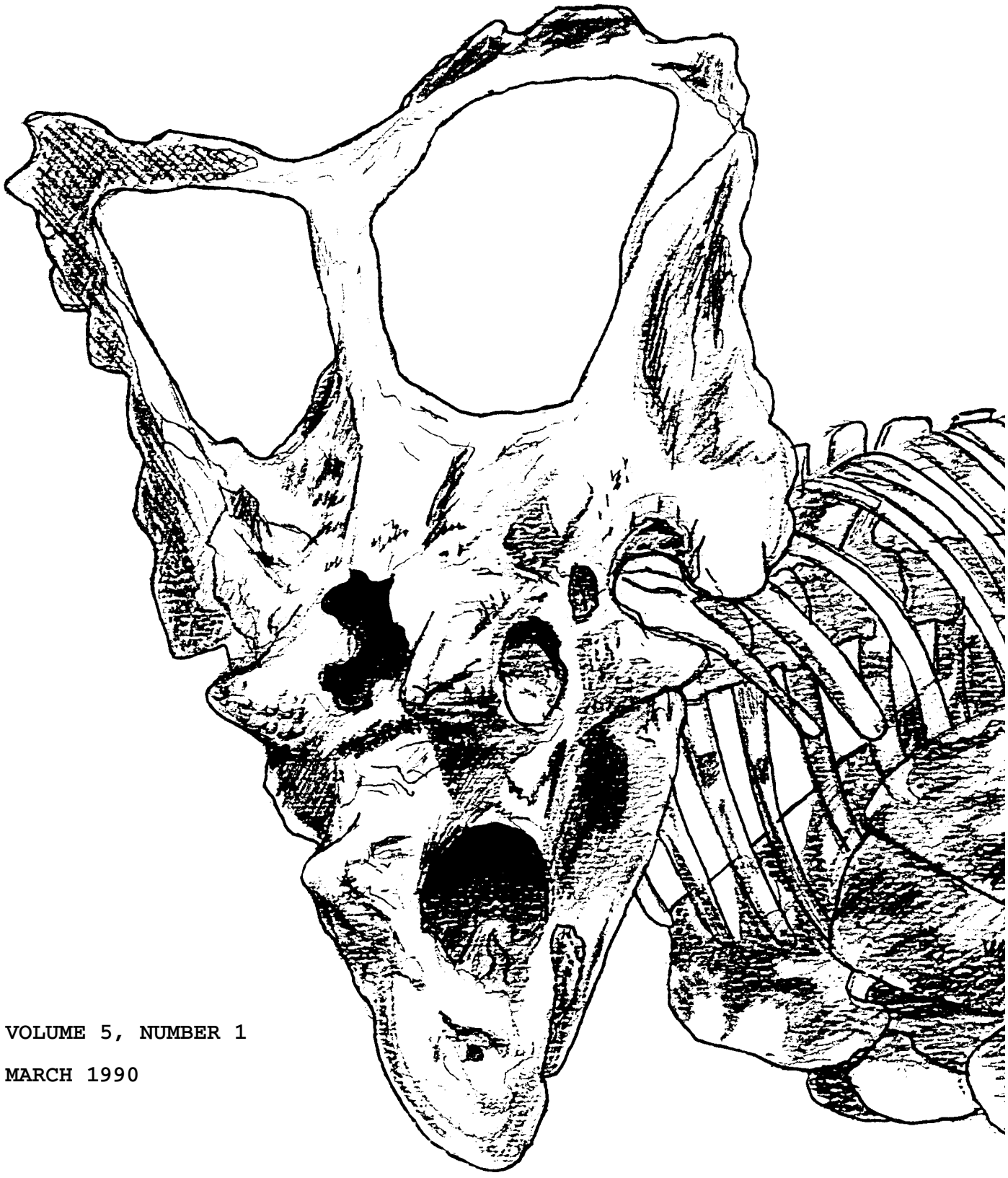

VOLUME 5, NUMBER 1

MARCH 1990

ALBERTA PALAEONTOLOGICAL SOCIETY

ALBERTA PALAEONTOLOGICAL SOCIETY

OFFICERS:	President	Percy Strong	242-4735
	Vice-President	----------	--------
	Treasurer	Les Adler	289-9972
	Secretary	Betty Quon	274-5965
	Past-President	Don Sabo	238-1190
DIRECTORS:	Editor	Wayne Braunberger	278-5154
	Memberships	Darren Tanke	823-6420
	Librarian	Roger Arthurs	279-5966
	Curator & Fieldtrip Co-ordinator	Harvey Negrich	249-4497
	Public Relations	Jeff Doten	249-0376
	Programs & Education	Don Sabo	238-1190
	Director at Large	Dr. David Mundy	281-3668

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) 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

THE 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

Mailing Address:

Alberta Palaeontological Society
P.O. Box 7371, Station E
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BULLETIN BACK ISSUES: Back issues of the Bulletin are available at $2.00 per copy. A limited number are available.

