ALBERTA • PALAEONTOLOGICAL • SOCIETY

BULLETIN

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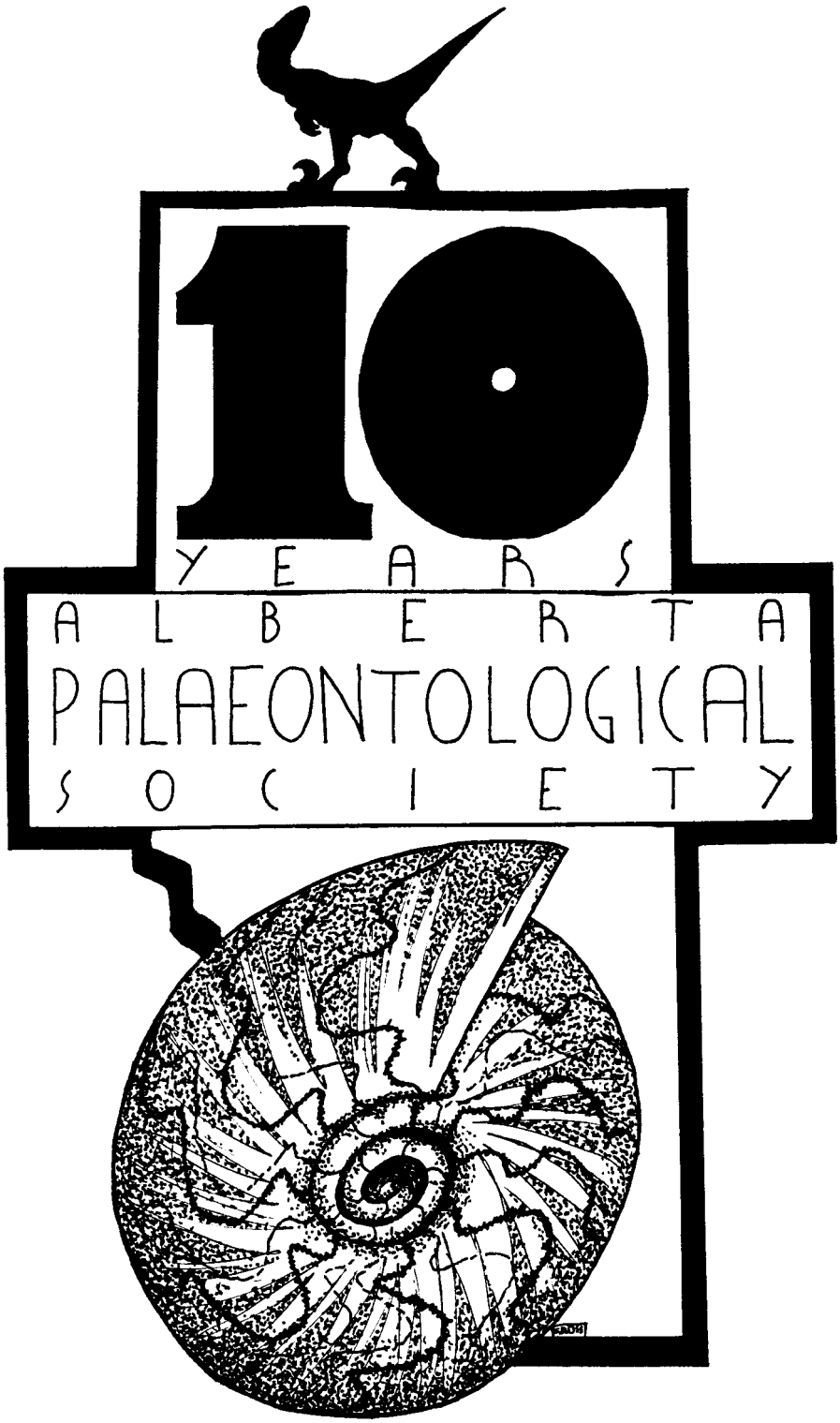

ALBERTA PALAEONTOLOGICAL SOCIETY

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

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

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

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

UPCOMING APS MEETINGS

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

Friday, March 15—Wayne Braunberger, program topic to be announced
Friday, April 19—Calgary Zoo (see announcement on page 2)
Friday, May 17—Dr. Gerry Morgan, Evolutionary History and Diversity of the Vertebrates

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ON THE COVER: The Alberta Palaeontological Society's 10th anniversary issue. Art by APS member Cory Gross. ©1995. Reproduced by permission.

President's Message

by Wayne F. Braunberger

1996 marks the tenth anniversary of the Alberta Palaeontological Society. The Society was founded in January of 1986 and incorporated under the Societies Act in the Province of Alberta in April of 1986. Prior to the formation of the Society there did not exist an organization in the Province dedicated to palaeontology.

The Society was founded by a group of amateur palaeontologists who had been meeting since the Fall of 1983. In the Fall of 1985 the group was still going strong and it was felt that a society should be formed. The two main reasons for the formation of the Society were: 1) to bring together amateur and professional palaeontologists, and 2) to provide a medium for the sharing of knowledge and information about fossils and the activities of others; in general to learn more about palaeontology and related sciences. These two reasons have not changed and are still relevant today.

The inaugural meeting of the Alberta Palaeontological Society was held on Friday, January 17, 1986 with 15 enthusiastic members present. Of these original 15 charter members 8 are still active in the Society. They are: Les Adler, Wayne and Lynn Braunberger, Jill Fryling, Lyle Hartwig, Harvey and Steffie Negrich, and Don Sabo. Elected officers were: President—Wayne Braunberger, Vice-president—Don Sabo, and Secretary-Treasurer—Steffie Negrich. The following two tables list the officers and directors over the years.

Initially we met in various members' homes but soon became too large to be easily accommodated. During the summer of 1986 arrangements were made with the Department of Geology at Mount Royal College to meet in their labs and classrooms. Particular thanks are due to Drs. Wayne Haglund and John Cox of Mount Royal for these arrangements without which the Society could not operate.

