventing misunderstandings.

There is at least one discussion group on the Internet devoted to dinosaurs. In April 1994, it had over 400 subscribers and was still growing. The members include professional palaeontologists and geologists, professors, students at all levels, teachers, researchers, and interested amateurs. I have subscribed to the list since late 1993, and through it have kept up with areas of research and debate in dinosaur science. One member monitors the electronic feed from the major newswires, and sends along stories dealing with dinosaurs and other major fossil discoveries. Members who have been to conferences or public lectures sometimes

summarize the talks and post the results. Book reviews and notices of expeditions sometimes appear. Other topics I have followed include:

- the latest on the new *T. rex* skeletons (Sue, Stan, and Duffy)
- major discussions on dinosaur classification and nomenclature
- a debate on scavenging vs. predatory behaviour by *T. rex* (including sideline debates about arm length, nocturnal hunting possibilities, alternate ways to kill sauropods, and the classic line "...as difficult to swallow as a *Pachycephalosaurus* dead for a week...")
- a new find of dinosaur eggs in China, and a *Polacanthus* dinosaur skeleton find on the Isle of Wight (England).
- How to clone a dinosaur, or, what is needed in the *real* world to turn DNA into living beings that behave and breed true
- The dinosaur/bird debate, with some wonderful comments about certain proposed tree climbing dinosaurs being hampered by "broomsticks behind them" (i.e., tails stiffened by ossified tendons)

Other dinosaur Internet sources I have heard about include graphical images that can be viewed and/or downloaded, and a guide to a dinosaur exhibit in Hawaii, which lets you preview the exhibit on your computer, from anywhere in the world. Specialized computer hardware is needed to view the graphical material—so far, I've not been able to do so.

In the next few years, more and more information will be available through the Internet. It will probably be better organized, and easier to access; in the meantime, sources like the dinosaur discussion list are light years ahead of phones, faxes, and "snail mail." I just wish that more of the people I need to talk with had Internet access! For those of you who do, here are the directions to subscribe to the dinosaur list:

1. send an e-mail message to:
listproc@lepomis.psych.upenn.edu
2. leave the subject field blank
3. type the following: **subscribe dinosaur your name:** e.g. **subscribe dinosaur Heather Whitehead**

[*Heather currently lives in Troy, New York, where she works as a science librarian at Rensselaer Polytechnic Institute. Her e-mail address on the Internet is hw@mts.rpi.edu*] □

Dinotour 4, 1994: A Western Canadian Geological Experience

by Les Adler

Friday, May 6th

Most of the 31 participants along with the Cardinal bus driver from the previous three Dinotours assembled at the Uplands Hall in northwest Calgary for a get-together and wine-and-cheese party to meet and receive a guidebook; a specially designed Mike Skrepnick T-shirt; and a copy of *The Last Great Dinosaurs* by Monty Reid, illustrated by Jan Sovak. In addition to regular participants from Ontario, Alberta and Washington State, members of the Dinosaur Society, a worker from the Page Museum at the Los Angeles La Brea Tar Pits and a Cincinnati geology lecturer joined us. Also we had a Calgary medical doctor on board.

Saturday, May 7th

Tour members gathered at the east side of McMahon Stadium or at the motel opposite and were then transported to Horseshoe Canyon near Drumheller, for an introductory lecture on Alberta dinosaurs by Dr. Philip Currie, director of dinosaur research at the Royal Tyrrell Museum of Palaeontology and scientific advisor to the previous three Dinotours. We hiked around in the bottom of the canyon for some time but did not find much in the way of fossils. We had lunch in Midland Provincial Park and then entered the Tyrrell Museum by a back entrance for an extended tour of most of the back-room facilities including storage areas, mould-and-casting facilities, Phil's office, the library, laboratories and a glimpse of rare fossils. After some time viewing the main museum exhibits some members went on a hike of the badlands to the north of the museum. We stayed overnight at the Drumheller Inn.

