

THE
BRODIE
CLUB



ROYAL ONTARIO
MUSEUM OF ZOOLOGY

THE 1,041th MEETING OF THE BRODIE CLUB

The 1,041th meeting of the Brodie Club was held at 7:30 pm on Tuesday, October 19, 2010 in Room 432 of the Ramsay Wright Laboratories of the University of Toronto.

Chair: George Bryant
Secretary: Ann Falls

The meeting was attended by 20 members and 7 guests.

Roll Call:

Present: R. Addison, Bodsworth, Boswell, Bryant, A. Falls, B. Falls, J. Hussell, Iron, A. Juhola, H. Juhola, Lumsden, Norm Martin, Norma Martin, McAndrews, Pittaway, Reading, J. Rising, T. Rising, Speakman, Tasker.

Regrets: Abraham (Saskatchewan), E. Addison, Bertin, Crins (birding in Brazil), R. Dunn, Eadie, D. Hussell, Larsen, Rapley, Seymour, Thorpe, Tomlinson, Young (travelling in France).

Guests: Calvin Chan, Sharon Hick and Kristen Katsopoulos, guests of McAndrews; Leslie Gray, Paul Gray and Robert Ritchie (Jr.), guests of Rose Addison; and Lingyun Zhang, guest of the club.

Minutes:

Minutes for September were accepted with no changes.

Elections:

Annual elections were held and the following slate was approved.

Secretary: Rose Addison will act as coordinator of volunteer recording secretaries who will each take minutes for one or two meetings during the year. These are Paul Aird, George Bryant, Ricky Dunn, Ann Falls, Trudy Rising and Kevin Seymour. More volunteers would be very welcome.

Treasurer: Aarne Juhola.

Membership: George Bryant, Bill Crins, Ann Falls and Kevin Seymour.

Program: Bruce Falls, Ed Addison, Jock McAndrews, Hugh Currie and Jim Rising.

FON representative: Rose and Ed Addison.

Archives: Alexandra Eadie and Kevin Seymour.

Field trip: A new committee was formed to give some advance thought to the annual picnic and field trip and bring timely proposals to the club. George Bryant, Jean Iron, and Trudy Rising agreed to form this group.

Announcements and New Business:

- In response to a query, Treasurer Aarne Juhola said that the club's finances were in good order – over \$1000 in the bank account.
- Jock McAndrews informed the club that the Geologic Journey programs with Nick Eyles (our February 2010 speaker) are currently showing on the CBC television programme “The Nature of Things” Thursday evenings at 8 pm. They can also be accessed on-line at <http://www.cbc.ca/documentaries/natureofthings/video.html>
“After more than 2 years of hard work by the Canadian Broadcasting Corporation and its partner, 90th Parallel, the first episode of Geologic Journey - World ('Tectonic Europe') aired on the Nature of Things at 8 pm, Thursday 21st October. It will run for five weekly episodes with a break for November 11th. The remaining episodes are: African Rift, Pacific Rim-West, Pacific Rim-Americas and Collision Zone-Asia.”
- Ron Pittaway announced that David Hussell and Erica Dunn received the Distinguished Ornithologist Award from the Ontario Field Ornithologists at their Annual Convention Banquet held at Port Dover on 25 September, 2010. Congratulations on this honour!
- Paul Gray has been nominated by Ed Addison as a member of the BRODIE Club. The membership committee members have unanimously endorsed this application. Paul's information follows.

Paul A. Gray

At ten years of age and wandering the swamps around Trenton, Paul knew what he wanted to be when he grew up - “a swamp keeper”. When he was a young teen, his family left Trenton and



moved into Toronto and Paul became a student at Victoria Park High School. In grade 9 he started a project looking at the effect of different compounds on plants. His teacher, Murray Rowan, arranged for him to go to the Botany Department at U of T for some guidance. There Paul met a young Ron Thorpe, now a Brodie Club member, who mentored Paul in this experiment. Their paths soon crossed again when Ron was hired as a science teacher at Victoria Park. Paul was one of Ron's students and went on many ecology field trips to Claremont and Albion Hills Conservation Areas.

Paul remembers being on a TFN bird hike through the Don Valley around this same time... the hike leader was Brodie member, Fred Bodsworth.