Alberta Palaeontological Society Officers 1986 – 1996

Year	President	Vice-President	Secretary	Treasurer
1986	W. Braunberger	Don Sabo	Steffie Negrich	Steffie Negrich
1987	W. Braunberger	Don Sabo	Susan Lancaster	Les Adler
1988	W. Braunberger	Don Sabo	-	Les Adler
1989	Don Sabo	Percy Strong	Betty Quon	Les Adler
1990	Percy Strong	-	Betty Quon	Les Adler
1991	Percy Strong	-	Betty Quon	Les Adler
1992	Percy Strong	-	-	Les Adler
1993	Les Adler	Peter Meyer	Don Sabo	Roger Arthurs
1994	Les Adler	Peter Meyer	Don Sabo	-
1995	Les Adler	Peter Meyer	Don Sabo	Joe LeBlanc
1996	W. Braunberger	Peter Meyer	Don Sabo	Joe LeBlanc

continued on page 3... ☛

IMPORTANT NOTICE!

April 19th Meeting: Change of location

The April 19th General Meeting will be held at the **Calgary Zoo**.

Enter the Zoo at the **North (LRT)** entrance between 7:15 and 7:30 PM. No formal program is scheduled but members will have the opportunity to handle various biofacts (bones, skulls, etc.) There will also be a fun "Zoo Contest."

Alberta Palaeontological Society Directors 1986 – 1996

Year	Editor	Membership	Programs	Curator	Field Trips
1986	G. Barrett	S. Negrich	D. Sabo	H. Negrich	H. Negrich
1987	G. Barrett	I. Markhasin	D. Sabo	H. Negrich	H. Negrich
1988	G. Barrett	S. Negrich	D. Tanke	H. Negrich	H. Negrich
1989	W. Braunberger	S. Negrich	D. Tanke	H. Negrich	H. Negrich
1990	W. Braunberger	D. Tanke	D. Sabo	H. Negrich	H. Negrich
1991	H. Whitehead	P. Meyer	-	H. Negrich	W. Braunberger
1992	H. Allen	P. Meyer	-	H. Negrich	L. Fazekas
1993	H. Allen	V. Marsovsky	H. Hartmaier	H. Negrich	L. Fazekas
1994	H. Allen	V. Marsovsky	H. Hartmaier	H. Negrich	L. Fazekas
1995	H. Allen	V. Marsovsky	H. Hartmaier	H. Negrich	L. Fazekas
1996	H. Allen	V. Marsovsky	H. Hartmaier	H. Negrich	L. Fazekas

Alberta Palaeontological Society Directors 1986 – 1996 (cont'd)

Year	Librarian	Director	Fund Raising	APAC	Public Relations
1986	K. Weinhold	M.C. Wilson	J. Barrett	H. Negrich	-
1987	K. Weinhold	M.C. Wilson	-	H. Negrich	-
1988	K. Weinhold R. Arthurs	D. Mundy	-	W. Braunberger	J. Doten
1989	R. Arthurs	D. Mundy	-	W. Braunberger	J. Doten
1990	R. Arthurs	D. Mundy	-	W. Braunberger	J. Doten
1991	R. Arthurs	D. Mundy	-	W. Braunberger	-
1992	R. Arthurs	D. Mundy	-	W. Braunberger	-
1993	G. Morgan	D. Mundy	-	W. Braunberger	-
1994	G. Morgan	D. Mundy W. Braunberger	-	D. Sabo	-
1995	G. Morgan	D. Mundy W. Braunberger	-	D. Sabo	-
1996	G. Morgan	D. Mundy	-	D. Sabo	-

From the above compilation you can see that a number of individuals have been on the board for several years. I would like to thank all those who have served as officers or directors over the years. I would particularly like to thank Harvey Negrich and Don Sabo who have been on the board since the beginning—Harvey as Curator and acting Field Trip coordinator and Don in several positions. If you could help out it would be greatly appreciated. In particular, Fund Raising and Education Directors are needed. Raffles and other fund raising activities are not very high profile but if a designated individual was to take care of it, I'm sure that activities in this area could be improved. An Education Director is urgently needed to coordinate the seminars. Seminars will be held for the rest of this year and will start again next year.

For the upcoming year plans are to continue with our usual activities plus add some new ones. The seminars are off and running with the "Introduction to Identification" having been held on January 11 and 18. A curation seminar will have been held on February 19 and brachiopod, vertebrate, and field methods seminars are upcoming in March, April and May. A registration form is included elsewhere in the *Bulletin*.

Upcoming in April will be a special event. Through the efforts of Joe LeBlanc the meeting will be held on **Friday, April 19** at the Calgary Zoo where Joe will give us a tour of the Biofacts area. This is the area where various animal remains such as skulls are kept. This promises to be one of the more interesting meetings that we've had so don't miss it! ❑

Program Summary

November 17, 1995: ***Fossil Evidence of Predation and Palaeopathology, with Don Sabo and Dr. Dave Mundy***

Several of our Calgary members are able to provide technical palaeontological lectures with slides, notes and specimens on topics not previously presented, with very little notice. Some tell us that they could not lecture for 45 minutes, our suggested time, but can handle a 15-minute session. We usually find that they have no difficulty in handling a 30-minute session. On this occasion Don Sabo and Dr. Dave Mundy of Talisman Energy joined forces to present a program on predation and palaeopathology—Don with dinosaurs and Dave with brachiopods.

Don has made extensive collections of dinosaur bones along river valleys in southern Alberta and has noticed markings and growths on the bones. Through examination, discussion and extensive reading he now knows that some of these markings indicate illness or accident or, where a bone has other markings, that the animal was probably attacked by a predatory dinosaur. He brought in a large collection of bones with examples of various types of pathologies so that when we go over our own collections we will be able to determine what injuries the living animals sustained.

Dr. Dave Mundy has made extensive collections of marine fossils from Carboniferous limestone reefs of northern England. In this lecture Dave specialized on spiriferid and rhynchonellid brachiopods and presented statistical evidence to suggest what had happened to the shells both before and after having been attacked. Dave also examined other associated fossils to work out which animals had done the attacking. It is most likely that cephalopods (ammonoids and nautiloids) had done much of the attacking although some types of fish and phyllocarid crustaceans were also present. The latter appear not to have been large enough to have done the damage. Dave provided a set of notes (a technical paper with photos of the brachiopods with holes, marks and changes in growth patterns). Thanks to Don and Dave for an educational and practical lecture!