Sunday, May 8th

The tour visited Horseshoe Canyon on the Dinosaur Trail, then we were able to collect dinosaur bone fragments, fossil wood, a fossil clam shell and recent mammal bones near the Bleriot Ferry. The tour proceeded to the overlook of the Dry Island Buffalo Jump and hiked across the Knudsen Farm to the Cretaceous-Tertiary boundary location on a coal bed. There were Indian tepee rings close by. We did not get to the *Tyrannosaurus rex* site as it has become unsafe due to a cliff collapse.

Monday, May 9th

With an early start at 7:30AM the tour left Drumheller, proceeded across to Highway 22X,

passed through Turner Valley, Black Diamond and Longview. Experienced petroleum geologists Ron Manz and Gordon Holland gave a set of lectures on the Turner Valley oil field and the structure of the Canadian Rockies from a modern viewpoint of plate tectonics.

The Rockies were followed to the Frank Slide where a huge slice of a mountain slipped down a valley and covered a portion of the town of Frank, killing many people. We clambered over huge rocks and were able to see specimens of crinoid ossicles, a brachiopod and some Carboniferous horn corals. Lunch was at Lundbreck Falls.

After lunch Phil took us to an outcrop northwest of Cowley, where the water has backed up due to the Oldman Dam. About half of a *Tyrannosaurus rex* has been taken from this site with about another half currently under thirty feet of water. Also the rear half of a *T. rex* came from Huxley. In the near future there will be discussions as to the possibility of a third Alberta *T. rex*.

We had a temporary detour on our way to the Head-Smashed-In Buffalo Jump, as a bridge that we thought was out, was in. A young Indian guide showed us the jump after a ten-minute movie showed us how the Indians gathered the bison together to direct them over the jump. That night we stayed at the Lethbridge Lodge.

Tuesday, May 10th

From Lethbridge we travelled to the Christensen Farm near Magrath on the St. Mary River where Wendy Sloboda has continued to make fabulous finds. Wendy is in her early twenties and has completed a program in history at the University of Lethbridge and has been employed by the Royal Tyrrell Museum on dinosaur exploration in Southern Alberta. Wendy directed the Tyrrell Museum staff to egg and nest sites at Devil's Coulee, found half a hadrosaurian dinosaur with a fossil sturgeon preserved inside and located dinosaur footprints with skin impressions from the webbed feet.

On this occasion Wendy directed Phil to a nother site with footprints and skin impressions three miles further down river. This occurred while a partial eclipse of the sun was in progress with cool and overcast weather conditions. After the eclipse the sun came out and we had a warm afternoon. During the previous week Wendy had given nine presentations on her discoveries to schools. Her father, Ed Sloboda, represents the Royal Tyrrell Museum in Southern Alberta and investigates fossil discoveries. Wendy may come to the APS to give a talk.

After lunch near Magrath, we returned to Lethbridge and continued on to Keho Lake and Scabby Butte. Phil showed us the *Pachyrhinosaurus* bone bed which may be reopened in the future. The author obtained a hadrosaur tail bone,

the third of four collected during the trip. There were plenty of clam shell fragments around.

Wednesday, May 11th

The tour reached the Devil's Coulee nest and egg site. Wendy Sloboda had arrived earlier from Warner and had already located a fossil dinosaur egg that had not been previously mapped. The group easily found fossil dinosaur egg shell and Cretaceous gastropods. Later we found fragments of dinosaur at a *Hypacrosaurus* bone bed. Lunch was at Writing-On-Stone Provincial Park. Three staff-members guided us along sets of Indian petroglyphs and gave their interpretations of the animals and figures. We took pictures of many weathered rock formations. On our way to Medicine Hat we stopped at the Red Rock Coulee which features large, unusual water-worn spheroids 1.5 to 2.5 metres across of red sandstone emerging from the Bearpaw Formation shale. The first rattlesnake of the trip was encountered here; there were also mosquitoes.

Thursday, May 12th

Leaving Medicine Hat about 7:30AM Dinotour proceeded to Eastend, Saskatchewan and met with Tim Tokaryk, assistant curator of vertebrate palaeontology at the Saskatchewan Museum of Natural History in Regina. We toured the Eastend Museum which features fossils and the history of the local area. We had lunch at the rear of the museum and continued on to the Frenchman River near Climax.