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.

PRESIDENT'S MESSAGE

Percy Strong

In our last bulletin Don Sabo predicted that the decade that we are beginning would be "even more rewarding for the Society than the last". In order for this prediction to come true we have to lay the groundwork for it now. To this end we have begun to compile a list of long and short term goals.

I feel that our long term goals fall into four categories:

1) membership
2) public relations
3) education
4) finance

1) **membership:** To maintain a healthy, active society we have to continue to increase our membership. This will provide an influx of new ideas and enthusiasm which is vital to the Society's well being. Presently many of the positions on the executive are being recycled between members who have not had a break since the Society was formed! That is dedication. Let's not burn them out.

2) **public relations:** We have to seek a higher public profile to enable our hobby to be promoted and indeed our rights as collectors protected. The general public has to be made aware of what we can offer in term of educational programs and in preserving our heritage.

3) **education:** To further our own interest in palaeontology we have to offer the membership courses in fossil identification, preservation, and collection. These are the tools of our hobby which hone our keenness to learn more and promote the science.

4) **finance:** Presently we operate on a budget of around $900 per year. This provides a basic, no frills existence. Providing more and better educational programs as well as developing a higher public profile will obviously cost more. To enable this we will either have to raise yearly dues and/or start a fund raising program.

These four long term goal areas still require work to be fully fleshed out. The short term goals will then easily fall into place. The big challenge for us is to come up with the innovative ways to achieve these goals.

Bring on the 90's.

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NEXT MEETING

The last meeting before the summer will be:

May 25, 1990, 7:30 pm
Room B208, Mount Royal College

Special guest speaker for the evening will be Dr. D.J.C. Mundy. He will give a presentation entitled: **"Preserved Colour Patterns in Fossil Invertebrates".** Dr. Mundy's presentations are always informative and entertaining, so don't miss this one.

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FIELD TRIPS 1990

Harvey Negrich

Our planned field trips this year are set at an earlier date mainly for those who may plan on attending them. It is our hope that they will be run on the days specified. Please do not be disappointed if a last minute problem necessitates a change. Bring along a lunch, drink, and proper clothing as some of our outings take us to odd places not normally visited.

TRIP 90-1: June 19 and 17, 1990, Southern Alberta
Resource person: Lawrence Halmrast (643-2126)

We hope to go to collecting localities in the Upper Cretaceous. We may be able to visit the Egg Site in Devils Coulee for an educational visit. No collecting will be permitted at this site.

TRIP 90-2: July 21, 1990, Canyon Creek, Alberta
Resource person: Dr. Dave Mundy (281-3668)

We planned this trip last summer but were not able to have it, so we have rescheduled. We will be looking at the sedimentary and depositional environments as interpreted by Dr. Mundy. The time period will be Carboniferous with an emphasis on the Rundle Group and Banff Formations.

TRIP 90-3: July 28 and 29, 1990, Dinosaur Provincial Park
Resource person: Dr. Dave Eberth (294-1992)

We will start from the viewpoint on top of the hill over-looking Judith River deposits of Upper Cretaceous age. After that we expect to hike into the area to view various geological features as described by Dr. Eberth. We expect to spend Saturday on this trip and on Sunday AM we will be free to see the area at our own pace and then in the afternoon Dr. Eberth will be giving a public lecture on the area that we can attend. Please note: no personal collecting permitted in the park.

TRIP 90-4: Burgess Shale (Walcott Quarry)
Resource person: Guided by Yoho Park interpreter

TRIP 90-5: Mount Stephen (trilobite beds)
Resource person: Guided by Yoho Park interpreter

Plans are still in the formulative stages for these two hikes. We hope to have them on a Saturday in August. These dates could be August 8 to 25, depending on our booking limitation. Our group is limited to eight therefore we may want to book two trips to each locality. Both these trips are a strenuous hike departing at 10:00 AM and returning in the early evening. The Mount Stephen is a steeper climb than the Burgess Shale but the Burgess Shale is much further. A note of caution for either of these trips: the participants should be prepared for an extra effort but the end of the trip should be worth it.