– Les Adler

December 15, 1995: ***Palynological Investigations in the Northern Yukon and Alaska, by Dr. Jim White***

Dr. Jim White joined the Geological Survey of Canada in 1986, where he has worked as a palynologist, mainly in the Beaufort Sea and Queen Charlotte Islands. His main area of interest lies in determining climatic changes during the past 18 million years (Neogene period), by studying microscopic pollen and spore fossils. His talk focused on some recent expeditions to the northern Yukon and Alaska where he worked in collaboration with geoscientists from the US Geological Survey.

Pollen and spore fossils reflect the types of vegetation present in an area at a given time, and therefore indirectly reflect the prevailing climate. Dr. White and his associates took samples from a number of localities, which he illustrated with slides. Pollen and spore samples were taken from peat and coal beds and ancient lake bed deposits. Some gravel deposits produced mammal fossils. One locality included fossil tree stumps in growth position, which were dated to 15 million years (Miocene); pollen analysis indicated that the trees grew in a climate similar to the modern-day Florida Everglades. The fossil stumps showed charring from overlying lava flows.

Dr. White's team travelled to some of the locations by canoe, which often entailed much hard work in poling and lining the boats through rapids and over sand bars, activities illustrated in his slide presentation.

Using palynological distribution diagrams, Dr. White showed how the fossil data demonstrate climatic changes in the subarctic over the past 12 million years from a warm temperate to a cooler, northern climate. He pointed out how some of the climatic changes correlate to plate tectonic events such as local mountain-building, the drying up of the Mediterranean Sea, the development of ice sheets in the Antarctic, and the uplift of the Himalayas.

Special thanks are due to **Eva** and **Meinrad Hoffman**, who provided a delicious assortment of snacks following Dr. White's presentation.

– Howard Allen, with notes from Les Adler

January 19, 1996: ***An Introduction to Palaeozoic Corals, with Joe LeBlanc***

This meeting was notable for three reasons:

1) It happened to be our 10th anniversary meeting; **2**) It was probably the coldest night on which we have ever held a meeting, the outside temperature being -28°C; **3**) Joe Leblanc provided computerized notes and photocopied diagrams of Palaeozoic corals.

Don Sabo brought the champagne and a double-sized sponge cake with the iced inscription: "*Alberta Palaeontological Society 10th Anniversary, January 1996.*" This was quickly

disposed of after Joe's talk was concluded.

Wayne Braunberger, Society President both tonight and 10 years ago, delivered a eulogy on the history of the Society's past ten years with encouragement to continue on for the next ten years and beyond. **Les Adler**, being one of the original members and a past-treasurer and past-president was photographed cutting the cake before sharing it around in large pieces. Don and Wayne then took 10th anniversary group photos of the 15 members who braved the very cold temperatures to attend.

Each member present was provided with a set of computer-generated notes to keep and a set of corals and sections to be shared and returned. A geological time scale was provided to indicate the age range of the various coral groups and to compare the ranges of other organisms.

Joe LeBlanc has been assisting in the processing of Palaeozoic corals at the Geological Survey of Canada on a voluntary basis under the supervision of Dr. Bamber and is now quite knowledgeable in procedures. Studying corals is not simple because first there is not agreement on what palaeontologists are talking about. If the specimen is not complete or has not been internally preserved then the outward appearance may cause the specimen to be falsely identified as a sponge, a bryozoan, a gastropod or a brachiopod. Also, palaeontologists have set up rules for naming these organisms and when the rules are broken by accident, confusion arises when attempts are made to update the names.

In order to put a name to a specimen you have to cut it both vertically and horizontally, obtaining very thin slices that allow light to pass through, so that you can see the shapes of the internal structures under a microscope. After you sketch your specimen you can then compare your specimen against the sketches provided in textbooks, the *Treatise* or a specialized geological paper.

Joe explained that Palaeozoic corals are divided into two classes: tabulates, which have flat, table-like internal platforms and range in age from Mid-Cambrian to the end of the Permian; and rugose corals, mid-Ordovician to mid-Permian. Rugose corals are divided into two groups: solitary corals and colonial corals, in which the coral skeletons were joined together in colonies. Palaeontologists disagree on whether modern corals, which probably appeared in the Jurassic Period, have any connection with the Palaeozoic corals.

With the help of diagrams Joe pointed out the various internal structures of the coral skeleton, with names such as: septa, dissepiments, zones, tabulae, fossulae, epithecae, crests and lamellae.

Once the security person unlocked the back door, **Dr. Gerry Morgan** (our librarian) brought out several boxes of books and papers recently sorted and catalogued. **Marilyn Francis** brought in a group of Palaeozoic corals to be identified that she has collected while scrambling in the Rockies. **Roslyn Osztian** provided a large selection of ganoid scales from the garpike *Lepisosteus* to be shared around, and **Cory Gross** showed off a reconstructed dinosaur fragment either from a rib or a pelvis of a hadrosaur. We ate, drank, talked, cleaned up and then attended to the problems of getting our vehicles moving in the frigid temperatures. *– Les Adler*

February 15, 1996: ***Inoceramid Bivalves of the Late Cretaceous Wapiabi Formation, with Chris Collom***

This meeting was highly successful as everyone concerned had done their homework; we had ideal Chinook weather conditions; and 27 members attended. **Mrs. Routledge** brought in a bountiful supply of cookies, and volunteers prepared the coffee and cleaned up afterwards.

The main event was Chris Collom's report, accompanied by colour slides and a spectacular collection of macrofossils, on the progress of his PhD project on the fauna of the Upper Cretaceous Wapiabi Formation of the Alberta Foothills, from the US border to the Grande Cache area. (Wapiabi means "white-tailed deer.")

Chris qualified for a Master of Science degree from Brigham Young University in Utah and is doing his PhD degree at the University of Calgary, directed by Dr. Russell Hall. Chris has examined rock exposures across the Rocky Mountain foothills including the Seebe shale pit, site of an early APS field trip. Many of the exposures are along steep river cliffs. The best exposure for his study is at Smoky River. At this locality is a thick set of steeply dipping strata with several geologic members and different sedimentary rock types, containing a large variety of beautifully preserved fossils dated at about 87 million years old.