We took note of the Cretaceous-Tertiary boundary in this area and inspected sites containing fragments of *Triceratops* and a micro-vertebrate site which yielded several turtle fragments, garpike scales, and fish vertebrae, jaws and teeth. Here we had to shake off ticks before entering the bus and the second rattlesnake of the trip was also encountered here. We returned to Medicine Hat at about 10:15PM after a three-course meal at Eastend, provided by the Dinotour Committee.

Friday, the Thirteenth!

We encountered wet conditions so we had a quiet day travelling to Brooks, Alberta via the South Saskatchewan River and Dinosaur Provincial Park Field Station. We visited both the rear and the front and went on to Brooks.

Saturday, May 14th

We returned to the Dinosaur Provincial Park from Brooks and undertook the hike to the "Citadel" outcrop and the *Centrosaurus* bone bed, about four miles each way from the campground.

Along the way we encountered a slippery slope of bentonite (altered volcanic ash) which can be impassable when wet. It took about twenty minutes to negotiate a slope with everybody getting mud either on their hands or clothes or

both. One participant found an excellent specimen of an *Albertosaurus* tooth. Then we visited sites where the Sternbergs had excavated dinosaur skeletons decades ago. We had excellent conditions for hiking and for taking pictures.

After the hike the Dinotour Committee provided the group with a wind-up dinner at the Patricia Hotel where you cook your own steak over a hot fire. This way, if your steak is not to your liking, it is your own fault! Phil Currie was presented with a cheque for dinosaur research and the bus driver, Heinz Kluth, received an honorarium.

Sunday, May 15th

From Brooks across to Drumheller. First we toured the curling rink which has been transformed into a display called *The Dinosaur Empire* where a Japanese company has set up many dinosaur models which move and make noises. The Tyrrell Museum is to share the profits.

Next came the Drumheller District Museum which is a combination of several collections including that of the late Larry Duncan of Calgary, founder of the Calgary Rock and Lapidary Club.

After lunch at Midland Park, we returned to the Tyrrell Museum to preview the Devonian reef display which is soon to be opened to the general public. This display features models of thousands of invertebrates such as corals, crinoids and brachiopods with a few vertebrates such as fish. The lighting is blue-green, as you are supposed to be under the sea. Next we went to a lecture on the early history of fossil studies.

We returned to Calgary, dropping people off at the airport, a motel and McMahon Stadium, having travelled about 3700 kilometres during eight-and-a-half days. Most days Phil Currie lectured through a bus loud-speaker system and answered questions relating to dinosaur families, extinctions, the revision of formation names, regulations, and identification. Heather Whitehead will probably expand on some of these topics in a later *Bulletin*.

Next year...

Considerable planning for a 1995 trip to east and west Texas to visit track sites and museums, with the help of local authorities, has already taken place and further details will be coming later this year.

My Dinotour album is in order with a lot of inscription yet to be done. □

Field Trips 1994

Three field trips are planned for this summer. Details appear on the following pages.

Trip 94-1: Saturday, June 18

Ram Falls, Alberta—Ammonites and other molluscs occur in extensive exposures of the Cretaceous Wapiabi Formation at this locality in the foothills west of Rocky Mountain House.

Trip 94-2: Saturday, July 16

Monarch, Alberta—The Cretaceous St. Mary River Formation contains well-preserved fossil gastropods and pelecypods at this location, west of Lethbridge. Scabby Butte, a half-hour drive to the north, exposes the same formation, with abundant microvertebrate fossils (ray and other fish teeth and scales) and dinosaur bones.

Trip 94-3: Saturday, August 20

Genessee, Alberta—This trip, postponed from last year due to inclement weather, will be attempted again. Paleocene plant fossils occur in abundance at this locality southwest of Edmonton.

