

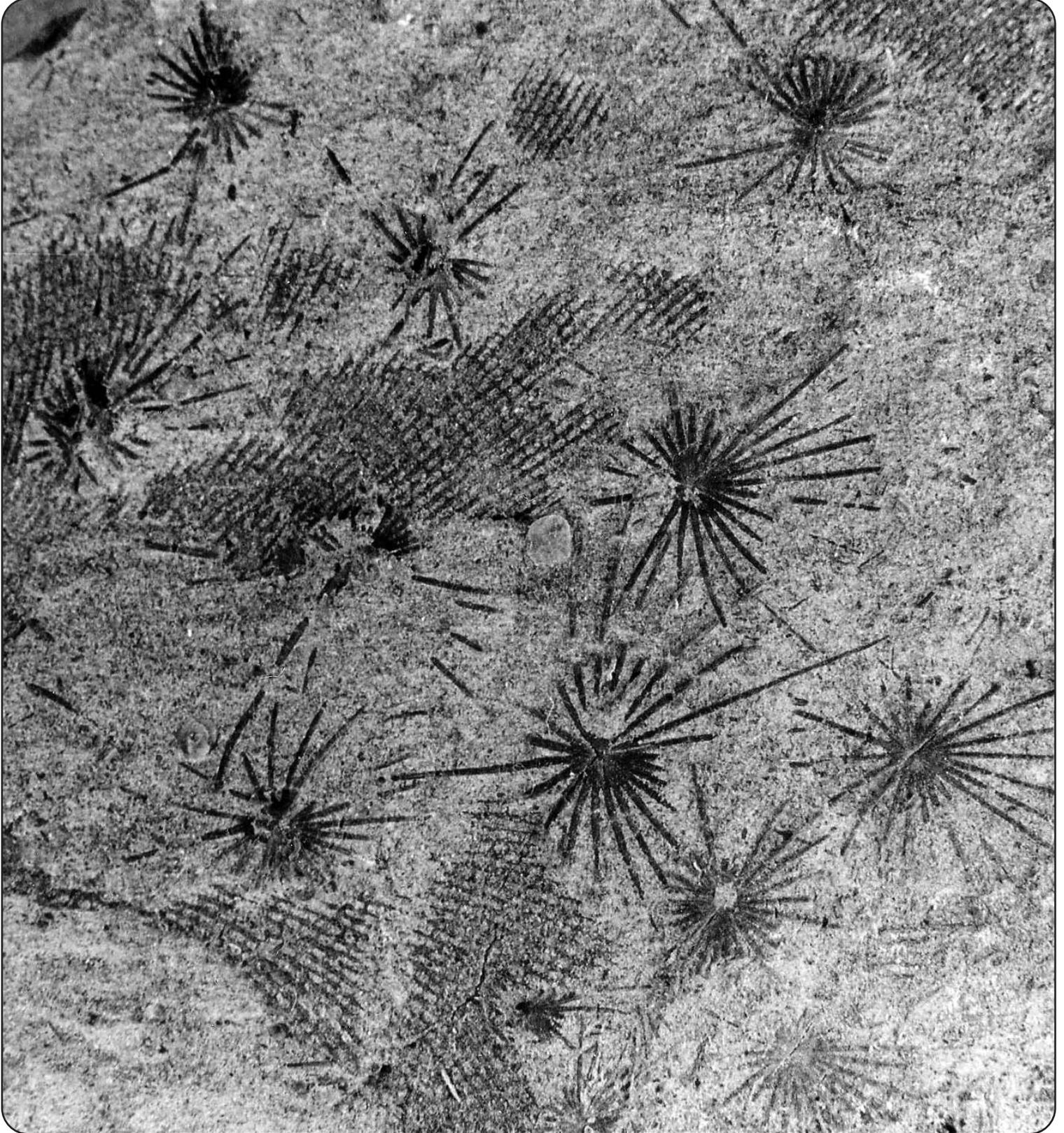
Alberta

*Palæontological
Society
Bulletin*

VOLUME 18 • NUMBER 3

www.albertapaleo.org

SEPTEMBER 2003



ALBERTA PALAEOLOGICAL SOCIETY

OFFICERS

President	Dan Quinsey	247-3022
Vice-President	Keith Mychaluk	228-3211
Treasurer	Mona Marsovsky	547-0182
Secretary	Kimberley Motz	243-1044
Past-President	Vaclav Marsovsky	547-0182