Summers jobs with Algonquin Outfitters (1969-75) and at the Wildlife Research Station in Algonquin Park (1976) with Ed Addison, another Brodie member, only strengthened Paul's interest in ecology.

Paul completed a Bachelor of Environmental Studies with Biology at the University of Waterloo and a Ph.D. in Biology with Duncan Cameron, a Mammalogist at York University. His thesis topic was Winter Habitat Evaluation Models for Moose in Nahanni National Park.

Paul started working as a biologist in Red Lake for the West Patricia Land Use Planning program in

the late 1970s. Following a stint in Alberta as a Wildlife Biologist with the Fish and Wildlife Division he spent six years in Yellowknife in the Northwest Territories, first as an Environmental Assessment Biologist, and then as the Supervisor in Habitat Management, Wildlife Management Division, Government of the NWT.

In 1987, Paul returned to Ontario and has worked since that time with the Ministry of Natural Resources (MNR) in the Wildlife Policy Branch and in the Research Science and Technology Branch. He was seconded for a year to the Zimbabwe Natural Resources Management Programme in Harare, Zimbabwe where he worked as a Planning and Assessment Specialist. Paul has been MNR Senior Ecologist and Senior Advisor to the Natural Heritage Section and is presently Co-ordinator of the Climate Change Program.

Paul is a PADI certified scuba diver and travels to the Caymans and the Caribbean to pursue this hobby. He also dives in local rivers and in Ferran Lake near Westport. He is certified as a Professional Wildlife Biologist by the Wildlife Society.

Paul brought the idea of a Mammal Atlas to the Atlas Management Committee of the FON and he and Jim Baker were instrumental in its funding.

He is an author of *Ontario's Natural Heritage Areas: Their Description and Relationship to the IUCN Protected Areas Classification System*, published in 2009. He is an author with three others of *Protected Areas and Climate Change in Ontario; Challenges and Opportunities for Adaptation* - a survey of provincial, territorial, and federal jurisdictions dealing with climate change, published in 2010 by the Canadian Council on Ecological areas.

SPEAKER

The speaker, Dr. Chen Shen, was introduced by Jock McAndrews.

“Dr. Shen is Senior Curator and Bishop White Chair of East Asian Art and Archaeology at the Royal Ontario Museum, where he has worked since 1997. Shen began his archaeological fieldwork in China in 1984 and received his Bachelor’s degree from Wuhan University, a Master’s degree from the University of Tulsa in Oklahoma, and a PhD degree at the University of Toronto for his dissertation on use-ware prehistoric lithic tools found near Grand Bend, Ontario. Currently, he leads several research projects in Pleistocene archaeology in northern China. His work focuses on discovering the origins and lifeways of our early ancestors in East Asia, and the cultural interactions leading to the peopling of America. Chen is a professor at the University of Toronto, where he teaches courses in Art and Archaeology of Early China.”



Unfortunately we were unable to get the computer in Room 432 to work in spite of the efforts of several knowledgeable members and guests, so we were unable to see the illustrations for Dr. Shen’s talk.

Peking Man

2009 was the eightieth anniversary of the discovery of *Peking Man* fossils in Zhoukoudian (Chou-Kow-Tien) Cave. Zhoukoudian is China’s first UNESCO World Heritage site; permits are required to work there.

Zhoukoudian Cave is located in an area known as Dragon Bone Hill about 50 km southwest of Beijing (formerly Peking). It is large limestone cave; about 140 m long and 40m wide at its maximum. The site is 40 meters deep and contains much ash. Last summer a large rock fall resulted in closure of the cave to further digging. A steel frame is needed before excavation can resume.



There is a long-standing connection between Zhoukoudian and Toronto. Davidson Black, a 1911 graduate of the University of Toronto, went to teach at the Peking Union Medical College. In his spare time, Black pursued his passion for palaeo-anthropological research, getting some funding from the Rockefeller Foundation. *Java Man* had been discovered some time earlier but was not taken seriously until the discovery of *Peking Man*. Black

studied the hominid fossils from Zhoukoudian Cave. Fortunately, scientific casts were made of the *Peking Man* skulls. These replicas became very valuable after five skulls were lost in WWII.

Black and colleagues published reports suggesting the cave could have been a long-term home base for *Peking Man*, who was capable of making stone tools, hunting, and controlling fire in the Middle Pleistocene (780,000 – 120,000 years ago).