Please note the following points, which appear in material of the Canadian Hostelling Association, and are very relevant to our Society's field trips:

Trip Participant Responsibilities

It is understood that risk is inherent to some degree in all outdoor activities. 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.
- Trip co-ordinators are not professional guides. They are simply club members who have volunteered their time for your enjoyment.
- Contact the trip leader prior to the trip and again if you cancel. The leader will be able to answer questions about the trip and required equipment.
- Inform the trip leader of any medical conditions they should be aware of in an emergency, for example: diabetes, bee-sting reaction, asthma.
- Ensure that your previous experience, ability and fitness level are adequate for the trip.
- Stay with the group. Wait for other group members frequently and at all route junctions.
- Tell the trip co-ordinator if you must turn back.
- Contribute to car pool expenses.
- Enjoy!

ALBERTA PALAEOONTOLOGICAL SOCIETY

Field Trip 94-1, Ram Falls Alberta

Resource Person: Les Fazekas (248-7245)
Field Trip Leader: Wayne Braunberger (278-5154)

Access: From Calgary travel north on Highway #2 to Red Deer, take the turnoff to Rocky Mountain House (Highway #11); from Rocky Mountain House take Secondary Road #752 (the Strachan Road) until it connects with the forestry trunk road. Turn west (right) and drive to Ram Falls. There are several alternative routes, however this route is mostly on pavement and is a bit quicker. The forestry road is very rough, has loose gravel, and may be muddy. Also watch out for large trucks and heavy equipment. Allow approximately 3 to 4 hours from Calgary to Ram Falls.

Itinerary: Saturday, June 18, 1994
 10:30 hrs. Assemble at Ram Falls viewpoint parking lot.
 10:45 hrs. Introduction
 11:30 hrs. Walk to site
 12:00 hrs. Lunch
 12:30 hrs. Continue collecting

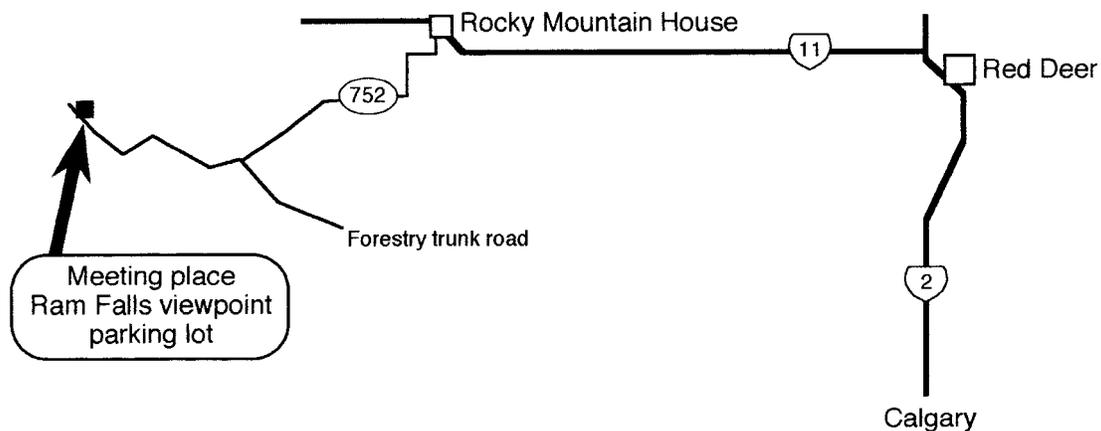
This trip has been planned as a very long day trip. Camping is available at the Ram Falls Recreation Area at a charge of about \$7.00 per night (it may be more). If there is interest we can arrange something for Sunday. Part of this trip is educational and initial plans are to review field work methods.

Clothing and Equipment:

Outdoor gear appropriate for hot, dry conditions or cold, wet conditions (this site is in the foothills and the weather is unpredictable). Sturdy hiking boots and hard hats are recommended. Bring sunblock, mosquito repellent, lots of water, and food.

Safety:

Locations are on steep slopes, with possible loose and/or muddy surfaces. Watch your footing, and be careful not to dislodge rocks onto persons below. **Hard hats should be worn.** We will also be along the South Ram River, which is cold and fast-moving, so extra care should be taken when near it.



