



ALBERTA

PALAEOLOGICAL

SOCIETY

BULLETIN

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SEPTEMBER 1988

**ALBERTA PALAEOLOGICAL SOCIETY**

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The Society was incorporated in 1986, 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, curation, and display
  - 4) Education of the general public
  - 5) Preserve 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

OUR BULLETIN WILL BE PUBLISHED QUARTERLY: March 1, June 1, September 1, and December 1 annually

DEADLINE FOR SUBMITTING MATERIAL FOR PUBLICATION IS THE 15TH OF THE MONTH PRIOR TO PUBLICATION.

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**PRESIDENTS MESSAGE**

**WAYNE BRAUNBERGER**

Hard to believe, but summer is almost over and soon it will be winter again. September is usually a busy month, school starts again and most organizations resume their regular meetings. During all this activity you should remember that Fall is an excellent time for hiking. The cooler days are pleasant and the scenery can be breathtaking.

For the upcoming season we will be meeting in new quarters at Mount Royal College. The Department of Geology and Petroleum Sciences will once again allow us the use of their facilities for our monthly meetings. The construction at Mount Royal is nearing completion and much of the confusion that exists should be ending soon.

As I mentioned in the June 'Bulletin' I will be introducing some changes in the by-laws this Fall, anyone with any other ideas is asked to bring them forward as soon as possible.

Over the winter we hope to once again offer a series of interesting and informative talks, as well as special events. Also, material is needed for future editions of the 'Bulletin', any contributions would be appreciated. Over the summer we have had our problems with the production of the June issue of the 'Bulletin', I would like to apologize for this inconvenience.

In the June issue on page 5 an advertisement for fossils was printed, your comments on this type of advertising would be appreciated. Any comments on advertising in general would be welcome as, at this time, the Society does not have any policy regarding advertising.

I look forward to seeing everyone this Fall and exchange stories about our summer adventures.

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**ALBERTA PALAEOLOGICAL SOCIETY  
MONTHLY MEETINGS 1988-1989**

1988	1989
September 16	January 20
October 21	February 17
November 18	March 17
December 16	April 21
	May 26

All meetings are on the third Friday of the month, except May, which is the fourth Friday.

All meetings will be at Mount Royal College, Calgary, in the facilities of the Department of Geology and Petroleum Sciences.

Meetings will start at 7:30pm

## **EDUCATION AND PROGRAMS**

**DARREN TANKE**

As newly appointed Director in charge of Education and Programs with APS, I look forward to fulfilling this position. part of my job at the Tyrrell Museum includes Public Relations, both in the field and within the museum. Usually, in the field, this involves explaining to people what, why and how we excavate fossils. In the museum I am actively involved in fossil identification.

My frequent contact with the general public and amatuer collectors has made me aware of their wants and desires. I plan on fulfilling my obligation as Director of Education and Programing in the following manner.

### **EDUCATION**

1. Instituting a column entitled "Cretaceous Critters" in which one genus of North American vertebrate (may be expanded to encompass invertebrates if other APS members are interested) is discussed in such a manner as to be of interest to both layperson and scientist alike.
2. Another column of upcoming Tyrrell Museum events, lectures, films, etc.
3. Identification of vertebrate fossils at regular APS meetings.
4. Fossil preparation and/or casting seminar(s) at regular meetings if enough interest can be established.

### **PROGRAMS**

Most slide shows will deal with vertebrate palaeontology topics as most of my contacts are in this area. In leiu of slideshows some meetings may include a couple of films from the TMP film library. If, of course, any APS members would like to give a talk on something they think would be of interest to other members, I would be interested in hearing from them. Due to the frequent visits of palaeontologists to the Tyrrell Museum it may be possible that one or two 'big name' people may give presentations.

Anyone interested in giving a slideshow at one of our regular meetings may contact me at the Tyrrell Museum during business hours, 292-1994 (toll free) or my residence 823-6420 after 5pm.

Slideshows confirmed to date are:

1. Clive Coy, Technician at the TMP will talk on the Roy Chapman Expeditions to the Gobi Desert.
2. Dr. Dave Eberth, Curator of Sedimentology at the TMP will give a presentaion on Palaeozoic Vertebrates of the S.W. United States.