The slides showed the extent to which the Late Cretaceous seas covered North America. The fossils are an indication of the depth and sometimes very stormy conditions that existed. A large display of pelecypods such as *Pinna* sp., *Inoceramus* sp. and *Sphenoceramus*—a giant—were on display. There were also plesiosaur vertebrae, and a dramatic portion of a jaw with teeth, from the giant Cretaceous fish *Xiphactinus.* *– Les Adler* ❑

Fossil Secrets Revealed through Acetate Peels

by Joe LeBlanc

The use of acetate peels opens new areas of study for the fossil enthusiast. This simple method allows amateurs to examine such diverse phenomena as the internal preservation of corals, molluscs and bryozoans, the cellular makeup of a dinosaur bone and the discovery of microfossils such as fusulinids in limestone.

What is an acetate peel? Think of a fingerprint. A peel is used to bring out minute detail on the surface of a rock just as your fingerprints would be much more visible on a piece of glass after dipping your fingers in flour. Only with a peel, a fine impression is made on a piece of thin plastic that can be mounted between two slides and examined under a good hand lens or a microscope.

Let's make a peel!

List of necessities:

✓ Hydrochloric acid (muriatic acid)
✓ Acetone
✓ Clear acetate paper (.005mm to .02mm thick)
✓ A grinding surface (a sheet of glass)
✓ Grinding abrasives (200, 600, 1000 grits)
✓ Glass slides (sizes will vary)
✓ A shallow dish (such as ice cream tub lid)

Method:

• Choose the fossil to be studied. Most fossils or fossiliferous limestone will do. The surface to examine can be anywhere from one to several centimetres across. **A smooth flat peeling surface must be created.**

• This smooth surface can be started by making a clean cut with a rock saw. Don't despair, however, if a saw is not available. Many fossils can be ground on a piece of glass using 200 grit, water and lots of "elbow grease." (If a saw is used, the fossil must still be ground with 200 grit.) Use a rotating motion with the hand, as in polishing a table surface, to grind the fossil on the glass plate. Add water and grit when needed. There is no magic ratio of water to grit; only experimentation will tell. **Keep grinding until the surface is not getting any smoother.**

• Wash the fossil and glass of all 200 grit. **Every speck!** Repeat the grinding process with 600 grit until the surface is not getting any smoother. Wash again. Repeat with 1000 grit. The surface where the fossil has been ground should be smooth to the touch and show an even surface when reflecting light. The ground fossil surface must now be etched in acid.

• Pour **weak** (10 percent maximum*) hydrochloric acid into a shallow dish. Use just enough to cover the bottom. Take the ground surface of the fossil and press it into the acid for 6 seconds. **Remove the fossil and immediately rinse it in water.** The fossil surface is now etched and ready for a peel.

• Take acetate paper and cut a square of paper about 25 per cent larger than the fossil surface to be peeled. Place the fossil on a table so that the ground surface is level and facing up. (If the underside is not flat, use Plasticine or some such product to create a stable base.) Pour a small amount of acetone over the entire ground surface to be peeled. **Immediately** place the cut square of acetate paper on top of this surface. **The paper must be laid evenly in one motion.** ***Do not press.***

• The acetate will cling to the wet, ground surface. The acetone will quickly evaporate. Leave in place for at least 3 minutes (no maximum limit). After the waiting time, peel off the acetate paper by **slowly** pulling it up from one corner. The motion is similar to removing a wet stamp from an envelope.

• The square of acetate paper in your hand is now a "peel." Place it between two glass slides. The slides do not need to be sealed and can be reused. Your peel is now complete and ready to reveal palaeontological wonders under the microscope.

You may need to make several attempts before coming up with a successful peel. Don't despair. The rewards are worth it! A new world of internal fossil structures, microfossils and "curiosities" will be revealed. On your next field trip you will find yourself collecting bits & pieces of fossils and sedimentary rock that would have previously been discarded. Inside these bits & pieces are fossil secrets you can now unlock using acetate peels.

[* *Note: The muriatic acid available in hardware stores needs to be diluted for this application. Add 1 part muriatic to 2 parts water, to obtain a 10% solution. Remember the AAA rule: Always Add Acid to water, not the other way around, and wear eye protection. Also, use acetone only in a well-ventilated area, preferably outside or in a garage; acetone fumes are toxic and very flammable.*

Joe has generously offered to mail a sample acetate peel to any interested member. Write to the Society's mailing address c/o Joe LeBlanc – ed.] ❑

APS Field Trips 1986–1996

by Les Adler

As this issue of our *Bulletin* commemorates the tenth anniversary of the functioning of the APS, I am providing a quick rundown of the field trips to date. The number of participants on each trip has varied from 4 to 26 while some of the trips were held under quite difficult weather conditions. Some days were very wet, uncomfortably cold or hot and some of the campgrounds either disappeared in the preceding twelve months or were under water or terribly noisy. Some trips were meant only for observations or for taking photographs while others would produce some really nice museum-quality specimens for a collection.

Field Trip 86-1, June 1986, went to the Tolman Bridge, led by Wayne Braunberger. Wayne explained the stratigraphy. This area is now off-limits as it has become a Provincial Park; scarce dinosaur fossils can be found occasionally outside the park boundary, and you have to keep north to avoid extremely thick thorn bushes.

Field Trip 86-2 was an observation trip covering Cretaceous, Triassic and Devonian sediments west of Calgary, taking in trace fossils at Seebe, Mesozoic and Palaeozoic fossils at the Banff traffic circle and Devonian sponge and coral reefs at Grassi Lakes near Canmore. This long trip was led by Percy Strong.

Field Trip 86-3 was led by Harvey Negrich who then arranged the field trips for the next six years. Harvey usually arranged for an experienced geologist or someone who had collected extensively in an area to lead a trip. On this occasion Harvey took us to a series of locations on both sides of the Kicking Horse River east of Golden, B.C. This area produced a large number of different graptolite species from the Ordovician Period.

Field Trip 87-1. Betty Speirs of Red Deer showed us her fossil plant collection, then took us to the Joffre Bridge fossil area 16 kilometres east of Red Deer. Except for fossils from the mollusc bed, most of the material is no longer legally available.

Field Trip 87-2. Canyon Creek, with Percy Strong. This trip was to examine the sedimentary structures and to see why some sediments contain fossils and others do not.

Field Trip 87-3. Dinosaur Provincial Park, with Harvey Negrich and park personnel. We collected specimens for the Alberta Government, not being allowed to keep any material, but we did get the feel of collecting rare microvertebrate fossils in the badlands.

Field Trip 88-1. This was a repeat of trip 87-1.