DIRECTORS

Editor	Howard Allen	274-1858
Membership	Howard Allen	274-1858
Program Coordinator	Philip Benham	280-6283
Events Coordinator	Wayne Braunberger	278-5154

APPOINTMENTS

APAC Representative†	Dan Quinsey	247-3022
Curator	Ron Fortier	285-8041
Fund Raising	Dan Quinsey	247-3022
Librarian	Mona Marsovsky	547-0182
Social Director	unfilled	
Webmaster	Vaclav Marsovsky	547-0182

† APAC is the Alberta Palaeontological Advisory Committee

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

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

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

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

THE BULLETIN WILL BE PUBLISHED QUARTERLY:

March, June, September and December. Deadline for submitting material for publication is the 15th of the month prior to publication.

Society Mailing Address:

**Alberta Palaeontological Society
P.O. Box 35111, Sarcee Postal Outlet
Calgary, Alberta, Canada T3E 7C7
(Web: www.albertapaleo.org)**

Material for the Bulletin:

**Howard Allen, Editor, APS
7828 Hunterslea Crescent, N.W.
Calgary, Alberta, Canada T2K 4M2
(E-mail: editor@albertapaleo.org)**

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. Requests for missing issues of the Bulletin should be addressed to the Editor. Back issues are available for purchase from the Librarian or the Editor, in hard copy or CD-ROM formats. Copies are also available for loan in the Society library.

UPCOMING APS MEETINGS

Meetings take place at 7:30 p.m., in Room **B108** (or **B101**, across the hall)
Mount Royal College: 4825 Richard Road SW, Calgary, Alberta

Friday, September 26, 2003—Open House and Fossil ID Clinic: bring in your summer finds!

Friday, October 17, 2003—Dr. Michael Webb, Imperial Oil—Insights into the Science of Mammalian Biostratigraphy and Late Cretaceous (Lancian) Mammals of the Bighorn Basin, Wyoming.

Friday, November 21, 2003—Dr. Derald Smith, University of Calgary—Evidence for Catastrophic Post-Glacial Floods and the Formation of the Mackenzie River (tentative).

ON THE COVER: Alberta fossils! The enigmatic *Macgowanella stellata*, possible bryozoan holdfasts from Lower Carboniferous (340 million years old; Mount Head Formation) rocks of the Rocky Mountain Front Ranges, Alberta. Magnified approximately 5 times. See cover story, Page 6. Photo by APS member Geoff Barrett. (Copyright ©)

From the President

by Dan Quinsey

Welcome to a new and exciting year. I hope everyone's summer was safe and fulfilling as mine was. As many of you already know, last year we made some changes to our meeting formats and we will continue with the revised formats this year.

We are working hard to raise funds for upcoming projects which will be announced during the first few meetings. I encourage all members to attend the meetings, especially the first few, to have the opportunity to get involved in the new projects that will be proposed.

Unofficially, I would like to declare this year the "Year of the APS Volunteer." Our goal is to get our members more active in projects even if it only involves bringing treats for a meeting. There is a great feeling of accomplishment and satisfaction one gets when they volunteer. It is the best work of life.

I look forward to seeing familiar faces and many new ones during the next year. □

Upcoming Programs

September 26, 2003

Alberta Palaeontological Society Open House and Fossil Clinic

The APS welcomes members, families and the general public to the September Open House and Fossil Clinic. APS members should bring specimens to display, and our resident experts will be on hand to help identify fossils that are brought in to the clinic.