ALBERTA PALAEOONTOLOGICAL SOCIETY

Field Trip 94-2, Monarch Alberta

Resource Person: Les Fazekas (248-7245)
Field Trip Leaders: Wayne Braunberger (278-5154), Howard Allen (274-1858), and Les Fazekas (248-7245)

Access: From Calgary travel south on Highway #2 to the junction with Highway #3, turn east (left) toward Fort Macleod and Lethbridge, and drive 26 km. The meeting area is at the bridge over the Oldman River (approximately 2 km. west of the town of Monarch). Driving time is about 2.5 hours from Calgary.

Itinerary: Saturday, July 16, 1994
 09:30 hrs. Assemble at bridge
 09:45 hrs. Introduction
 10:00 hrs. Walk to site
 12:00 hrs. Lunch
 12:30 hrs. Continue collecting
 17:00 hrs. Depart

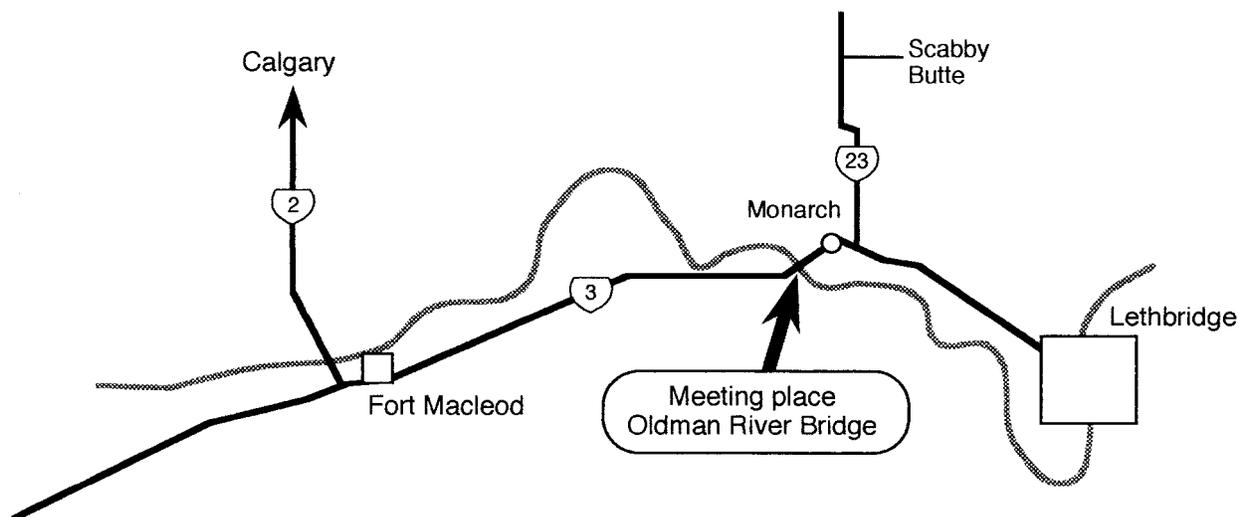
This trip has been planned as a day trip. If there is interest we can camp overnight and collect at Scabby Butte on Sunday. Plans at this point are tentative so keep in contact.

Clothing and Equipment:

Outdoor gear appropriate for hot, dry conditions or cold, wet conditions. Sturdy hiking boots and hard hats are recommended. Bring sunblock, mosquito repellent, lots of water, and food.

Safety:

Locations are on steep slopes, with possible loose and/or muddy surfaces. Watch your footing, and be careful not to dislodge rocks onto persons below. **Hard hats should be worn.** We will also be along the Oldman River, which is deep and fast-moving, so extra care should be taken when near it.