Field Trip 88-2. Jonathan Greggs of Mount Royal College took us up the canyon of Jura Creek near Exshaw, into the mountains to the north. This can be an extremely dangerous area when there has been heavy rain in the area. Here we examined the contact of the Exshaw and Banff Formations (latest Devonian to earliest Carboniferous). The fossils included rare cephalopods.

Field Trip 89-1. Dr. Dave Mundy and Wayne Braunberger took us around locations to the east and southwest of Drumheller and East Coulee and along the Horseshoe Canyon. This great trip showed us sedimentary structures, stratigraphy and also produced trace fossils, oysters and clams.

Field Trip 89-3. Hope Johnson, formerly a palaeontologist for Dinosaur Provincial Park, showed us her badland and fossil paintings and her Cretaceous fossils. She then led us to an area 24 kilometres south of Suffield above the South Saskatchewan River. Next day Les Adler and Harvey Negrich took the party east of Manyberries to collect ammonites and crayfish claws in the Bearpaw Formation.

Field Trip 90-1. We visited the late Lawrence Halmrast's museum near Warner. This museum has now been absorbed by the Royal Tyrrell Museum of Palaeontology. Lawrence took us to Devil's Coulee and the Milk River Reservoir dinosaur bone deposit, now covered by water. Harvey Negrich took us across southern Alberta near the Montana border to the Pinhorn Ranch, to collect dinosaur bone and molluscs.

Field Trip 90-2. Canyon Creek with Dr. Dave Mundy—a detailed look at a great many fossiliferous locations along a 4.8 kilometre stretch of the creek, which was quite deep on this trip. The material included early Carboniferous stromatolites, brachiopods, gastropods, plant roots, worm tracks and crinoid ossicles.

Field Trip 91-1. Wayne Braunberger took us high up in the mountains south of the Frank Slide to the Adanac Mine and Carbondale River to collect Jurassic and Cretaceous molluscs. Les Fazekas located a rich spot with many pelecypods.

Field Trip 91-2. Les Adler took us on a long hike across rugged badlands on a hot day with mosquitoes, near the Morrin Bridge to a spot with many chunks of dinosaur bone and some scarce *Albertosaurus* teeth.

Field Trip 91-3. Wayne Braunberger took us to Canyon Creek, high up a ravine above a pipeline compressor station to collect brachiopods, blastoids and some very rare trilobites.

Field Trip 92-1. Les Fazekas took over as field trip chairman and led us to Ravenscrag Butte, Saskatchewan to collect Paleocene plants. While camping at Eastend a cougar appeared and quickly left. We then went to the museum and examined their fossil displays. The following day Les Adler took us to the Manyberries area to collect marine mollusc fossils from the Bearpaw Formation.

Field Trip 92-2. Les Fazekas led us to Scabby Butte, near Lethbridge to collect microvertebrate material, including garpike scales, dinosaur bones and crocodile and fish teeth.

Field Trip 92-3. Les Fazekas took us to Knudsen's farm at Huxley to view the Cretaceous/Tertiary boundary and the *Tyrannosaurus rex* quarry, now covered over and lost. We collected fossil wood and *Platanus* leaves while Dr. Gerry Morgan found a hadrosaur tail centrum.

Field Trip 93-1. Les Fazekas directed a group to Coronation and the Carolside Dam to collect Bearpaw material including mosasaur vertebrae, ammonites, pelecypods and crayfish.

Field Trip 93-2. A trip to Nihahi Ridge with Wayne Braunberger to collect early Carboniferous shark mouth-plate pieces and brachiopods.

Field Trip 94-1. Wayne Braunberger and Les Fazekas took us to the Ram River Falls area to collect pelecypods and ammonites of the Cretaceous Wapiabi Formation, involving a very long drive on some narrow gravel roads.

Field Trip 94-2. Les Fazekas and Peter Meyer led a trip to Genessee to collect fossil Paleocene plants.

Field Trip 95-1. Les Fazekas took a group to Manyberries to collect Bearpaw Formation fossils and then visited Dr. Steim's collection at Medicine Hat.

Field Trip 95-2. Les Fazekas obtained permission for us to go to the Siksika Nation Reserve near Bassano to collect fossil wood, a dinosaur tooth and clams from the Late Cretaceous Horseshoe Canyon Formation. We then collected ammonites and pelecypods above the Bow River south of Bassano in the Bearpaw Formation, between thunderstorms.

Field Trip 95-3. Middle Eocene floras, insects and fossil fish at McAbee near Cache Creek, British Columbia. Peter Meyer made arrangements with the Thompson Valley Rock Club to collect on their leases. Les Fazekas was camped quite close to a major derailment on the CPR line at Savona.

For 1996 the program calls for a trip to southwest Alberta to measure a fossiliferous geological section of the Bearpaw Formation, followed by a trip to Red Rock Coulee near Medicine Hat and a return trip to Genessee to collect fossil Paleocene leaves. ❑

Field Trips 1996

Three field trips are planned for this summer. **Dates are firm. Watch for detailed updates in the June Bulletin. For more information, contact Les Fazekas, field trip coordinator: (403) 248-7245.**

NOTE: Because of the distances from Calgary, all three of these field trips have been slated as two-day trips. In most cases the second day (Sunday) will be optional, and not part of the scheduled itinerary.

Non-members and unaccompanied minors will not be allowed to attend field trips.

Trip 96-1: Saturday & Sunday, June 22–23

Waterton Dam, Alberta—This field trip is designed to be held in conjunction with the Field Methods seminar starting on May 9, in Calgary. There is a $10.00 fee for the seminar, which includes the field trip (see details elsewhere in this issue). The locality is a fossiliferous outcrop section of the Upper Cretaceous Bearpaw Formation.

Trip 96-2: Saturday& Sunday, July 20–21

Red Rock Coulee area, southern Alberta—Both invertebrate (marine molluscs) and vertebrate (dinosaur, etc.) fossils occur in the Upper Cretaceous rocks of this area south of Medicine Hat.

Trip 96-3: Saturday & Sunday, August 17–18

Genessee, Alberta—This locality on the North Saskatchewan River southwest of Edmonton is well known for beautifully preserved Tertiary (Paleocene) plant fossils. ❑

Speculations in Natural History: The Nit-Picker's Guide to Dino-Documentaries

By Cory Gross

Well, we all knew this was coming. It was only a matter of time. I've already shown off that I can draw, so now it's time to shoot my mouth off as well.