3. Linda Strong-Watson, Head of the Preparation Labs at TMP will relate her experiences of the 1987 Canada/China Dinosaur Project in N.W. China.
4. Darren Tanke, Technician at the TMP will present an update on activities in Pachyrhinosaurus bonebed near Grande Prairie, Alberta.
5. Brooks Britt, University of Calgary (student at the TMP) will give a talk on Morrison Fm. Jurassic dinosaurs of Colorado.
6. Darren Tanke and Jeff Doten will present an evening of dinosaur drawing techniques. Jeff will draw freehand dinosaur reconstructions and Darren will demonstrate how to draw dinosaur bones from 35mm slides.
7. Wendy Sloboda will give a talk on the Devil's Coulee egg site and the exciting discoveries made there to date.
8. Jim McCabe will give a presentation on the fieldwork results of the 1988 Canada/China dinosaur project in N.W. China and the Gobi Desert.

Dates for these presentations have not been established as yet. Les Adler will contact APS members with further information on dates and lectures.

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**FIELD TRIP #88-1, JOFFRE BRIDGE (RED DEER AREA)**

The first field trip of the year was held on Sunday June 19, 1988. The trip was to Joffre Bridge, just west of the city of Red Deer, Alberta. Betty Speirs of Red Deer was our guide for the day.

We met at the home of Mrs. Speirs, in Red Deer, on Sunday morning and then went out to the site. This was the same site that we visited last year (see APS Bulletin Vol.2 No:2 Sept.1987 p.5). Considerable work had been done over the past year and much overburden needed to be removed. This was the task which many of us took on, a large amount of overburden was removed but much still remains to be done.

The Joffre Bridge site is well known for its diverse and well preserved specimens of Paleocene plants from the Paskapoo Formation. Mrs Speirs has been excavating here for several years and has made many exciting discoveries. Also, a team from the University of Alberta has been excavating a layer containing fossil fish which lies above the plant horizon.

The weather for the day was excellent. The sun shone brightly all day and it was quite warm in the afternoon. A light breeze made the temperature bearable, this year there were no thundershowers to interrupt us.

I would like to thank Mrs. Speirs for taking the time to be our guide for the day, an excellent trip enjoyed by all.

**FIELD TRIP #2**  
**July 9, 1988**  
**Jura Creek**

**Jonathon Greggs**

Jura Creek is one of the best but least visited of the local field localities. On July 9, ten members of the APS, and two guests, hiked the Jura Valley to examine its stratigraphy and palaeontology

Along the creek bed are excellent exposures of several formations from either side of the Devonian-Mississippian boundary. Jura Creek is also the type locality of the Exshaw Formation, which is about a one hour walk from the road.

After meeting at the entrance to the Loder Lime plant just east of Exshaw, the group proceeded through light bush to the creek. The first rock encountered was the grey limestone of the Morro Member of the Palliser Formation (Devonian). This may sound a little dry, but the exposure is a very narrow and deep canyon cut by the stream. In places the canyon is just 1.5m wide, but 8-10m deep! Once out of the canyon, outcrops of the Banff and Exshaw Formations were examined. Features which can be seen include algal mats and stromatolites, trace fossils (worm trails), joint patterns and beds of plasticly deformed sediments. Once at the type section of the Exshaw Formation, the group saw fossils of spiriferid brachiopods, orthocone cephalopods, fish bones and corals. No collecting was done at the type section because it is the standard to which all other outcrops of the Exshaw are compared and because the fossils are in bedding planes and cannot be removed without excavation with heavy equipment.

After spending several hours at and near the type section, the group retraced its steps back down the valley to the road. For the energetic and adventuresome, it is possible to climb to the ridge of Door Jamb Mountain, to the east and follow the ridge back to the cars.

**Maps:**

Topographic: 82 0/3 Canmore 1:50000  
Geologic: GSC Map 1265A (82 0/3 coverage)

**HISTORY:**

Jura Creek was named during a reconnaissance of the Bow River Valley for the 1913 International Geological Congress. The name refers to black shale outcrops of the Exshaw Formation, which were originally thought to be Jurassic. Palaeontological work at a later date showed the actual age as Palaeozoic.

**JURA CREEK VALLEY - distance in metres**

- 0m            **Outcrop 1** Beginning of canyon in Palliser limestone (Upper Devonian). This is the massive Morro Member, which consists of dark grey micritic to pelletoid limestone and minor dolomite with burrowed intervals. The burrows are partly dolomitized
  
- 675m        End of canyon
  
- 825m        **Outcrop 2** Brown-weathering lower Banff Formation with bedded calcareous siltstone and shale on left hand.
  
