BULLETIN

VOLUME 1, NUMBER 4

DECEMBER 1986

ALBERTA PALAEONTOLOGICAL SOCIETY

OFFICERS:	President	Wayne Braunberger	278-5154
	Vice-President	Don Sabo	238-1190
	Secretary-Treasurer	Steffie Negrich	249-4497
DIRECTORS:	Editor	Geoffrey Barrett	246-8738
	Director at Large	Dr. Michael C. Wilson	239-8289 (Res.)
	Acting Curator & Field Trip Co-Ordinator	Harvey Negrich	249-4497
	Education & Programs	Don Sabo	238-1190
	Fund Raising	June Barrett	246-8738
	Librarian	Karen Weinhold	274-3576
	Membership	Steffie Negrich	249-4497

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. Applications will be referred to the Board of Directors for approval. Upon approval new members will receive a copy of the Society By-Laws and a copy of the current edition of the Bulletin.

Single Membership	$7.00
Each additional member at the same household	$3.00

For further information contact:

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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.

PRESIDENT'S MESSAGE Wayne F. Braunberger

This season has gotten off to an exciting start. We have successfully moved into Mount Royal College and are just getting to know our new surroundings. It will take a while to settle in but once we do I'm sure we will be able to make good use of the facilities.

In addition to our regular meetings we have started holding an open night on the first Friday of the month. This is an opportunity to come out and work on your specimens and the Society's collection as well. Mount Royal College has made available a number of display cases. We would like to have several of these cases around the College with fossil displays in them.

Three of the staff members at Mount Royal College have put in a great deal of time and effort to help the Society establish itself at Mount Royal. They are: Wayne Haglund and Jon Greggs of the Department of Geology and Petroleum Sciences and Allan Ingelson of the Department of Continuing Education. I would like to thank Wayne, Jon and Allan for the contribution they have made to our success, and hope we may continue the relationship for many years.

The end of December marks our first complete year of operation and is, I feel, a time to reflect back on our past accomplishments and also to contemplate the future. In January a new Executive will be elected. Les Adler, our nominating chairman, has been busy rounding up people to run for office. Serving on the Executive and Board of Directors can be a lot of fun, not to mention a very worthwhile learning experience. So be sure to come out and vote in January and perhaps even run for office.

HAVE A MERRY CHRISTMAS AND A HAPPY NEW YEAR.

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PROGRAMS Don Sabo

Commencing in September, the Society has been fortunate in having presented to its members at the regular monthly meetings a series of programs which have been both informative and educational, as well as touching on the technical side of the science. These programs have included the following speakers and topics:

September - Dr. Dave Mundy, Sedimentologist for B. P. Canada, presented a program on British Carboniferous Reefs of Northern England.

October - Darren Tanke, Fossil Preparator for the Tyrrell Museum presented a program on last summer' s excavation of the Pachyrhinosaurus Bonebed near Pipestone Creek south of Grande Prairie, of which he was leader.

November - Dr. Donald Brinkman, Curator of Vertebrate Palaeontology for the Tyrrell Museum presented a program on Microvertebrate Fossils and the research he is doing on them in Dinosaur Provincial Park.

These programs were enjoyed by all who attended the meetings, and I'm sure everyone went away with a feeling of having learned something new. The December meeting will be a social evening with no program planned, but for everyone to come and enjoy themselves.

Tentative programs for 1987 are as follows:

January 16 - Film on Palaeontology
February 20 - Presentation by Dr. Philip Currie, Assistant Director for the Tyrrell Museum.
March 20 - Australian Invertebrate Fossils by Paul Johnson, Curator of Invertebrate Palaeontology for the Tyrrell Museum.

I would like to give a special thank you to all the speakers during 1986, and appreciation to the members for their support.

If anyone feels they would like to contribute ideas, or speak on a particular topic, please do not hesitate to contact me at 238-1190.

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FIELD TRIP TO THE TYRRELL MUSEUM OF PALAEONTOLOGY

On Saturday, November 29th, 1986, eighteen members of the Society travelled to Drumheller to tour the back rooms of the museum. The guide for the tour was Dr. Bruce Naylor who is the Assistant Director responsible for display and public programs.

The tour started off in the auditorium with a short presentation by Dr. Naylor on the history, mandate, and function of the museum. We then went into the back to view the shops, labs, storage areas, offices and library.