October 17, 2003

Insights into the Science of Mammalian Biostratigraphy and Late Cretaceous (Lancian) Mammals of the Bighorn Basin, Wyoming

Speaker: **Dr. Michael W. Webb, Imperial Oil**

Mammalian remains, primarily teeth, are biostratigraphically useful index fossils in terrestrial Cretaceous and Tertiary strata of western North America. Mammalian teeth are preferentially preserved due to their hardness, are species-specific in most instances, are generally immune from variation due to age and sex, and lend themselves to detailed morphological studies. Using fossil mammals as the primary means of biostratigraphic control in the Cretaceous and Tertiary terrestrial sediments of western North America has led to the creation of North American Land Mammal Ages (NALMAs) that supplement/replace biozones based on European strata and fossils. As a basis for further discussion, tooth morphology and NALMAs will be touched upon.

The Hewett's Foresight Local Fauna of Wyoming's Bighorn Basin is latest Cretaceous (Lancian) in age. It is one of only four large collections of Lancian mammals, all of which are found in localities from Alberta, Montana and Wyoming. Similar to the "type" Lance fauna of eastern Wyoming, the Hewett's Foresight Local Fauna is rich in multituberculate and marsupial mammals as indicated by the overwhelming abundance of the genera *Mesodma* and *Alphadon*. The composition of the multituberculate and eutherian (placental) assemblages suggests northern affinities for the fauna, while the marsupial sample shows important differences from the "type" Lance fauna. The Hewett's Foresight Local Fauna provides special insight into the status of mammalian populations in the latest Cretaceous of western North America.

Biography:

Michael Webb received his M.Sc. (Geology) from the University of Alberta for his work on Paleocene mammals from near Drayton Valley, Alberta. He then earned a Ph.D. (Geology) from the University of Wyoming for research in two distinct fields: Late Cretaceous mammals and fluvial sedimentology. Dr. Webb currently resides in Calgary, working with Imperial Oil on various geological projects based in northern Alberta, the Mackenzie Delta, and offshore eastern Canada. □



Panoramic view of lower Horseshoe Canyon Formation badlands along the Willow Creek Road; view is to the northwest. (File photo, Howard Allen.)

2003 Field Trip Reports

**Drumheller, Alberta
June 21-22, 2003**

by Mona Marsovsky

On June 21, thirty-six APS members (including six children) braved the windy, cold start of summer to learn about the geology and palaeontology of the Bearpaw and Horseshoe Canyon Formations near the Hoodoos Recreation Area, east of Drumheller.

Luckily the threatening showers kept their distance, allowing members to scramble up the steep slopes to look for fossils and enjoy a bounty of wild flowers (including those of onions and cacti). At Stop 1, participants examined the transition between the Bearpaw (marine) and Horseshoe Canyon (continental) formations and found some trace fossils and fossilized wood. Stop 2 highlighted an incised channel where clams had burrowed into the wood at the bottom. When sea level rose, the stream-cut channel and burrows were filled in with mud. This is one of the best places in the world to see these *Teredolites* burrows.

After a short lunch at the Hoodoos Recreation Area, the group car-pooled up the Willow Creek Road. All admired the huge petrified tree stumps standing in place near the coal layers, midway up the cliff. Almost as prevalent as petrified wood were fossilized oyster shells, from beds near the coal layers. At the

final stop of the day, members examined the structure of a large estuarine point bar, which illustrated cross-bedding (inclined heterolithic cross stratification).

On the following Sunday, the group met at the “World’s Largest Dinosaur” in downtown Drumheller then car-pooled to the Drumheller Airport road. From that point the members examined the difference between a channel and a crevasse splay. Crevasse splay deposits occur when a river overflows its banks during a flood. Members also viewed the Drumheller fault and an old bentonite mine which used to work one of the purest bentonite beds in the area.