- 930m        **Outcrop 3** Light grey-weathering Palliser limestone on the right. The contact of the massive Morro Member with the overlying bedded Costigan Member is exposed. See large stromatolites or stromatoporoids in upper Morro.
  
- 1275m      **Outcrop 4** Bedding plane of Exshaw silty member on right hand side. The rock surface shows abundant tracks of Scalarituba. Notice well developed sets of dolomite-filled joints.
  
- 1380m      **Outcrop 5** Outcrops on the left consist of thinly bedded lower Banff Formation showing penecontemporaneous slumping in a northerly direction.
  
- 1530m      **Outcrop 6** Palliser limestone on right.
  
- 1680m      **Outcrop 7** Brown weathering Exshaw silt member on the left continues until 1875m. Siltstone is grey to dark grey, with some flattened nodules.
  
- 2325m      **Outcrop 8** Exshaw black shale (Devonian-Mississippian) overlies the Costigan Member of the Palliser Formation. The bedded Palliser limestone is cherty and fossiliferous with brachiopods, nautiloids and the coral Chaetetes. Minor bedding cracks may indicate when it became covered by the Exshaw shale.

A siliceous, pyritic sandstone bed with thickness of only a few cm lies at the base of the Exshaw at this locality. Black phosphate nodules and chert as well as some bone fragments are embedded in the sandstone. The black shale itself is siliceous and in part, stained by weathered pyrite. The upper 50cm of the shale is fossiliferous and contains Lingula, Orbiculoidea, Lioestheria and the debated ammonoid Imitoceras (Macqueen and Bamber, 1970).

The upper member of the Exshaw Formation consists of hard, brown-weathering, massive to bedded siltstone with worm trails and scattered oxidized pyrite nodules.

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**FIELD TRIP #2 (Cont'd)**

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MacQueen, R.W. and Sandberg, C.A. 1970. Stratigraphy, age and inter-regional correlation of the Exshaw Formation, Alberta Rocky Mountains. Bull. Can. Ptr. Geol. v. 18, p. 32-66.

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**OPEN HOUSE AT DEVIL'S COULEE**

**WAYNE BRAUNBERGER**

On Saturday, August 27, 1988, Les Adler and I travelled to southern Alberta to view the dinosaur egg site. We left Calgary at 6:00am and arrived at 9:00am. The site is on the northern edge of the Milk River Ridge, to the south of the east end of the Milk River Ridge Reservoir. The nearest towns are Warner to the east and Raymond to the north.

The open house was a popular event and the area was crowded with people. Several cars with out of province license plates were seen amongst the multitude of vehicles from Alberta.

Guided tours, displays and refreshments were there for everyone's enjoyment. Two tours were available, a short half hour tour to the egg nest excavation and a one hour tour that included more information on the geology and environment, as well as the nest site. Three tents were set up, two display tents and a refreshment tent. One display tent was by the Friends of the Tyrrell Museum on their activities, the second was specifically on the egg site itself.

Devil's Coulee is not an area of spectacular badlands as one might expect. The coulee is part of a drainage system flowing northwards off the Milk River Ridge. There the coulee is quite narrow and very steep. Although the badlands are not very spectacular, the discoveries made there have been. Devil's Coulee is the only dinosaur egg site discovered in Canada and the second site known from North America. The nests are quite well preserved and contain numerous remains of infant hadrosaurs

Much work remains to be done and several years will undoubtedly pass before the complete story of Devil's Coulee is known.

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Several errors in the membership list were brought to my attention, would members please check their address and phone number against this list and notify me of any such errors. Ed.



## HER MAJESTY OWNS THE FOSSILS, BUT WE OWN THE DOCUMENTATION

August Bolvikoski

The Alberta Bill 11, which has amateur collectors in an uproar, will cripple the growth of interest in palaeontology, and will not stop illegal collectors. It seems a bit ridiculous that it will be forbidden to own fossils collected in Alberta, whilst allowing ownership of out-of-province fossils. This Bill will also reduce the number of fossils collected and preserved. Do not feel guilty about chucking your fossils in the river in response to this bad legislation; those fossils would have eroded away without you, anyway. Museums say that they can protect and preserve fossils for future study, but for a rebuttal, consider some of the horror stories told by Teichert et al (1987).

But to get to the point of the title of this article. The Crown can own title to fossils and do as it pleases. This is all part of established law, and is best known in regards to mineral rights. The Alberta government can make laws and regulations regarding fossils.