The first stop was a quick peek into the fabrication shop where the frames are constructed for the displays. From here we moved into the large preparation lab. This is the lab which may be viewed from the public galleries. At the time of our tour displays were being fabricated for the field station in Dinosaur Park. Various stages of preparation were observed: taking the original bone out of the field jackets, to casting, to mounting the cast bones onto the frames to form a completed skeleton. Several dinosaurs were in the process of being mounted. From the large preparation lab we moved on to the small lab where work is done on smaller material. Here each preparation technician has his own work area. Work is done here on such small items as turtles. Both preparation labs are well equipped to handle any task.

We then moved on to the storage area of the museum. Two storage areas are used, one for unprepared material and the other for prepared material. Also in this area are the offices of those responsible for the collection. The prepared storage area is unique in that it is underground. The space is immense with storage available for thousands of specimens. Many of us could have spent a few days here looking through the collection.

After going through the preparation and storage areas we then went upstairs to the office area. Here we viewed a typical curator's office, the design/drafting studio, student offices and the library. Each curator has his individual office/lab area to carry out his research projects. Office space

is also available for students working at the museum. The Tyrrell has its own design/drafting people who work on various projects. At the time of our tour one of the projects was the field station. The Tyrrell also maintains a library to support the research projects. The library contains an extensive collection of geology/palaeontology books and periodicals. Once again this was an area where a great deal of time could have been spent going through the material.

The Tyrrell Museum is a fantastic place with much going on behind the scenes. The tour helped us to appreciate the magnitude of the operation. It was also very advantageous to have Dr. Naylor as our tour guide. He was able to answer all questions that arose and to share some of his palaeontological ideas and theories with us. The Tyrrell Museum is definitely a palaeontologist's dream come true.

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DINOSAUR BUILDER PASSES

Trygve (Tig) Seland, 78, well-known Drumheller resident passed away on December 1, 1986, from injuries suffered in a motor vehicle accident. Mr. Seland built the Little Church on the Dinosaur Trail and several dinosaur replicas, many of which are in Prehistoric Park. Perhaps the best known of Mr. Seland's dinosaurs is the Tyrannosaurus Rex that guards the bridge over the Red Deer River. This dinosaur, built nearly 30 years ago, is one of Drumheller's most photographed landmarks. Mr. Seland was also a founder of the Drumheller Dinosaur and Fossil Museum.

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NEW MEMBERS:

Names and contact information removed to protect members' privacy.

CORRECTIONS:

CHANGE OF ADDRESS:

THE SOCIETY NOW HAS A NEW MAILING ADDRESS: P. 0. Box 7371, Station E
Calgary, Alberta T3C 3M2

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Alberta is a Province with a rich and diverse fossil record, representatives of almost every fossil group are to be found here. Included within these groups are many fossil types that fall into the category of unique, rare or unusual, and it is .the occurrence of these fossils of which the amateur collector is often unaware, due in part to a lack of available information.

In an effort to introduce these interesting and often enigmatic creatures to a wider audience I air my usual plea for Bulletin material by inviting members to submit a brief outline of any rarity or oddity which they find particularly interesting.

Following, I offer my own contribution to what could (with membership participation) become a regular feature of the Bulletin.

CONULARIIDS Geoff Barrett

My first encounter with a conulariid was as recently as 1980, the occasion being a collecting foray in the Moose Mountain area, accompanied by fellow A.P.S. member (and frequent Bulletin contributor) Les Adler.

Les handed to me a piece of rock on which was preserved a very striking, heavily ribbed, fin-like impression. I suggested to Les that this was probably a fossil fish fragment. This "off the cuff" identification eventually proved to be totally incorrect, although I had the satisfaction of learning that several other individuals had made the same erroneous identification as myself. Positive identification was finally made by Dr. Michael Wilson, then of the University of Calgary, who declared it to be a conulariid.

Indeed, the only common features shared by the conulariids and the fishes is that both are (or were, in the case of the conulariids) inhabitants of an aqueous environment and both are carbon based life-forms. There the similarity ends.

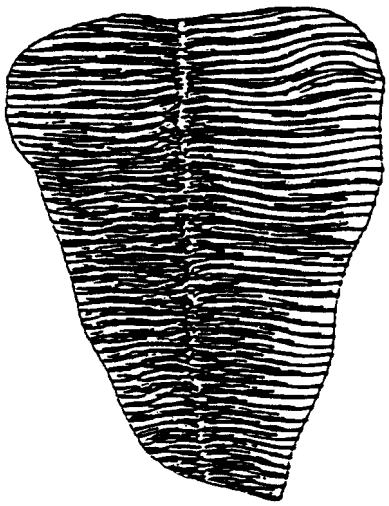
The conulariids are without doubt one of the oddities of the fossil record and, until recently, were little understood.