This is the first of what I hope will be a fairly regular column, "Speculations In Natural History" (with apologies to Gould). Before I start with subjects of which I have no academic knowledge, I decided to write about another interest of mine: Paleo-Media analysis. In this case, dinosaur documentaries.

I imagine most of you out there have noticed the rash of dinosaur documentaries since *Jurassic Park* was released. The Learning Channel's *PaleoWorld*, PBS' *The Dinosaurs*, the list goes on, and on, and on, and on, and…well, you get the idea. And of course, none of these documentaries (or docudramas in some cases) have any problems with letting you know that they're cashing in on the Jurassic cashcowosaurus. The caption on the covers of *The Dinosaurs* videos reads something to the effect: "…Meet the real paleontologists who helped bring *Jurassic Park* to life." So now it would seem that the science of palaeontology has been relegated to helping make movies. At least if I don't get a job at the Tyrrell, I can always try Stan Winston Studios or ILM.

In the "Beating The Dead Horse" department: I imagine we *all* know the capsulated history of palaeontology by now. First Mantell found the *Iguanadon* tooth, then Owen named the beasties and made models of them in the Crystal Palace. Now over to the U.S. of A. where two babies named Cope and Marsh had a little Bone War, and Roy Chapman Andrews made a harrowing expedition to Inner Mongolia. If they have a few extra minutes, they may mention Baron Cuvier. Everybody who's getting sick of this, raise your hand.

Did you know that all "important" discoveries in palaeontology were made in America, or by Americans if in other countries? Yah, neither did I until I started watching these documentaries. When they mention Mongolia, you always hear about Andrews' expedition and the most recent ones by the American Museum of Natural History. I think these producers were the only people who DIDN'T hear about *The Dinosaur Project*. (a friend of mine in Edmonton says that they got sick of the advertising deluge after about a year and a half). And it took Yale professor John Ostrom to figure out how the European *Archaeopteryx* really looked. Apparently, the only fossils of note that we have in Canada is that one *Centrosaurus* bone bed…hmmm. Of course, a Brit did find that one tooth that got the whole ball rolling, but we already covered that in the condensed history.

An important rule of thumb is the B.I.G. law: Bakker Is God. His word is law when it comes to dinosaurs. I personally wouldn't mind trying the Scientist/Movie Star bit for a while, it sounds like fun! One of my favourite comments he made is in a particular episode of *PaleoWorld*. He stated that the asteroid theory was "great cinema, bunk science," whereas his *T. rex*es and raptors that could romp, stomp and do jumping jacks aren't. (Sorry Bob, no offence…) On the back of the aforementioned *The Dinosaurs* videos, all four parts sported a picture of a youthful Bakker, whether or not he was actually in that part of the video. And what did the caption underneath the picture say? Why, he "helped bring *Jurassic Park* to life," of course.

Do they bother to give the poor turtle a cup of coffee? No!

The only time that B.I.G. does not apply is when it comes down to the dinosaurs' extinction. Then it was the asteroid. I do agree with the asteroid theory in part, but don't you think it gets just a bit too much camera time? In a one-hour show on extinction, the celestial impact gets about 45 minutes, the alternatives get about 10 (we have to leave room for the all-important commercials). This is symptomatic of the larger problem of "leading," where the predominant view gets all the support to convince the viewer that it's the only "real" option. In the classic argument of warm versus cold bloodedness, the cold blooded side always gets stuck with the turtle trying to crawl along on a nippy morning. Do they show a fast-moving reptile such as the cat-like monitor lizard? Do they even bother to give the poor turtle a cup of coffee? No! ***Never show an active reptile, it'll confuse the public!*** With such things as predator/prey ratios, nesting sites, bone histology, etc., they'll just…oh…neglect to show any countering opinions or evidence.

I hope that this article will serve as a springboard to get at least some of you to look at documentaries with a critical eye if you don't already. Remember, these thing are to be taken with a grain of salt—or a spoonful of sugar in some cases.

Until next time…❑

Fossils in the News

The Globe and Mail, January, 1996:
"New" bird fossils

LIAONING Province, China—Radiometric dating has pegged the age of two new bird fossils at 142 million years old, about five million years younger than *Archaeopteryx*. Dr. Lian-hai Hou found the fossils, one about the size of a budgie, and the other larger and similar to a modern bird.

The newly discovered animals would have been much stronger fliers than *Archaeopteryx*, which did not have a strongly keeled breastbone for the attachment of flight muscles. Besides having a well developed keel, the larger of the two new fossils has a short tailbone, like a modern bird's, placing the body's centre of gravity over the wings and allowing the tail to be used as a rudder.

New Scientist, January 20, 1996:
Ancient plants with modern plumbing

GUIZHOU Province, China—Some unusual plant fossils dated to 270 million years old (Permian) have surfaced in China, bearing a vascular (water piping) system thought not to have evolved until 150 million years later.

The new plant fossils belonged to a long-stemmed, climbing vine with tendrils (another "first") and huge leaves. Ohio State University (Columbus) student Hongqi Li and University of Kansas (Lawrence) colleagues were astonished when they examined thin-sections of the fossil's stem, and found well-developed vessels, best known in the flowering plants and a few other modern groups, which are thought to have arisen in Early Cretaceous time. "It looks like parallel evolution to me," says Edith Taylor of the University of Kansas. "Anything with leaves that big and stems that small would need vessels to move water."

The Arizona Daily Star, February 9, 1996:
Sale of 70 million-year-old egg gives British researcher funding

TUCSON—Fossil technician Terry Manning, an expert in the preparation of fossil dinosaur eggs had to resort to desperate measures to fund his palaeontological research project. The Dinosaur Embryo Project, of Leicester, U.K. sent Manning to the Tucson gem and mineral show to raise money for the project through the sale of one of its prize specimens. The fossil egg (from China), containing the embryonic bones of an unborn therizinosaur, shows evidence of attack by beetle larvae which "chewed the ends of the bones and sucked the flesh off the bones." It was sold to a Wyoming museum for US$70,000. "We are desperate for money, and it was decided that we should sell one egg," said Manning. "It's the only one that I am ever going to agree to put on the open market. They're too important, really. But I'm bloody broke. Flat broke. Seriously broke."