ALBERTA PALAEOONTOLOGICAL SOCIETY

Field Trip 94-3, Genesee Alberta

Resource Person: Les Fazekas (248-7245)
Field Trip Leaders: Peter Meyer (289-4135) and Les Fazekas (248-7245)

Access: From Calgary travel north on Highway #2 to Leduc, then go west on Highway #39 approximately 49–50 km. to the campground on the south side of the highway, between Sunnybrook and Warburg. Alternately, take Highway 2 north to Red Deer, turn west on Highway 11A to Sylvan Lake, then north onto Highway 20 and continue north to the T-intersection at Alsike. From here the campground is about 16–17 km. east. Driving time either way is about 3.5 hours: give yourself at least 4 hours.

Itinerary: Saturday, August 20, 1994
 Meeting times and itinerary are to be announced. Please keep in touch with the trip leaders.

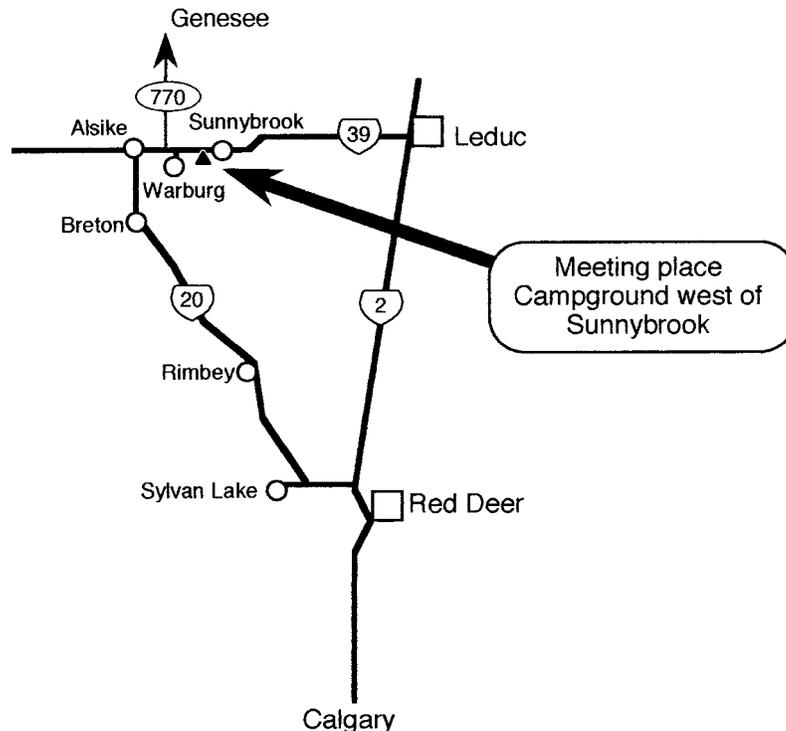
This trip has been planned as a very long day trip. If there is interest we can camp overnight and do more collecting on Sunday. Camping fees are about \$6.00 per night. Plans at this point are tentative so keep in contact.

Clothing and Equipment:

Outdoor gear appropriate for hot, dry conditions or cold, wet conditions. Sturdy hiking boots and hard hats are recommended. Bring sunblock, mosquito repellent, lots of water, and food.

Safety:

Locations are on steep slopes, with possible loose and/or muddy surfaces. Watch your footing, and be careful not to dislodge rocks onto persons below. We will also be along the North Saskatchewan River, which is deep and fast-moving, so extra care should be taken when near it.



Fossils in the News

USA Today, October 28, 1993:

Did the dinosaurs suffocate?

By Tim Friend—Researchers analyzing air bubbles trapped in amber report that a sharp decline in atmospheric oxygen occurred at the end of the Cretaceous period, and speculate that this may have caused the extinction of the dinosaurs. Gary Landis of the US Geological Survey theorizes that, prior to the extinction event, intense volcanic activity created high levels of atmospheric carbon dioxide. This promoted lush plant growth, which in turn produced prodigious volumes of oxygen through photosynthesis. The dinosaurs had become adapted to these high levels of oxygen. When volcanic activity suddenly ceased, plant growth and consequently oxygen production dropped off, leaving the dinosaurs short of breath. Remarks Landis: “If you’re chasing down dinner and pass out before you get to eat, that would not enhance survivability.”