After the Revolution of 1949, China shut out researchers from western countries so no further international research on the cave took place until the mid-1980s. Then, an American archeologist, Lewis Binford, challenged previous interpretations of the cave's deposits and suggested that the deposition of fossil remains was likely just the result of carnivore activity and proposed that the fire ash and burned bones were probably the result of natural processes. Other studies on spatial distribution of hominid fossils dismissed Black's idea that the cave was a home base for *Peking Man*. Instead, it was thought the cave was more likely used by carnivores scavenging *Peking Man*. However, these studies were based on analyses of limited samples of fauna and sediments. There were no studies on stone tools that would provide more direct and reliable evidence.

Dr. Shen has been honoured by the Chinese Academy of Science as an *Overseas Chinese Scientist*, and has students in China. Possibly because of this and the earlier connection with Canada, the ROM has been able to present the current exhibition of Terracotta Warriors. His work on the *Peking Man* project represents the first collaborative archeological research project between China and another country. Dr. Shen has been allowed to bring stone artifacts from China to the ROM for study. Part of the agreement is that results will be published first in Chinese, and then in English.

Over 100,000 stone tools have been collected at Zhoukoudian. Of these, 17,000 from the pre-1966 excavations have been catalogued and described. Were these tools intentionally made or just improvised? In his recent work, Dr. Shen selected a sample of 134 tools from the upper layers of the cave. He examined them under a microscope with 200x

magnification for indications of wear caused by various uses. Analysis of use-wear was based on a series of relevant experiments to determine the effects of wear from different uses; use-wear analysis examines the edge damage caused by intentional use, based on combinations and configurations of micro-fracture scars, rounding, and polish on the working edges. In scanning hundreds you begin to find patterns in stone tools that result from use – eg. serving/ cutting meat

Of the 134 tools studied, fifty percent showed signs of use. The two main types of tools were scrapers, used on soft animal parts, and points, used for engraving or drilling. A few points were multi-purpose, used for both engraving and drilling. Of 49 pointed tools, 32 exhibited use-wear. Pointed tools therefore had a relatively high use-rate. Dr. Shen is planning to look at the wear after tools have been fired to link the use of human fire to stone use.

Some points had been retouched for drilling or engraving while the other end was retouched to be narrow. This narrow end shows contact wear suggesting it may have been inserted into a wood shaft or antler to extend the length of the tool.

The spatial distribution of types of tools indicated particular working areas. Use-wear analysis suggests that *Peking Man* hominids were making and using pointed tools *in-situ*, at least during the late phase of the occupation, and that they were capable of producing distinctive tool forms for different tasks.

“Hominid tool-use behaviours at Zhoukoudian clearly suggest that occasionally, when *Peking Man* got the upper hand in battles for survival with predatory carnivores, the early hominids might have occupied the cave as their home base for a variety of on-site activities, although these may have been short-lived. They owned the cave temporarily and left us with the traces of their life at Zhoukoudian.” It is possible *Peking Man* was able to bring and maintain fire in the cave and use it to fire tools.

Quote from Archaeological Newsletter Series IV, No. 3, May 2008.

QUESTIONS:

Q.Tasker: How long have humans had fire?

A.Probably close to one million years in Africa. The earliest evidence in China is 200,000 years.

Q.Paul Gray: Is there evidence of domestication of dogs?

A.:Yes, 9000 years in northern China- there is evidence of a hybrid of fox used as human sacrifice.

Q.:McAndrews: Can you find teeth of Peking Man in drugstores in China?

A.;Not today, people are more educated in this respect. In 1987, three teeth from *Homo erectus* were found in a drug store.

Q.:Bruce Falls: How long have there been tools?

A.:Many tools are 400,000 years old..... 1.6 million in East Asia. Earliest ones are hard to find because they look like broken rocks.

Q.:Norma Martin: If Hyena had been eating human bones would there not be middens?

A.:Yes, there are layers with accumulations of bones. These bones show gnawing marks of teeth.

Q.:Jeremy Hussell: Do you find any tool marks on bones?

A.:Initially Dr. Shen replied “yes” but then qualified this saying that it was a challenge to determine cause.

Q.:J.H.: Are there other animal remains in caves?