Please do not attend any of our field trips without first checking with the resource person or the field trip co-ordinator: **Harvey Negrich (403) 249--4497** in Calgary. Each of us must appreciate that we will do our best to see that we will be able to attend if we say that we will be there. A no show on Trips 90-4 and 90-5 will mean that a spot for a person that would have wanted to go may in fact not be filled, so please on these two trips try and be honest. Phone Harvey and pass along to him your interest in attending any of the trips at your earliest convenience.

Happy hunting!

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PALEO-SITE

Jeff Doten

As an artist with the Alberta Palaeontological Society I had been itching to do an art show for quite a while. Beginning last spring I began to hunt out local palaeontological artists. At the end of the summer I had contacted: Mike Skrepnick from the Friends of the Tyrrell, Donna Sloane illustrator at the Tyrrell, Mike Caldwell from the University of Alberta, and Brian Cooly, the sculptor who has supplied the Tyrrell with it's life sized and life like dinosaurs. As a student at Mount Royal College and that being the location of the Alberta Palaeontological Society meetings, the show began at the College. In mid-April the show will move to the Sun-Life Building, then on to the Mobil Oil Building and hopefully the Tyrrell after that.

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PROGRAM REVIEWS

Program: January 19, 1990. **Cedar Mountain Formation, Utah,** presented by Brooks Britt, University of Calgary and Tyrrell Museum. Reviewed by Heather Whitehead

The Cedar Mountain Formation in Utah contains rocks of lower to middle Cretaceous age. The rocks look similar to the dinosaur-bearing Morrison Formation, but differ in palynology In the late 1970's Brooks Britt did field work in the area, near the Arches National Monument, under the sponsorship of "dinosaur" Jim Jensen of Provo, Utah.

In the study area, a rich dinosaur bonebed is exposed around the edges of a sandstone capped ridge, and is believed to underlie the whole ridge. The bones are generally poorly preserved, crushed, disarticulated, and have extensive calcite veins. Occasional well preserved individual bones are found. The bones represent many similar genera, including both theropods and sauropods. Genera similar to Ouranosaurus (found in Africa) and Iguanodon (found in Europe) illustrate evolutionary divergence since the breakup of Pangea in the Triassic.

During the field season, bones were stabilized on site, numbered, mapped, and removed in blocks (over 800 in one summer). Useful field accessories included a heavy winch for moving plaster blocks, trucks, and cats for building roads, brown paper rolls for wrapping specimens, and a "fossil pail" roped to a pulley for moving small specimens and supplies.

Few of the collected specimens have been studied or prepared. The bonebed is thought to be a stream deposit because of its large areal extent, the condition of the bones, and the surrounding sandstone/clay matrix

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Program: February 16, 1990. **The Cretaceous - Tertiary Extinction,** presented by Dr. Dennis Braman, Tyrrell Museum. Reviewed by Les Adler

Dr. Braman developed his topic systematically accompanied by a personal set of colour slides and dramatic charts. First he showed a chart of geological systems and the accompanying life forms of each geological period with the extinctions highlighted, especially at the end of Permian and Cretaceous times. Another chart showed the various faunas and the percentage extinction rates of various animal classes at the Cretaceous - Tertiary boundary. Another set of slides provided an exhaustive list of many, many theories which might be able to explain the extinctions.

Dr. Braman is a palynologist investigating the composition of fossil floras and their time ranges. Currently he is examining about 30 sites across the Canadian prairies. He was skeptical at first with the work of the Alvarez's and their chemical analyses of strata at the Cretaceous - Tertiary boundary in Italy with regard to the peaking of the iridium concentration. However, similar results have appeared in many widespread sites, so there may have been a cosmic event.

Slides were shown of local sites, including the one north of Trochu, and the relationships of strata, including various coal seams. He showed slides of cosmic events including the Nemesis theory which postulates periodic extinctions at 26 million year intervals, with about 13 million years to go to the next one. He showed slides with the results of his speciality. These graphs of the percentages of extinctions of seeds of various plant types such as ferns, angiosperms (monocots and dicots), and gymnosperms (evergreens) do not indicate a discernible pattern. Consequently, conclusions are still open-ended. The presentation of results such as Dr. Braman's has brought together the work of many disciplines such as cosmologists, astrophysicists, palaeontologists, chemists, physicists, palaeobotanists, and mathematicians so that you would now have to read about 3,000 scientific papers to cover the topic.