A good crowd attended the Drumheller trip, despite a blustery start. Photo by Les Adler.

The final stop was Horsethief Canyon, which exposes the lower Horseshoe Canyon Formation, capped by the Drumheller Marine Tongue. The Drumheller Marine Tongue is rich in oysters, other bivalves (clams) and gastropods (snails). Under this marine layer, the Horseshoe Canyon Formation contains fossils such as dinosaurs, fish, turtles and crocodiles.

We would like to thank the **Dooley** family for allowing APS access to the section on Willow Creek. Thanks go to **Wayne Braunberger** for organizing an excellent field trip.

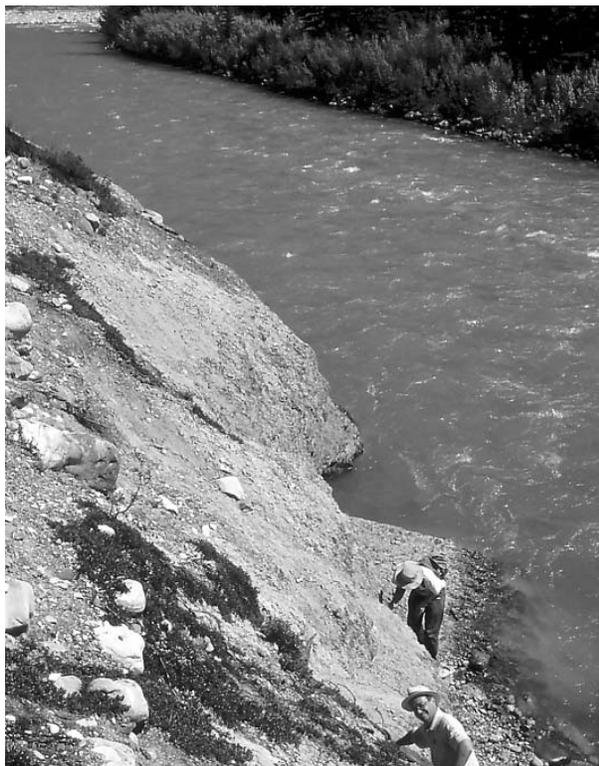
Nordegg area, Alberta July 19-20, 2003

by Mona Marsovsky

On Saturday, July 19, about twenty APS members hiked to where the Cline River had carved into the Devonian Mount Hawk Formation. Unfortunately, the unusually high and swift-flowing river made access from the shore impossible. Several intrepid members scaled down the steep banks to collect various genera of brachiopods, including *Atrypa* and *Hypothyridina* and pieces containing crinoid stems. The rest enjoyed hiking the steep winding canyon cut by the Cline River through the Palliser Formation limestone.

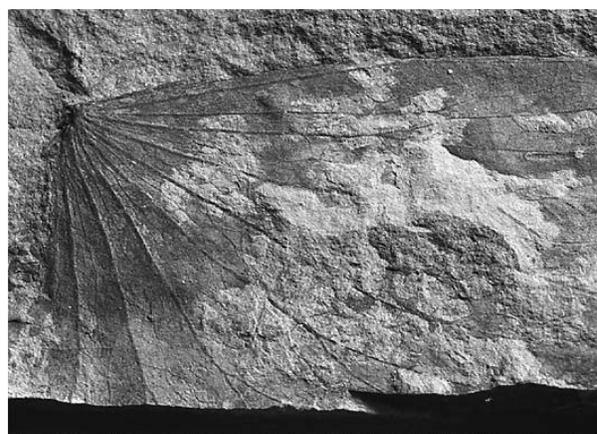
Later that afternoon, members jetted forward in time about 300 million years to investigate late Cretaceous (Coniacian) ammonites in the Wapiabi Formation just downstream from the Big Horn Dam.

