



Bulletin of the MPE

Expedition to Schefferville, Québec

As you all know, your museum aims to be a focal point for paleontology in Quebec. Over the years it has indeed accumulated a rich collection of fossils from different parts of the province. However, these collections consist almost exclusively of specimens of the Ordovician, Silurian, Devonian (all Paleozoic) and Quaternary deposits which abound in southern Quebec. Except for rare fossils of the Cambrian, pre-Paleozoic eras (Precambrian) and late-Paleozoic (Carboniferous and Permian), Mesozoic and Tertiary are hardly represented in our province. This is explained in large part by the fact that the sediments which could contain fossils, if they ever were deposited, have been eroded over millions of years and they are simply absent from Quebec now. That said, it would probably be possible for the Museum to unearth fossils from the Precambrian and Mesozoic; their presence has been reported in rare scientific articles.

In this context, your president recently organized a scientific expedition in the Schefferville area in order to collect fossils from the Mesozoic (Upper Cretaceous), mostly leaves and more rarely, insects, whose presence was detected there more than half a century ago, during mining operations. The Museum has in its possession a half-dozen specimens of leaves, saved by Pierre Bédard at the Ecole Polytechnique of Montreal, a few rare remaining fragments of the collection of Roger A. Blais. To our knowledge, apart from a few fragments of fossil wood preserved in the Redpath Museum in Montreal, and some leaves ex-



A fossil insect from the Late Cretaceous, preserved in red argillite and found by members of the MPE this past summer, in the vicinity of Schefferville (Quebec).

posed at René Bureau Museum of Laval University, there is no other specimen of this important site in Quebec. (continued)



Schefferville (cont.)

Of the 18 insect fossils recorded from Schefferville, two specimens are preserved in the collections of the Geological Survey of Canada (GSC) and the rest are found at the Yale Peabody Museum of Natural History (YPM) in New Haven, Connecticut (USA). There are six species and four additional families. As for the fossil leaves, more than fifty species have been identified of the 129 specimens preserved at the YPM. Moreover, there are also plant fossils kept at the GSC (personal communication of Michelle Coyne, GSC, to Mario Cournoyer).

The team, composed of Jean-Pierre Guilbault, Mario Cournoyer, Pierre Bédard and Jacques Letendre took the train to Schefferville one morning in early August. The train is named Tshiuétin, which means “North Wind” in the local language. The wind blew gently in this beautiful corner of the country because it took 17 hours to cover the 570 km that separates Schefferville from our starting point in Sept-Îles. This track and the small northern town of Schefferville are part of Quebec's heritage. We must admit that the adventure at Schefferville stirred not only the desire for scientific breakthroughs, (the fossil site was barely studied, more than 50 years ago), but also all kinds of human emotions connected the plight of its former residents.

Fossils of interest accumulated in swamps and lakes in a continental environment, small grabens oriented east-



Piece of fossil wood recovered at the Ruth Lake mine. The fossil wood collected by members of the MPE in this locality presents a problem in terms of its exact age. The literature speaks of fossil tree stumps (cypress family) found at the base of the Redmond geological formation that is lower Cretaceous, but specimens collected this summer seem a little more recent. Note that they were found without stratigraphic context, and an analysis is required to determine the species and age of the fossils.

west, whose presence in Quebec (and around it) is essentially reduced to two or three small deposits assigned to the Redmond Formation and absolutely nothing more. They are therefore exceptional sites. Note that the word “Quebec” is used here in a broad sense because the sites are actually located in the Province of Newfoundland and Labrador, 2 or 3 kilometers from Schefferville, which itself is located in Quebec. Past mining operations



Photo at left : Jacques Letendre looking for plant and insect fossils in the iron ore waste dump at the Redmond Mine. Photo below : Henry Simpson, geologist for the New Millenium Iron mining company (left) and our president, Jean-Pierre Guilbault (center) observing the excavation of a section by Dr. James Conliffe, resident geologist for the Province of Newfoundland. The section is an accumulation of fine wood fragments. These fossils are currently the subject of debate among members of the MPE, whether they really are late Cretaceous (Cenomanian stage: 100 million old) or rather more recent than the last glaciation: less than 10 000 years.