Our group was privileged to have one of the active investigators present his findings on this exciting subject.

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Program: March 16, 1990. **Aspects of Paleoecology and Ontogeny of Productid Brachiopods,** presented by Dr. Dave Mundy, BP Resources. Reviewed by Heather Whitehead

Dr. Mundy introduced his talk with a review of brachiopods in general. Brachiopods are invertebrates, characterized by 1) bilateral symmetry through 2 valves; 2) a pedicle or "stalk" for attachment to a substrate, at least in juvenile forms; and 3) a brachidium inside the shell consisting of loops which suspend the lophophore, or feeding mechanism. The lophophore sets up the currents which allow filter feeding. Brachiopods are divided into articulate and inarticulate forms, and are found in the geological record from the Cambrian to the present day.

The lineage which gave rise to the product brachs evolved in the Devonian. The group is characterized by two features; shells that "nest" in concavo-convex fashion, vs. the normal brachiopod biconvex shape; and, most productids do not retain a pedicle opening. Productids existed from the Devonian to the Upper Permian, were a diverse group, and were most numerous prior to their extinction in the Upper Permian

Productids were often spiny, and spine arrangement can indicate life mode. The spines were hollow extensions of the mantle, which lined the body cavity. Spines are poorly preserved in calcareous preservation, but siliceous preservation yields perfect, fragile specimens. Spine arrangement and function changed with the growth of the brachiopod Baby productids probably had a pedicle stalk, which was replaced early by more efficient clasping spines which grabbed on to an anchorage. Other spine types include:

-cicatrix scars, which reflect the substrate of attachment on the upper valve (eg. brachiopod valve with the "waffle" texture of a bryozoan to which it was cemented)

-creeping spines, which extend along a hard substrate and cement the brachiopod to it. The attachment was strong enough to support the brach upside down.

-supportive spines, which could include all the above, plus grille spines which filtered coarse material before it entered the shell.

Other productid strategies for life included giant (to 10 cm), generally free living forms found in low sediment environments, and reefal forms which looked spiny solitary rugose corals.

The changes in productid types over time can be correlated to broad environmental changes. In the Devonian, reefs were common and most productids were the attached varieties, plus some free living forms. In the Mississippian and Pennsylvanian, environments were predominantly soft sediment, and most brachs were free living forms, However, wherever framework occurred, attached types appear. By the Permian, reefs were common again, and attached and "coral" types dominated.

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REVIEWS

Les Adler

1988 Sino-Canadian Dinosaur Project Expedition Successful in Inner Mongolia by Tomasz Jerzykiewicz in GEOS, Vol. 18, No. 4, Fall 1989 pp. 1-6

In 1971 Dr. Jerzykiewicz was a sedimentologist with the Polish-Mongolian Expedition to the Gobi Desert. In 1988 he resumed his studies of this area with the Project. He works out of the Institute of Sedimentary and Petroleum Geology in Calgary. The 1988 expedition collected from the Djadokhta Formation. More than 40 dinosaurs, several mammals, turtles, lizards, and five kinds of unhatched dinosaur eggs were collected. One mass grave provided five specimens of Protoceratops while another provided six baby Pinacosaurus. The arrangement of the continents at this time is sketched and conclusions obtained from sedimentology studies of the rock sequences in which the dinosaurs are found are stated.

Although a large proportion of dinosaurs found at other locations lived in lowlands with dense, subtropical vegetation, broad marshes, vast lakes, and coastal plain environments, a variety of other environments were inhabited by various families of dinosaurs. In this location the dinosaurs inhabited dry steppes and semideserts away from the sea or large inland lakes. Here the dinosaurs had to survive long periods of drought by looking for water in small intermittent streams filled occasionally during rare but heavy rains and fed on scarce plants adapted to this semidesert habitat. An environmental change took place between early and later Cretaceous times when the large inland lakes dried up and marshy terrain gave way to a semidesert. The studies carried out in the Gobi Desert are to be used for comparing these rock sequences with sequences in Western Canada.