Calgary Herald, December 21, 1995:
Fossil shows nesting dino incubating its eggs

The Globe and Mail, December 21, 1995:
Desert dinosaurs weren't egg eaters

NEW YORK—A recently discovered fossil from the Ikhaa Tolgod beds in south-central Mongolia preserves a parent oviraptor (toothless, ostrich-like dinosaur) in the act of incubating or protecting its nest of eggs. Mark Norell of the American Museum of Natural History made the find, which clearly shows that the animal was sitting on the eggs in a brooding position, and not attempting to eat them, which was a behaviour formerly attributed to the oviraptors (which means "egg-stealer").

The find also seems to support the feeling by many palaeontologists that modern birds are directly related to the dinosaurs. It is thought that the animal was killed and buried by a sandstorm while protecting its fifteen eggs. The fossils are to be returned to Mongolia after study.

The Globe and Mail, December 30, 1995:
Ship probes Caribbean for signs of dinosaur extinction

The scientific drillship JOIDES (Joint Oceanographic Institutions for Deep Earth Sampling) Resolution has set sail for the western Caribbean Sea, off Mexico's Yucatan Peninsula, to probe sediments thought to preserve evidence of a catastrophic meteorite impact 65 million years ago. The collision is thought by many scientists to have caused the extinction of the dinosaurs and other life forms, when huge volumes of sulphur-laden smoke and dust were injected into the atmosphere, causing sudden cooling and darkness that would have severely affected ecosystems.

The JOIDES Resolution will drill a number of holes to depths of 800 to 1000 metres, and recover sediment cores for analysis. It is expected that samples will contain tiny beads of molten rock created by the impact. Chemical analysis of the beads may show how much sulphur was present at the impact site.

[*Thanks to Fred Lewis, Trudy Martin and Sam Richter for providing clippings –ed.*] ❑

Reviews

by Les Adler

Flying Lessons from a Flightless Insect by James H. Marden, *Natural History*, February 1995, pp. 4–8.

Jim Marden is an assistant professor of biology at Pennsylvania State University and with a student collects and conducts studies with winter stoneflies (*Taeniopteryx burksi*). Stoneflies spend a year living as herbivorous nymphs in the streams where they were born. When mature the nymphs metamorphose into a flightless adult form, leave the water and on land search for mates in the snow. What caught Jim's attention is their method of reaching shore.

Jim studies these insects to look for insights into the evolution of insect flight some 350 million years ago. Flight allowed novel ways of interacting with the environment which then led to faster evolution and frequent speciation. The end result is that flying insects comprise about 60% of all living species described by scientists. Humans have to deal with this evolutionary event particularly in the form of mosquitoes carrying deadly parasites and other insects destroying crops (locusts) and killing trees.

Jim has read several scientific papers discussing the development of insect wings, distance covered, protowings on the thorax, body temperatures, muscle development, wing joints and neuromotor coordination. He was not happy with methods using models so he decided to study the insects themselves.

Jim found that aquatic insects move about on the water surface in a wide variety of ways. Stoneflies couldn't fly but they were able to cover long distances by an aerodynamic method of skimming on the surface, perhaps as an intermediate form between swimmers and fliers. He then experimented with stoneflies, adjusting their wings and muscles. This did not answer his questions. Currently he is studying vein structure to find a correlation with flight ability. He may be peeking into a third of a billion years of the evolution of flight.

How to Build a Tree by Karl J. Niklas, *Natural History*, January 1996, pp. 48–52.

You will find this article to be of interest if you collect fossil plants. Karl discusses the cell structure of past and present-day plant types which have exhibited convergent evolution of wood and other stiff tissues, enabling trees to become the largest living things on the planet. (There is a suspicion that underground fungi may be the largest.)

A set of diagrams is provided of a series of cross-sections of the trunks of oak, pin, cycad, *Lepidodendron, Calamites*, tree fern and palm, with associated stems, cambium and leaves.

Lyme Regis, England: Fossils by the Sea by Michael A. Taylor and Hugh S. Torrens, photographs by Tim O'Sullivan. *Natural History*, October 1995, pp. 66–71.

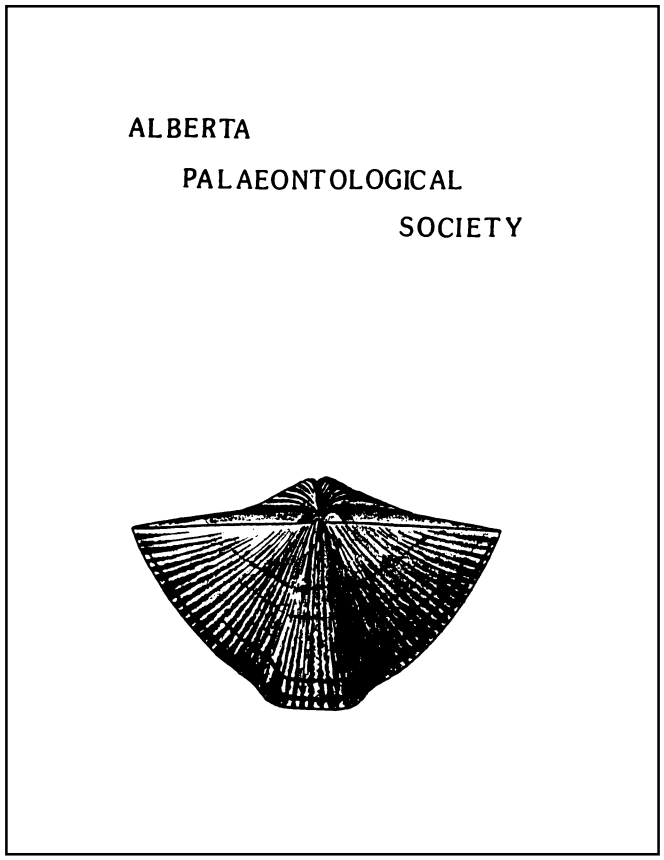
Several of our members have visited Lyme Regis and Charmouth in Dorset, southwest of London. If you are going to England this area is a must-see. The town is historically important, it has a fossil museum and several fossil shops, it has records relating to Mary Anning and there are fossils nearby in the cliffs.

Lyme Regis was a major port in the Middle Ages and became a leading holiday resort in the late eighteenth century. The Anning family set up a business of preparing and selling fossils to the holidaymakers and then to important collectors and museums. The foremost collector was Mary Anning who found ichthyosaurs and plesiosaurs decades before dinosaurs became widely known. Her best finds were made in the winter when erosion of the local cliffs is rapid. The business had its strong and weak periods and Mary became an attraction herself.