The following day, the group met **Georgia Hoffman** and **Dr. Art Sweet** (of the Geological Survey of Canada) near the Alexo Children's Camp to help



APS members David George and Harold Whittaker (lower) enjoying a sunny scramble on the Devonian Mount Hawk Formation outcrop at the Cline River. Photo by Vaclav Marsovsky.

collect Paleocene leaves for Georgia's research. Georgia Hoffman is using her Permit to Collect to investigate plant diversity and palaeoclimate just a few hundred thousand years after the catastrophe that caused the demise of the dinosaurs.



Fossils from the Alexo site. Top: *Metasequoia* sp., cf. *M. occidentalis* (dawn redwood, large frond) and *Mesocyparis borealis* (cypress). Bottom: unidentified fan-shaped leaf. Scale in centimetres. Photos courtesy of Georgia Hoffman.

Some APS members chiselled the large refrigerator-sized sandstone blocks that had fallen to the ground, to uncover a large variety of leaves (even a leaf that appeared to be a water lily). Other members helped Georgia excavate the loose talus slope, trying to find the K-T (Cretaceous-Tertiary) boundary.

Previously, Art Sweet had used pollen samples taken from the coal layer at the bottom of the cliff to determine the early Paleocene age (200 to 300 thousand years after the K-T boundary) of that coal layer. Intensive, cooperative digging allowed the participants to find a coal layer about 1 metre below the first. Art Sweet took samples for pollen analysis to determine if this lower coal layer is Late Cretaceous or early

Paleocene. Art also took sandstone samples from above the top coal layer and below the bottom coal layer for paleomagnetic studies to help determine the age. Luckily the rain held off for the entire day, and Georgia was able to take a heavy load of rock displaying leaf impressions (conifers, *Ginkgo*, and angiosperms) to the Geological Survey of Canada's office in Calgary for further study.

The APS would like to thank **David Frenette** of the Alexo Children's Camp for allowing APS members to park near the quarry. □

Archaeological Society of Alberta

Calgary Centre

Fall talk schedule

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

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

September 17, 2003

Speaker: **Sue de Caen**, University of Calgary

University of Calgary's Department of Archaeology Public Programming at Fish Creek Provincial Park.

Abstract:

Fish Creek Provincial Park, one of the largest urban provincial parks in Canada, provides rich evidence of more than 11,000 years of human use. The Fish Creek Archaeology Interpretive Centre, an educational facility operated by the University of Calgary, addresses First Nations and early European use and settlement of the Fish Creek area. From this facility, the University of Calgary conducts interactive, hands-on public archaeology outreach programs. Cooperative research and learning projects, involving members from the University and local and regional communities, assist the program in defining Alberta's archaeological past. Included are a public excavation program, a year-round elementary school archaeology program, and a growing volunteer program. This talk examines the

objectives of the public archaeology programs, their development and growth, and goals for future program enhancements.

October 15, 2003

Speaker: **Dr. Ted Binnema**, University of Northern British Columbia

Southern Alberta in 19th Century Blackfoot Maps

Abstract:

In 1801 and 1802 a number of Blackfoot men drew maps for Hudson's Bay Company trader, Peter Fidler. Several of these maps depict present-day southern Alberta in particular detail. Some of the landforms on the maps will be familiar to Calgarians. In this presentation I will discuss these maps with an emphasis on the landforms that I have, and have not, been able to identify.

November 12, 2003

Speaker: **Dr. Malcolm Lillie**, University of Hull

British Wetland Archaeology: the Humber and beyond

Abstract:

This talk will outline the development of wetland archaeology in the UK since the 1960s. Over the past four decades numerous initiatives, funded by a variety of national and regional agencies, have raised the profile of British wetlands on the international stage. Major research projects have been undertaken in England, Ireland, Wales and Scotland.