The Daily Telegraph, London, April 6, 1994:

Desert fossil trove

By Roger Highfield, Science Editor—A team from the American Museum of Natural History has made a dramatic discovery in the Gobi Desert of Mongolia. Expedition leader Michael Novacek reports finding “the best-preserved assemblage of backbone animals ever found from the Cretaceous Period.”

Findings include several dinosaur “nurseries” with well-preserved eggs; six skeletons of armoured ankylosaurs, some with perfectly preserved tail spikes; more than a dozen skeletons of small meat-eating dinosaurs; and six skeletons of the transitional dinosaur/bird animal *Mononykus*. Other finds included 175 fossil lizards and the skulls and skeletons of 147 “very rare” mammals.

The Daily Telegraph, London, April 6, 1994:

Novice fossil hunter digs up a dinosaur

By Robert Bedlow—An amateur fossil collector from the Isle of Wight has uncovered a skeleton of the Cretaceous armoured herbivore *Polacanthus*. Mrs. Lin Spearpoint, who started her hobby less than a year ago, discovered the bones near her home at Brighstone. This is only the third skeleton of a *Polacanthus* discovered to date. Mrs. Spearpoint and her husband, who receives a £75 weekly disability pension, are tempted to put the skeleton up for sale, as it has been valued at £10,000 to £40,000 (CDN \$20,000 to \$80,000) by fossil dealers.

The Daily Telegraph, London, April 9, 1994:

Prehistoric bear market only picks at the bones

By Roger Highfield, Science Editor—It seems that some of the gloss has begun to come off of the lucrative fossil market, which received a big boost from the recent *Jurassic Park* hysteria. Prices at Bonham’s Auction House in London have taken a downturn: a recent auction of fossils raised only £65,000, far short of the expected £400,000 (CDN \$800,000) total. One of the major items for sale was the complete skeleton of a Pleistocene cave bear, *Ursus spelaeus*, from Austria, which fetched £14,300 from an American woman who wanted the bones to furnish her new house. The bear was expected to sell for £15,000 to £18,000. A 30 cm. diameter egg of the extinct elephant bird, expected to raise £30,000 to £50,000, was left unsold as bids failed to meet the reserve price.

The Calgary Herald, May 6, 1994:

South Pole dinosaur is exciting the experts

Washington (AP)—The remains of a Jurassic carnivorous dinosaur recovered from a mountain side 650 km. from the South Pole are causing a stir in the palaeontological community. The fossils, excavated in 1991 by a team from Augustana College in Rock Island, Illinois, belong to a previously unknown species. The animal measured about eight metres in length and resembled the well-known *Allosaurus*. It has been dubbed *Cryolophosaurus ellito*, or “frozen-crested reptile,” reports team leader William Hammer. “That’s because it’s got a crest on its head and we almost froze to death collecting it.”

A report on the new dinosaur appears in the May 6 edition of the journal *Science*. The presence of the fossils so close to the South Pole prove that the climate of Antarctica 200 million years ago was very mild, much like that of the present day climate of southern British Columbia.

The Calgary Herald, April 25, 1994:

Dinosaur date

Now, you too can experience the terror of a *Jurassic Park*-style nightmare. The Royal Tyrrell Museum is putting on *Dinosaur Empire*, a display of robotic dinosaur models. For \$80, families can spend a night camped-in among the 13 snarling monsters. The next camp-in is June 25. To sign up, call 294-1992 (Calgary, direct).

[Thanks to Brian Allen, Holger Hartmaier, Trudy Martin, Harvey Negrich and Roslyn Oszian for sending in clippings – ed.] □

Reviews

This View of Life: In the Mind of the Beholder
by Stephen Jay Gould, *Natural History*, February 1993, pp. 14–23

Stephen reports on three issues which have recently appeared in print (purposely ignoring *Jurassic Park*). The first issue examines evolutionary rate; the second, interaction among organisms; and the third, biogeography, or place of origin for a key species.