Fossils, however, are worthless without documentation. Museums cannot make much use of material that has no locality data, no stratigraphic data, or other such documentation. Will they be quick to accept such fossils? I think not.

The Alberta government can lay claim to fossils by right, but it cannot claim the documentation, which was created by the collector, not found lying alongside the fossils. Anything created can be subjected to copyright and patent laws, which are controlled by the federal government. If the provincial museums want to confiscate fossils, they cannot do the same for the documentation. Let them have the fossils, but charge them your costs (gas, labour, vehicle wear and tear) plus a profit margin for the locality data. You own the copyright on the data; you have the moral rights to it; hide the data where a search could never find it and the museums will have nothing but a pile of rocks.

Museums claim they do not have the right budget to buy such material, but it would be cheaper to do so instead of going off on China expeditions. Under the registration procedures, a collector with a large collection is faced with spending hundreds of dollars photographing the fossils, with the possibility that they will still be confiscated.

### References:

Teichert, C., W.C. Sweet and A.J. Boucot (1987). The unpublished fossil record: implications. *SENCKENBERGIANA LETHAEA* 68:5-19

CRETACEOUS CRITTERS

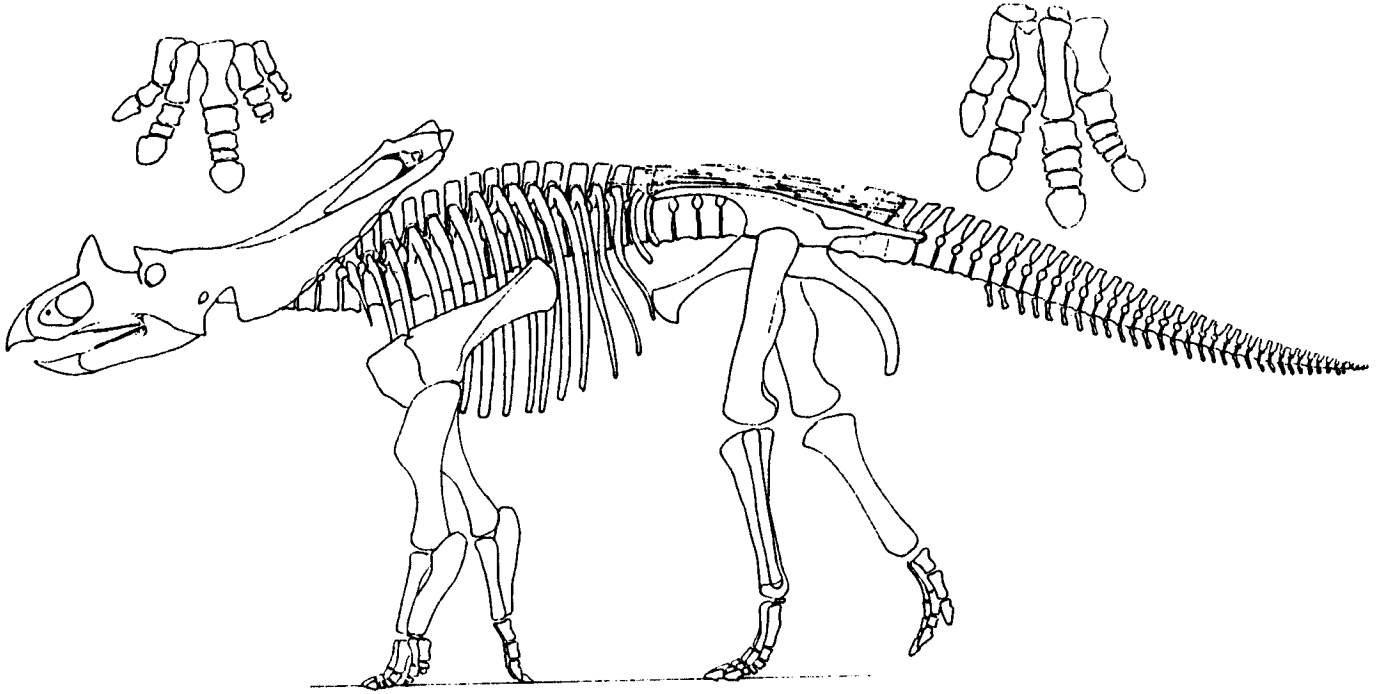
No:1 CHASMOSAURUS

Darren Tanke

The horned dinosaur Chasmosaurus is well known from isolated skulls, complete skeletons and bonebeds. The best material comes from the Judith River Formation of Dinosaur Provincial park, Alberta, dated at approximately 75 million years old. An unexplored Chasmosaurus bonebed is known from the Hilda, Alberta, area. Skull materials once identified as Eoceratops are probably referable to Chasmosaurus (Lehman, 1982). The only real