The nature of the discoveries occurring, including key sites and finds, and an outline of the structure of the research developed, along with significant long-term initiatives and current research directions will be covered. The "Humber" aspect comes from the author's continued involvement in the wetlands research undertaken in the Humber Estuary and its tributaries since 1994. Key aspects of this work include landscape reclamation, the study of an Iron Age lowland "hillfort" and on-going study of Bronze Age maritime trade in Britain and northwest Europe. □

Bookmark our website!
www.albertapaleo.org

Review

by Les Adler

Requiem for a Heavyweight

by Juan Luis Arcuaga. Adapted from *The Neanderthal's necklace: In search of the first thinkers*, translated by Amy Klatt. *Natural History*, December 2002–January 2003, cover and pages 42–48, 5 photographs and one illustration.

There is no familiar equivalent to a Neanderthal—to come across a reconstructed one is a thrilling experience. Neanderthals (*Homo neanderthalis*), based in Europe and modern humans (*Homo sapiens*) originating in Africa, may have first laid eyes on each other in what is now Israel perhaps 100,000 years ago. Neanderthals appeared to be stocky, with broad trunks and relatively short forearms and shins. Their sloping foreheads and forward-projecting faces would have looked strange, and the heavy brow ridges that formed a continuous double arch above their eyes and nose gave them a proud and fierce profile. Patterns of tooth wear suggest they used their jaws as a “third hand.” Their skin would have seemed very pale, to produce vitamin D in northern latitudes. Both species had brains about the same size, both made stone tools, used fire, and may have shared other abilities.

At Gran Dolina, near Burgos in Northern Spain, Juan's group have found eighty fragments representing at least six individuals about 800,000 years old, the oldest known in Europe, designated as *Homo antecessor*, Latin for “human forebear”; twenty-four pieces are shown here in a photograph. At another site, by accident less than a kilometre away at Sima de los Huesos (the bone pit), is the largest concentration of early human remains in the world, with the skeletons of at least twenty-eight individuals. At an age of 400,000 years, they are designated as *Homo heidelbergensis*. Access to this site is extremely difficult.

Neanderthal remains date from about 250,000 years before present. Between 127,000 and 40,000 years ago they spread out from Europe to populate the Middle East and southwest Asia. This species may have evolved from the two species named above. Cro-Magnons, the first European representatives of modern humans, developed new tool types that included side scrapers, the burin (a chisel-like tool) and an awl,

all made by modifying long thin flakes, or blades of stone that had been struck from a prepared core. Cro-Magnons made points from antlers, bone and ivory, turning the animals' own weapons against them.

Some Neanderthals were able to take up the new technology. Cro-Magnons survived the onslaught of very difficult climatic conditions better than the Neanderthals, through cultural and ecological abilities and by forging alliances among groups separated by great distances. Juan discusses the movements across the Russian plain and then southwards, stating that the Cro-Magnons possibly had better reasoning ability. Another hypothesis is that the Cro-Magnons had developed language and symbolic communication and creative consciousness.

Juan believes that modern humans developed a brain specialized for the manipulation of symbols and had a more energy-efficient body. They then replaced the Neanderthals.

The American Museum of Natural History at New York City, in connection with the above report, hosted a special display in early 2003, titled “The first Europeans,” of exquisitely preserved hominid and animal fossils up to one million years old, from the two Spanish localities, exploring what it means to be human today. □

On the Cover

Alberta fossils

This issue's cover picture, by APS member **Geoff Barrett**, illustrates a fine specimen of the enigmatic fossil *Macgowanella*. The fossil was first described by University of Alberta geologist P. S. Warren in his pioneering work, Geological Survey of Canada Memoir 153, *Banff area, Alberta* (1927). Warren described two species of the organism from rocks at Tunnel Mountain, Banff, questionably assigning them to the bryozoan genus *Evactinopora* Meek and Worthen 1865, based on a resemblance to presumed bryozoan holdfasts from the Mississippi Valley.