Until 1993 palaeontologists did not have a fix on the start of the Cambrian Period. S.A. Bowring, J.P. Grotzinger, C.E. Isachsen, A.H. Knoll, S.M. Pelechaty and P. Kolosov, in “Calibrating Rates of Early Cambrian Evolution” (*Science*, September 3, 1993, pp. 1293–1298), have pinpointed the time of the Cambrian explosion of life by calibrating the radioactive decay of uranium to lead within zircon crystals obtained from volcanic rocks interbedded with Siberian sediments containing earliest Cambrian fossils. The early Cambrian rocks have been divided into three parts or stages, oldest to youngest, named after the Russian localities where the earliest Cambrian rocks are particularly well exposed: Manakayan, Tommotian and Atdabanian.

The Manakayan Stage started 544 million years ago (with potential error of only a few hundred thousand years), lasted some 14 million years and contains many fossilized bits and pieces of “cousins and precursors,” but not the remains of major modern phyla. The Manakayan stage therefore predates the Cambrian explosion.

The Tommotian Stage began about 530 million years ago. The subsequent Atdabanian Stage ended between five and ten million years later. By the end of the Atdabanian Stage virtually all modern phyla had made their appearance. The Cambrian explosion therefore spans the Tommotian and Atdabanian stages. The entire Cambrian explosion now fits within a span of five to ten million years, much faster than was previously thought.

The second issue discussed concerns relationships between plants and insects. Suggested causes for the great diversification of insects have been their small size, great ecological diversity, rapid geographic dispersal and coevolution with angiosperms or flowering plants. Conrad Labandeira and Jack Sepkoski tested theories in “Insect Diversity in the Fossil Record” (*Science*, July 16, 1993, pp. 310–315). Insects arose in the Devonian Period, achieving a major radiation in diversity during the Carboniferous Period some 325 million years ago. Angiosperm plants arose in the early Cretaceous Period some 140 million years ago. Angiosperms didn’t flower (pardon Stephen’s

pun) until 100 million years ago when their explosive evolutionary radiation stands out as one of the great events of the fossil record. Sepkoski examined reports in all languages in all countries for all fossil genera and families. Insect radiation started in the early Carboniferous, got derailed in the great Permian mass extinction and began again in the Triassic Period and then never stopped. If anything the rate slowed down in the Cretaceous as the angiosperms “flowered.” Also the angiosperms were not responsible for the morphological variety of insect feeding mechanisms.

The third issue relates to the origin of *Homo sapiens*: the “multiregionalist” model versus the “out of Africa” model. This issue has still to be resolved.

In each of the above issues, newspaper correspondents expressed surprise at the stated outcome, while Stephen did not, due to preconceptions. Stephen’s view is that stability is the norm for most times and evolutionary change occurs as a relatively rapid event punctuating the stillness and bringing systems to new states. A faster Cambrian explosion suits this thesis. Grand scale independence of flowers and insects despite the tight linkage of many species conforms to this view. Perhaps Stephen’s world view might provide a more fruitful outlook upon reality than the previous ideas that have been presented. Later evolutionary presentations may yet bring forward examples of deterministic gradualism.

—reviewed by Les Adler

The Cambrian Period—Explosion of Life
by Rick Gore, *National Geographic*, October 1993, pp. 120–136.

This long article continues the tradition of providing the layman with news of recent developments in palaeontology. A set of twenty beautiful photographs on glossy paper with two double page sets of colourful illustrations of unfamiliar-looking animals, mostly bizarre arthropods, shows us a selection of fossils from the Burgess Shale of British Columbia, and earlier fossils from Greenland and China. Rick interviewed a number of Cambrian specialists and relays their interpretations. The Greenland and China specimens are about 10 to 15 million years older than the Canadian specimens. The Chinese site has also produced a variety of brachiopods. Many examples of Cambrian trace fossils have been found on the Swedish coastline and these are also shown. Several of the fossils seem to be close to some present-day arthropods. These fossils fill in some missing gaps in our knowledge of life of the past.

—reviewed by Les Adler □

APS MEMBERSHIP LIST, June 1994

**Names and contact information removed
to protect members' privacy.**