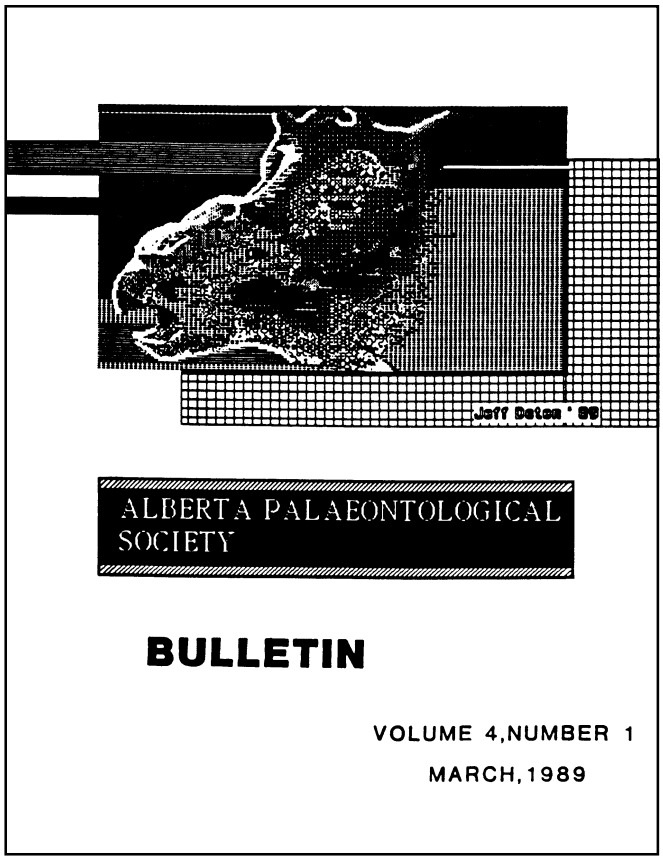
Much of the published information on Mary Anning is incorrect. It was her brother Joseph who found the first of the ichthyosaurs and it was not *in situ*. Mary Anning's role as a woman of crucial importance in the history of vertebrate palaeontology has largely been ignored and merits attention.

Wander down to the coast and proceed both east and west, mindful of the dangerous tides and storms. You will certainly see evidence of Jurassic ammonites.

The APS Bulletin: Ten Years of Cover Art



Volume 1, No. 1, March 1986 — *Geoff Barrett*



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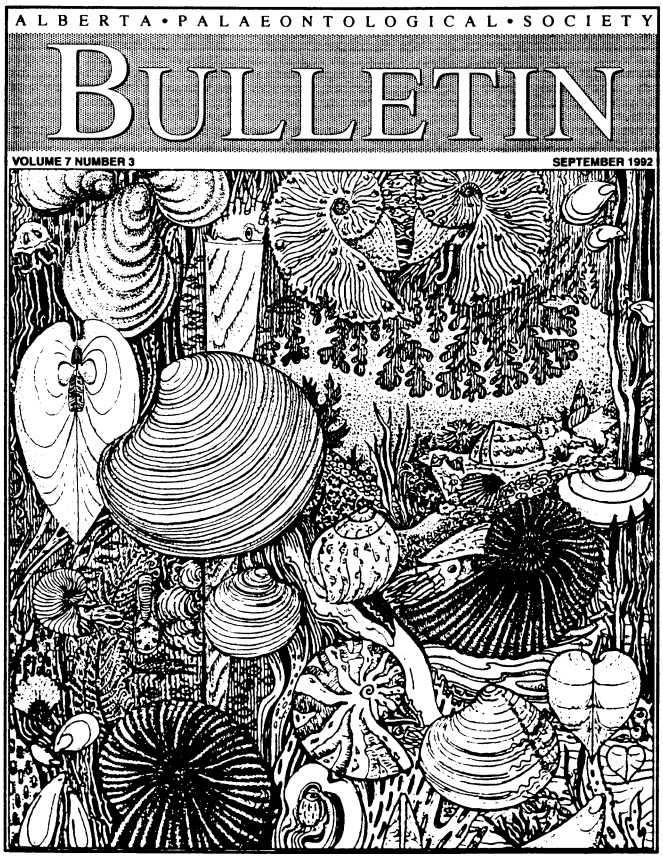
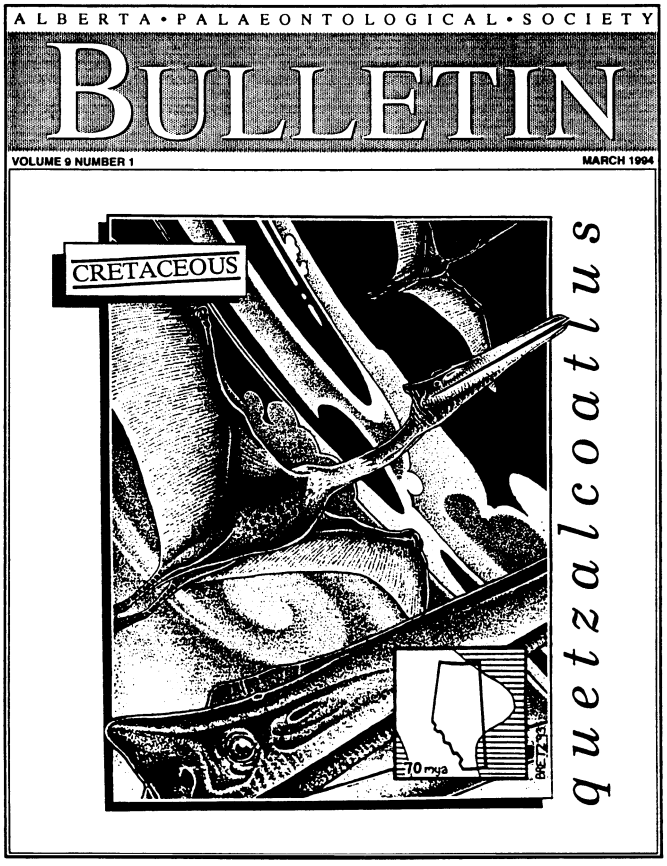


Hope Johnson



Chris Bretz

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