A.:Yes, many kinds of animal bones (perhaps up to 200 species). The small ones have not been identified. This year very fine screens will be used, looking for small bones. This will require a large team.

Q.:John Speakman: A French missionary, de Chardin, was at Zhoukoudian at the time Davidson Black was there. Was there collaboration?

A.:No, but that was an inspiration.

Q.:J.S.: What do the Chinese think about the holding of Chinese artifacts at the ROM?

A.:This is a very good question! Chinese authorities understand that the collection at the ROM was shipped out before 1934. (Bishop White). We have a good relationship. In 1931 the National Government passed a law banning exportation but China was in turbulence and it was not implemented right away. The ROM acquired materials rich Americans didn't want.

Q.:Fred Bodsworth: Was the stone material the tools were made of available on site?

A.:Yes, the quartzite was local. A different raw material, not available in the region, was “imported” by some unknown means over quite a long distance.

Q.:F.B.: How long was the cave occupied?

A.:The lower levels of the deposit are 770,000 years old and the upper levels were 200 – 300,000 yrs old. This is determined through radium detection.

Q.:Robert Ritchie: Has it been determined how many individuals are represented?

A.:Yes, based on bone there is a total of 41.

Q.:FB: What is the relationship between Java Man and Peking Man in timing and physical similarity?

A.:They are both *Homo erectus* and were contemporary; same people living at the same time. *Java Man* may be a bit earlier.

Q.:Ken Reading: Why is this site so unique?- there is a lot of karst topography and caves are common. Why not other places?

A.:It is because of the depth of the deposit and the length of occupation. The deposit is 40 m deep and contains a very large number of stone tools, of which the oldest is 750,000 years old.

Q.:F.B.: The oldest man is 750,000 years – can that be related to migration out of Africa?

A.:The first wave of pre-humans from Africa to Asia occurred 1.7 million years ago. There is little argument the first out of Africa was *Homo ergaster*, not *Homo erectus*.

Q.:K.R.: Do you have any comment on the bone from Siberia that is perhaps a new species?

*A.:*The DNA sequence from the one finger bone found didn't fit any pre hominoid lineages. Perhaps it could be a gene change.

Q.:George Bryant: Your excavation is 40 m. deep – is that not one of the deepest archeological digs in the world?

*A.:*Yes. And it now needs stabilization.

The speaker was thanked by Jim Rising.

NOTES & OBSERVATIONS

Ron Pittaway has posted his expectations for winter finch migrations (see <http://www.ofo.ca/reportsandarticles/winterfinches.php>). Ron said there has been a big movement of Black-capped Chickadees and that finches, Redpolls, and Boreal Chickadees have started to move. Gray Jays have been seen as far south as Port Stanley.

Jock McAndrews showed a specimen of *Polyporus squamosus* called 'Pheasant's Back' because of its markings. In some books it is called 'Dryad's Saddle'. (The name "Dryad's saddle" refers to creatures in Greek mythology called Dryads who could conceivably fit and ride on this mushroom, whereas the *pheasant's back* analogy derives from the pattern of colors on the bracket matching that of a pheasant'sWikipedia)



Jim Rising had seen Purple Finches at his cottage in Muskoka recently.

Ron Tasker had been on a trip to Lake Muskiki, south of Saskatoon, Saskatchewan to see Whooping Cranes in migration and succeeded in seeing a total of 40. There are said to be 200 of this endangered species in the wild.

Harry Lumsden was on the Bruce Peninsula last Thursday (Oct. 14) and observed 15 Sandhill Cranes, and said they are common on Manitoulin Island. *Ron Tasker* agreed as he saw a few hundred Sandhill Cranes on Manitoulin last week.

Bruce Falls reported that Hugh Currie went to Cootes Paradise on Oct. 10 and saw five Nelson's (Sharp-tailed) Sparrows and 7 Hudsonian Godwits. One week later he returned (with Bruce) and found no Nelson's Sparrows and only 3 Godwits.

The meeting was adjourned at 9:28 and members and guests enjoyed refreshments and discussion.

NEXT MEETING

The next meeting will be held at 7:30 pm in Room 432 of the Ramsay Wright Zoological Laboratories. The speaker will be Arthur Weiss, Director of the Koffler Scientific Reserve at Joker's Hill.

Please note December meeting is Dec. 14 (second rather than third Tuesday).