Conulariids are first found in rocks of Ordovician age and survived until the late Triassic. In some formations their remains are locally abundant, as in the Whitby Formation of Craigleith, Ontario, but on the whole are relatively rare. Because they are such a problematic creature they have, over the years, been placed in a variety of fossil groups including worms, gastropods, cephalopods and coelenterates. Today, the most widely held opinion is that they belong to the class Scyphozoa, the jellyfish.

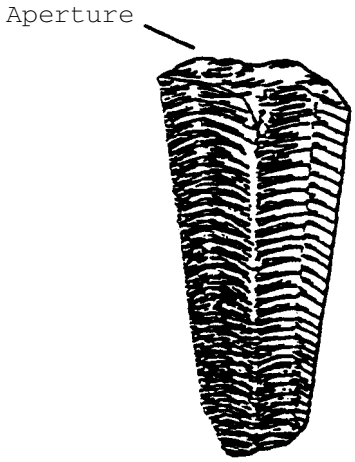
However, as recently as 1984, several specimens were collected from a locality in Ohio that exhibited previously unknown features of the exoskeleton.

The exoskeleton of the conulariid is typically a four-sided elongate pyramid. It exhibits a strongly ribbed ornamentation, the ribs arising from four deep longitudinal forrows.

From a detailed study of the Ohio specimens (again, initially identified as fish remains) it was seen that the ribbed ornamentation was due to a series of articulated rods underlying the thin outer layer (integument) of the exoskeleton. The arrangement of these rods would impart a degree of flexibility to the exoskeleton, a structure that is so unlike that of any fossil group to which the conulariids had been previously associated that they have now been assigned a new phylum, the Conulariida (Feldman and Babcock). The soft body parts (not preserved) are believed to have been crowned by tentacles which protruded from the aperture of the exoskeleton, and were presumably retractable when danger threatened.



Conularia (x 1)



Paraconularia (x1.5)

The conulariid is most frequently found as a flattened impression (see sketch), although very rarely a three-dimensional specimen may be found.

I have personally recorded isolated conulariids from several localities in the Kananaskis area, all occurring within sections of the Mt. Head Formation (Mississippian). These fragmentary remains are often of such a size as to suggest that the creature attained a length of at least 8 to 12 inches. More commonly, conulariids also occur in the Banff Formation (Mississippian), especially in the Moose Mountain area and, rarely, in the talus slopes at Nihahi Ridge. One particular specimen that I occasionally encounter in the Canyon Creek area, albeit extensively weathered, is a full 8 inches in length. Of more interest are the rare three-dimensional fragments of the smaller Paraconularia that may be found in the cherty beds at the top of the Banff Formation, immediately underlying the cliff-forming Pekisko Formation, excellent sections of which occur in Canyon Creek and Moose Dome Creek.

REFERENCES:

Feldmann, R.M., and Babcock, L. E., Exceptionally Preserved Conulariids From Ohio - Reinterpretation of Their Anatomy, National Geographic Research, Vol. 2, No. 4, P. 464-471, 1986.

Shimer, H. W., and Shrock, R. R., 1944, Index Fossils of North America, Massachusetts Institute of Technology Press.

Moore, R. C., Lalicker, C. G., and Fischer, A. G., 1952, Invertebrate Fossils, McGraw-Hill Book Company, Inc.

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A BRIEF HISTORY OF PALAEONTOLOGY Wayne F. Braunberger

Fossils have been known since ancient times, however it has only been in the last two hundred years that interest has picked up and the science established. Today palaeontology is a separate science and draws on many other disciplines.

The Greek philosopher Xenophanes of Colophon (570-470 B.C.) recognized the significance of fossils and suggested that they were very old. Aristotle, perhaps the most famous of the Greek philosophers also became convinced of the significance of fossils. However, with the coming of the Roman empire, interest in fossils declined but the knowledge was not lost.

During medieval times (the dark ages) fossils were generally disregarded. The church suppressed the teaching of the natural sciences, with the writings of the Greeks and Romans hidden away. Those who did study fossils explained their presence by the great flood. The veil of darkness was not lifted until the Renaissance. Leonardo da Vinci (1452-1519) refuted ideas of the great flood, with his own ideas being similar to modern ones. In 1546 a fellow named Agricola coined the word "fossil" from the Latin "fossilis", which means something dug up. Fossils included minerals and rocks of all sorts, as well as flint implements. This broad definition understandably added to the confusion of the day.