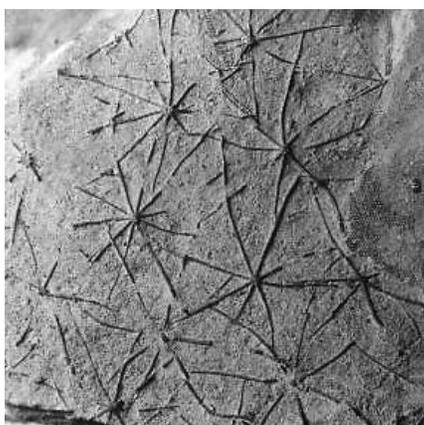
In the late 1970s, specimens of this peculiar fossil were found by Calgary amateur rockhounds, the late James W. McGowan and his wife, Dorothy, in the Highwood Pass area, who brought them to the attention of Drs. Sam Nelson (University of Calgary) and Tom Bolton (Geological Survey of Canada).

In a subsequent paper (Nelson & Bolton, 1980),

the McGowan specimens were examined in detail and compared with Warren's Tunnel Mountain specimens, as well as the *Evactinopora* literature from the United States.

Aside from the fact that the *Evactinopora* specimens had never been conclusively proven to be bryozoan holdfasts, the Mississippi Valley species were smaller and had shorter, thicker rays; as well, the Canadian species were seen to be commonly intergrown (see photo, below), suggesting a colonial habit, a characteristic never described in the U.S. species.

These differences were enough to convince Nelson and Bolton that the Canadian fossils should be assigned to a new genus, which they named *Macgowanella*, in honour of the McGowans.



Macgowanella tenuiradiata. Note several obvious interconnections between "stars" and fewer rays than *M. stellata* (cover). Photo by Geoff Barrett.

Warren's two original species, now called *Macgowanella stellata* and *M. tenuiradiata*, appear to be confined to the Marston and equivalent Lower Opal Members of the Carboniferous (Upper Mississippian; Viséan) Mount Head Formation of the southern Alberta Rockies, and make useful index fossils for that stratigraphic interval (Mamet & Nelson, 1984).

Thanks to Geoff Barrett for providing the photos and pointing out helpful references.

References:

- Mamet, B.L. and Nelson, S.J. 1984. Stratigraphic position of Carboniferous *Macgowanella* and *Sinopora? pascuali*, Canadian Cordillera. *Canadian Journal of Earth Sciences*, Vol. 21, p. 500–501.
- Nelson, S.J. and Bolton, T.E. 1980. *Macgowanella* gen. nov., possible bryozoan holdfasts, Mississippian of southern Canadian Rocky Mountains, Alberta. *Canadian Journal of Earth Sciences*, Vol. 17, p. 1431–1435.
- Warren, P.S. 1927. Banff area, Alberta. *Geological Survey of Canada, Memoir 153*, 79 p. □

T-Shirts!

Get your Society T-shirt or sweatshirt, with the new, award-winning design by Cory Gross, while they last!

T-shirts are available in three fabric colours: gold, red or natural (unbleached white), in sizes M, L, XL and XXL. Quantities of M and XXL may be limited—please inquire.

Sweatshirts are available in gold fabric only, in sizes M, L and XL. Quantities of M are limited—please inquire.

	PRICES	
	Members	Non-members
T-shirt	\$15.00	\$20.00
Sweatshirt	\$25.00	\$30.00

Buy yours at the next meeting (see Page 1) or by mail order. Contact Mona (403-547-0182, email vaclav@telusplanet.net) to inquire about availability of sizes and colours.

For mail orders, please include the following postage and handling charges:

Canada: \$6.00 per T-shirt, \$8.00 per sweatshirt
USA: \$6.00 per T-shirt, \$8.00 per sweatshirt



Mail your cheque or money-order to:

**Alberta Palaeontological Society
P.O. Box 35111 Sarcree Postal Outlet
Calgary, Alberta, Canada T3E 7C7**