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Secrets of the Gobi Desert by Don Lessem in Discover, June 1989, pp. 40-46

Because of the massacre at Beijing this year's full expedition to China was postponed. This article reviews the results and activities of the joint Canada-China expedition to the Gobi desert in 1988. Don Lessem accompanied the expedition and provides these findings.

The article is accompanied by photographs, maps, and illustrations including: a fossilized skull and spine of Pinacosaurus grangeri, Dr. Phillip Currie with a Protoceratops skull, a map showing suspected migration routes, and sketches of six different types of dinosaurs.

Because of the experience of the team's members the finds were often spectacular, as they would excavate on productive sites whereas an inexperienced person would not persist in following the clues that would appear. For example Brian Noble and Phil Currie found the first clutch of baby Pinacosaurus hatchlings showing that Pinacosaurus babies were gregarious. This find was one of a number that provide tantalizing similarities between the dinosaur groups of North America and of Asia. The governments of China and Canada have supplied money, resources, visas, and given the group permission to dig at will in order to obtain results and conclusions. During three trips to the Gobi and four in Canada the researchers have unearthed hundreds of fossils, conducted sediment studies on both continents, and updated existing data.

This article also discusses the Mongolian expeditions of Roy Chapman Andrews of the 1920's and later expeditions conducted by Russian, Chinese, and Polish groups.

Currie has formulated a set of questions to help in the planning of a later expedition. Questions such as: Why did some types of dinosaurs not get across a land bridge (if it existed)? Why do horned dinosaurs not appear in Gobi deposits? What is the explanation for the types of dinosaurs that appear in Asia but do not appear in North America of the same age?

It is hoped that a later trip will find more dinosaur deposits with new discoveries which will produce evidence to explain missing conclusions as to the evolution and immigration of all of the types of dinosaurs on both the Asian and North American continents.

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Who or What Killed the Giant Mammals? by Joann Dennett in Science Year - World Book Annual Science Supplement, 1990, pp. 10-25

We know that there were giant mammals about during the Pleistocene Epoch because mammoth bone have been found in 1400 different locations. Occasionally mummified remains are found. More than one million animals have been discovered in the La Brea tar pits at Los Angeles, 30 mammoths at Hot Springs, South Dakota, and 30,000 Pleistocene mammals at Natural Trap Cave in north-central Wyoming. Radiocarbon dating indicates that most of the large mammals died out 12,000 to 10,000 years ago. Thirty-three genera of large mammals died out completely. The numbers of types of smaller animals experienced little change. The evidence suggests to some scientists that a worldwide climate change from cold to warmer took place which led to the extinction of the giant mammals because of changes in food supplies. The same clues have convinced other scientists that human hunters caused the extinctions. There are many illustrations and flaws are presented for both theories showing that it is unlikely that scientist will ever find enough evidence to prove either of these two theories or to prove or disprove any other theory that may arise.

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ALBERTA PALAEONTOLOGICAL SOCIETY
CALGARY, ALBERTA TWELVE MONTHS JAN-DEC 1989

BALANCE SHEET

BANK BALANCE DEC 31, 1989		$341.24	Unearned Revenue 1990		$240.00
INVENTORY OF PINS AT COST		$106.60	Members' Equity:		
INCORPORATION EXPENSE		$78.00	Previous Years	$584.09	
			Expenditures over Revenue, current	($6.51)	$577.58
TYPEWRITER	$379.00				
less depreciation	$136.44	$242.56			
LIBRARY	$61.47				
Less depreciation	$12.29	$49.18			
TOTALS		$817.58			$817.58

OPERATING STATEMENT FOR 12 MONTHS, 1989

REVENUE:		EXPENDITURES:	
		Advertising	$24.80
Dues	$640.00	Bank Charges	$23.10
Raffle Revenue	$94.00	Postage	$211.59
Pin Sales	$87.00	Pins Purchased	$46.83
U.S. Exchange	$11.29	Coffee Expense	$7.96
Coffee Revenues	$72.49	General Expense	$63.83
		Office Expense	$113.69
		P.O. Box Rental	$26.20
		Printing & Copying	$297.06
		Depreciation Expense	$72.93
		Pin boxes	$23.30
SUB-TOTALS	$904.78		$911.29
EXCESS OF EXPENDITURES OVER REVENUE FOR 1989	$6.51		
GRAND TOTALS	$911.29		$911.29