In the 17th and 18th centuries many returned to the role of chance or the Bible to explain the presence of fossils. In 1664, James Usher, an Irish Archbishop, from studying the Bible and other theological works determined that the earth was created at 9:00 a.m. on October 26, 4004 B.C. There were others who were more curious and had other ideas. In 1665 Robert Hooke observed foraminifera and the sutures on ammonites. His work, written between 1686-1689 was published posthumously in 1705 under the title Discourse of Earthquakes. It contains many ideas on fossils and their origin. In 1669 Nicolas Steno established the principles of modern stratigraphy. He recognized the superposition of sedimentary strata and the significance of unconformities. During the mid 18th century Carl von Linnaeus (1707-1778) invented binomial nomenclature and proceeded to classify and catalogue as many specimens as he could. It was during the latter part of the 18th century and into the 19th that the basic principles of modern geology and palaeontology were laid down. In 1778 geology was decided on as the proper word to describe the study of the earth. Prior to this the Latin Geologia covered the study of anything which was earthly rather than divine.

There are three gentlemen who could be said to be the founders of scientific palaeontology. They are: William Smith, Georges Cuvier, and Jean Baptiste de Lamark.

William Smith (1769-1839) was an English engineer and surveyor who collected fossils during the course of his work. He realized strata could be recognized by the fossils found and that the same succession could be observed where the rocks concerned were present. In 1799 he drew a map of British strata from the coal measures (Carbonif erous) to the chalk (Cretaceous). In 1816 he published Strata Identified by Organized Fossils and in 1817 Stratigraphical System of Organized Fossils. Smith firmly established the science of stratigraphic palaeontology, or biostratigraphy as it is commonly known.

Georges Cuvier (1769-1832) was a French scientist who applied the principles of comparative anatomy to explain the remains of fossil vertebrates. In 1812 he published 12 volumes entitled: Recherches sur les Ossemens Fossiles. Cuvier, who believed in the fixity of species, is generally considered the father of vertebrate palaeontology.

Jean Baptiste de Lamark (1744-1829), another French scientist, established the principles of invertebrate palaeontology and is considered the founder of this part of the science. In 1802-06 he wrote Memoire sur les Fossiles des Environs de Paris, and from 1815-22 wrote Histoire Naturelle des Animaux sans Vertebres. Lamark also came up with a comprehensive theory of evolution.

Two other gentlemen who had a great influence on geology and palaeontology were James Hutton and Charles Lyell. Hutton (1726-1797) originated the doctrine of uniformitarianism which simply states: the present is the key to the past. Lyell (1797-1875) established historical geology and published the first comprehensive textbook on Geology: Principles of Geology.

One other noteworthy event occurred during 1825 when Ducrotay de Blainville coined the word "palaeontology" from the Greek: Palaios - ancient, Ontos - being, and Logos - study. Palaeontology was introduced to geological literature in 1834 by Fischer von Waldheim.

The most famous of all the early workers is Charles Darwin. He profoundly influenced the course of modern palaeontology. When Darwin, in 1859, published The Origin of Species, he stimulated more thought, debate, investigation and controversy than any scientific idea past or present. °The debate on the theory of evolution shows no sign of ending, even today.

The science of palaeontology has had its detractors and two famous hoaxes were contrived which affected the credibility of the science. The first took place in the early 18th century. In 1726 Dr. Johannus Beringer of Wurzburg (Germany) published a book entitled Lithographiae Wirceburgensis. He illustrated it with "fossils" he had found in the hills surrounding Wurzburg. He later found that the "fossils" had been carved and buried where he could find them. Needless to say, Beringer was rather embarrassed. The other famous hoax is the Piltdown Man which was discovered in 1913 near Piltdown in Sussex, England. The remains were attributed to Eoanthropus Dawsoni and much discussion about the phylogenesis of humans and the authenticity of the remains ensued. In 1953 the remains were demonstrated to be fake. They consisted of the juxtaposition of a modern human skull and the mandible of an orangutan.

Palaeontology today is a separate science with many directions of research. In general, specialization has become the rule. Palaeontology borrows from many sciences including: geology, zoology, and biology. Palaeontology is used in: studying the evolution of the world, regional geologic correlations, stratigraphic and structural geology, and in economic geology.