differences between the two are minor proportional variations and differently curved horns, both are probably the result of growth and age differences or individual or sexual variation. The poor quality type of Ceratops montanus from rocks of equivalent age in Montana is also probably referable to Chasmosaurus (J. Horner, Pers. Comm., 1982). A Chasmosaurus bonebed in the Aguja Fm. of Texas was extensively studied by Lehman (1982) as part of his Masters thesis.

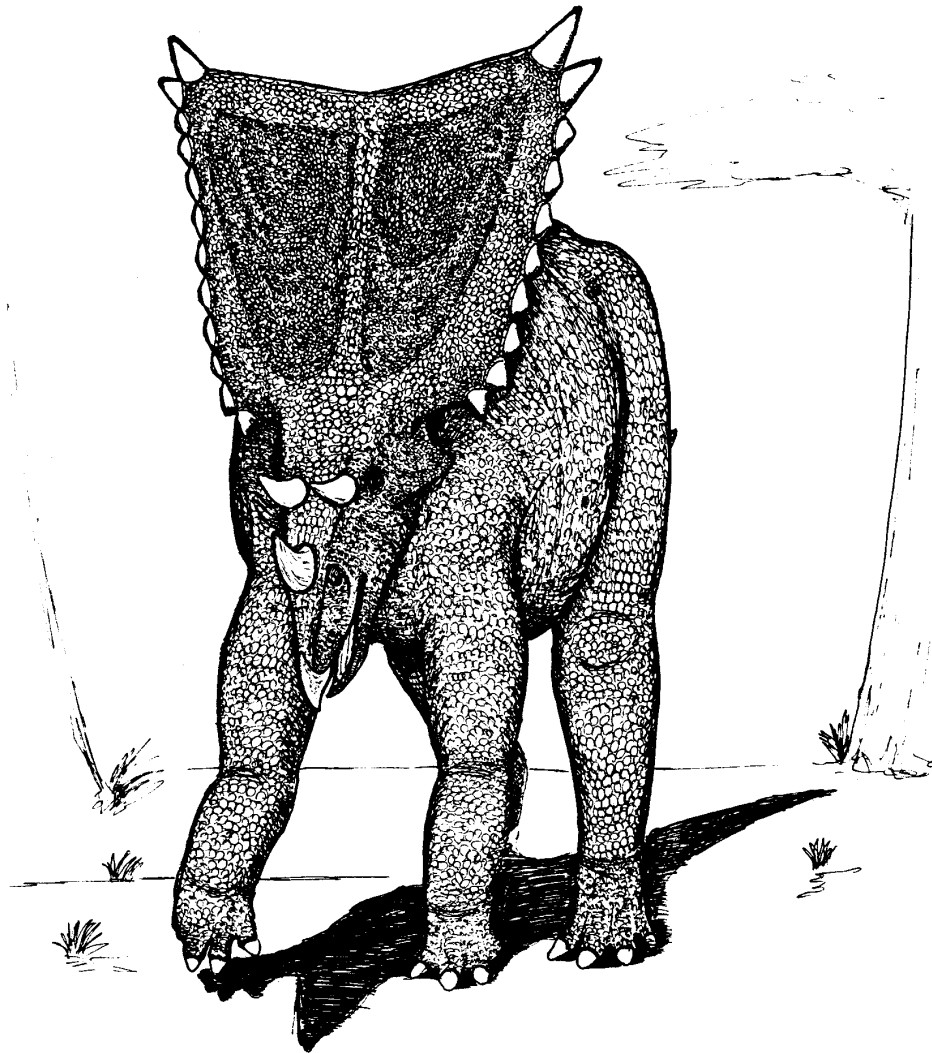
The skull of Chasmosaurus is characterized by a large lightly-constructed triangular frill covering the neck and shoulders. The "Chasm" in Chasmosaurus refers to the extremely large openings in the frill which reduced it to a bony framework. A pair of large, pointed triangular bones called epoccipitals are always found on the back corners of the frill, as are a series of about 8 Limpet-shaped epoccipitals which run down the sides of the frill running towards to the face. The horns over the eyes were evidently highly variable. Whilst most individuals had a set of small horns, some had none and some had very prominent orbital horncores. At present 5 species of Chasmosaurus have been described, four from Alberta and one from Texas. The validity of most of the Albertan species is open to debate as much of the "differences" are quite possibly age or sexual differences only. Accumulating evidence from the Centrosaurus bonebed in Dinosaur Provincial Park and the Pachyrhinosaurus bonebed near Grande Prairie, Alberta, shows a wide variety of horn shapes, curvatures and frill development- all directly related to growth, sexual differences (which are male or female is still not known) and individual variation. Whilst Centrosaurus and Pachyrhinosaurus are from a different sub-family, I would suspect that if the Hilda Chasmosaurus bonebed were to systematically excavated, highly variable horn and frill development would be documented.