For some further information on the history of palaeontology the following may be of interest:

Babin, C., 1980, Elements of Palaeontology, Chichester, New York, Brisbane, Toronto: Prentice Hall Inc.

Casanova, R. and Ronald P. Ratkevich, 1981, An Illustrated Guide to Fossil Collecting, Third Edition, Happy Camp California: Naturegraph Publishers.

Edwards, W. N., 1967, The Early History of Palaeontology, London: British Museum.

Janes, J. R., 1976, Geology and the New Global Tectonics, Toronto: Macmillan Company of Canada

Stokes, W. Lee, 1982, Essentials of Earth History, Fourth Edition, Englewood Cliffs, N. J.: Prentice Hall Inc.

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The following article could also be classified under the heading of "oddities", few amateur collectors are aware that Carboniferous fish remains occur in relative abundance in areas of Southern Alberta.

Boris (our youngest member) has taken a special interest in these fossils and built up a sizeable collection containing some outstanding specimens.

- Editor

LOWER CARBONIFEROUS FISH REMAINS OF ALBERTA

Boris Markhasin

Most work on Lower Carboniferous fish remains has been from localities in the U.S.A. Little work has been done on the faunas of Western Canada, although fish remains are quite common throughout Southern Alberta. The predominant forms of fish found have been described as flat-bodied, bottom-living fishes.

The basic structural material comprising the shark's skeleton is cartilage, a material that rarely fossilizes. But, parts of the shark are not cartilage, and are, therefore, subject to fossilization. These are the hard parts of the shark. The hard parts of sharks are also rarities since they are so few, so each specimen is of importance for study of the fossil record. The majority of the fish remains found in Alberta are the hard parts of the shark. These remains, for the most part, include dermal ossicles, fin spines, cephalic hooks, and low-domed, non-pointed teeth. These teeth suggest adaptation for crushing and grinding hard shelled organisms. This type of food source was readily available as indicated by the abundance of echinoderm, brachiopod, and coral fragments included in the rock with the fish remains.

Most of my shark specimens have been found in the Kananaskis area of Alberta, an area I consider to be very rich in fossil fish remains. The great majority of fish fossils found in that area are the low-domed, non-pointed teeth, and the rarer fin spines. Dermal ossicles and cephalic hooks are exceptionally rare, and are very seldom found.

These fossils pose great problems in areas of preparation and classification. The preparation of the fossil fish remains can be very tedious due to the fact that most of them cannot be etched out with any form of acid without the risk of damaging the specimen. The use of vibro-tools to "flake off" the rock matrix is the most widely used mode of preparation since it is relatively fast, and if done properly, does not damage the fossil.

The real problem is the classification or identification of the fish. As mentioned earlier, little work has been done on the faunas of Western Canada, so for the most part, U.S. publications have to be used to identify specimens. To make this task easier, I have listed two excellent publications that are helpful in the identification of these fossils.

McKenzie, M. A., and Bamber, E. W., An Occurrence of Lower Carboniferous Fish Remains from Alberta, Canada, Canadian Journal of Earth Sciences, Vol. 16, No. 8, 1979, P. 1628-1631.

Case, Gerard R., Fossil Sharks: a pictoral review, Pioneer Litho Co. Inc. 1973

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BOOK REVIEW:
MAIA — Don Sabo
A DINOSAUR GROWS UP
By John R. Horner and James Gorman
Price $12.95 (soft cover only)

This book was written for children, but is a must for any dinosaur enthusiast. The illustrations were done by Doug Henderson whose paintings of dinosaurs are some of the more accurate and up-to-date interpretations. Based on his recently discovered fossilized nests, eggs, baby and adult skeletons, John Horner, the well-known Montana Palaeontologist, has formulated some ideas and theories on the dinosaur Maiasaura from which James Gorman has created the story on Maia.

The story is very well done and used the most recent interpretations of what life must have been like during the time of Lower Cretaceous Dinosaurs in Montana. The illustrations show this remarkably well.

Available at the Tyrrell Museum Bookshop; expensive, but well worth it.

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MEMBERSHIP: — Steffie Negrich

It is that time of year again! We have been forced to raise the membership dues to $10.00 for a single membership, and $15.00 for a family or institution, due to the high postage rates. Please mail your cheques in while it is fresh on your mind, or do so at the December meeting. Remember, the elections are in January and only paid-up members can vote.