Ceratopsian posture has received much attention as of late. The older sprawling forelimb reconstructions are awkward and in line with trackway evidence. A more upright stance is presented here, drawn by APS member Tracy Ford of Poway, California. Chasmosaurus was a plant-eating dinosaur, similar in appearance to the modern rhinoceros and of about the same size and weight.



Chasmosaurus

Drawings by  
Tracy Ford



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ADDRESS CHANGE

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

BOOK REVIEW

LES ADLER

The Fossils of Montceau-les-Mines.  
Scientific American. September, 1988. Volume 259, No:3 pp.104-111.  
By Daniel Heyler and Cecile M. Poplin.

Recently I reported on a fossil find at Parrsboro, Nova Scotia. This report is concerned with another fabulous find, this one being located 300km S.E. of Paris, France. Amateurs working weekend after weekend retrieved 7,000 shale slabs and 100,000 nodules before machinery from coal strip-mining operations wrecked them. The location and orientation of each nodule was recorded, this being the first time that such precise modern excavating methods have been employed on deposits of this age. Nodule fossils much as those at Mazon Creek, Illinois, U.S.A., a Triassic site in Madagascar and a Cretaceous site at Ceara in Brazil are more three-dimensional and give a clearer picture of an organism's physical form.

The fossil flora at this site enabled the lower layers at Montceau to be dated at the Stephanian Stage, (the latest stage of the Carboniferous, or Pennsylvanian Period), and the upper layers to the Autunian Stage, (the earliest stage of the Permian Period). The fossils found include plants, arthropods, vertebrates, worms and a pelecypod. Nearly 300 identified species of plants include horsetails, ferns, seed ferns and conifers. As time passed the conifers tended to replace the other groups indicating the change to a drier, cooler climate.

The most numerous and well-preserved group consists of a half dozen classes of primitive crustaceans such as syncarids, (primitive shrimps), ostracods, estherias, euthycarinoids and xiphosurians including horseshoe crabs. There were also millipedes, spiders, scorpions, sow-bugs and eight orders of insects.

The vertebrates include four classes: bony fishes, cartilaginous fishes, amphibians and reptiles. There were also fossil imprints of falling rain, ripple marks and the cracked pattern of drying mud. These marks reveal intervals of dryness alternating with rainfall. Rapid sedimentation and a scarcity of nutrients indicate that Montceau was located at an estuary where the flow of fresh water alternated with brackish tides. The fossil fish indicate that the lakes in the area must have been linked at times and also that they were salty.

These fossils help scientists locate where the continents were placed relative to each other before continental drift broke a super-continent apart. The fossils add to the picture of evolution on this planet. The article is accompanied by many photos of fossils and the site. There is also a composite illustration of 32 types of fossils that inhabited this hot, humid landscape.

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ADDITION TO MEMBERSHIP LIST

Names and contact information removed  
to protect members' privacy.





# ALBERTA PALAEOLOGICAL SOCIETY

P. O. BOX 7371, STATION E, CALGARY, ALBERTA. T3C 3M2, CANADA

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## PINS!



- Logo placed on a Province or Alberta background (white)
- Logo: -Province blue  
-letters in raised gold
- Pin size: 1 inch
- Safety clasp or butterfly fastener

NAME: \_\_\_\_\_  
(Please print)

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ PROVINCE: \_\_\_\_\_ POSTAL CODE: \_\_\_\_\_

NUMBER OF PINS \_\_\_\_\_ X \$3.00/PIN = \$\_\_\_\_\_

Please enclose cheque or money order (do not mail cash) and send to the Society.