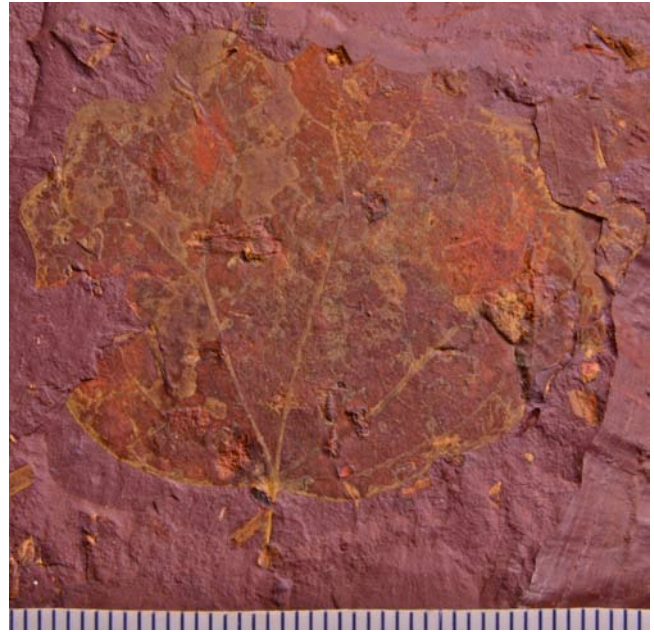




Schefferville (cont.)

completely removed the Cretaceous deposits of limited scope which were essentially overburden formations on economic iron deposits which themselves occasionally yielded ore.

The Museum team initially investigated whether there were any fossil collectors or a few specimens that might still exist in Schefferville. Apart from a few fragments of limited size of tree trunks, these searches were unsuccessful. The second field trip was successful, however, with Mario showing his hunting instinct, discovering the first fossils of plants and insects in a pile of tailings. Subsequent visits to the same area found other fragments of plants and insects (fifteen insects in total), as well as a good-sized fossil tree trunk. Fossils of plants and insects found up till now were all in very distinctive red argillite fragments in piles of tailings and are not *in situ*. However, we think that their origins were all relatively proximal. Finally, a visit to the region of Howell's River, located in Labrador about twenty kilometers from Schefferville, located fossiliferous outcrops of Proterozoic age. The flora is restricted to stromatolites, including some large size samples that have been extracted from the rock.



A Late Cretaceous fossil leaf (?*Marmarthia*) preserved in red argillite found by members of the MPE this summer in the vicinity of Schefferville (Quebec).



Photo above: Our president, Jean-Pierre Guilbault (left), Pierre Bédard, MPE member and lecturer at Ecole Polytechnique in Montreal (center) and Henry Simpson, a geologist for the New Millennium Iron mining company (right) on a Proterozoic (1.9 billion years) site. At this point, we were literally walking on a fossil beach preserving ancient stromatolites; sedimentary structures built by colonies of unicellular algae. These extraordinary fossils represent the first efforts of life to colonize our planet. Photo on the right: horizontal section of some stromatolites present on the site. One can notice the growth rings in each of the algae colonies.





Schefferville (cont.)

In summary, the Schefferville 2013 mission can be described as an unexpected success. However, it would not have been possible without the help of several valuable people, who volunteered their time and energy to guide the members of the expedition in the known or suspected fossil areas. We would like to thank with all our hearts, Jim Orth, consulting geologist in the region, who helped us make contact with company representatives. Jim Orth and Steve Zajac (a retired geologist from the Iron Ore Company) introduced the geology of the region to us by email. We especially need to thank Dr. James Conliffe and his students, of the Geological Survey of Newfoundland and Labrador. We also want to thank the geologists of Labrador Iron Mines (LIM), especially Ms. Clothilde (Chloe) Duvergier and Mr. Howard Vatcher who were present on site, but also Mr. Michel Cormier and Ms. Tara Schrama in Toronto. Yves Pelletier, public relations officer at LIM was our first contact to Schefferville. We were directed to Mr. Pelletier by Mario

Corneau, of the Musée minéralogique et Minier in Thetford Mines. Also, the geologists of New Millennium Iron: Henry Simpson (who made a considerable effort to guide us around the region) and Bocar Diagana. Without the cooperation of all of them, the mission would have been a failure.

In terms of logistics, we thank Professor Pierre Richard, of the Department of Geography at the University of Montreal who put us in touch with Wayne Pollard, Professor of the Department of Geography at McGill. Professor Pollard is responsible for the McGill Sub-Arctic Research Station at Schefferville, and gave us permission to stay at a very low price. This location facilitated our meetings with Jim Orth and James Conliffe. The members also wish to thank Ms. Oksana Choulik, manager of the Sub-Arctic Research Station. She was able to satisfy their voracious appetite and provide for all their needs.



Photo above: Jim Orth (left), consulting geologist sector, with two of our members, Messrs. Jacques Letendre (background) and Pierre Bédard (right) discussing potential fossil sites in the Schefferville area.

Photo on the right:
A well-set table! Each evening, residents of the McGill University Sub-Arctic Research Station, meet to discuss their day's work while enjoying hearty meals.

The bulk of the work remains to be done: finding specialists who will identify the different specimens of plants and insects observed to date; to carefully record and examine all Cretaceous argillite fragments at the laboratory (approximately 100 kg of material) hopefully finding other fossils, and attempting to extract microfossils, (any discovery would be a first in Quebec) and finally, to publish the results.

J. L.



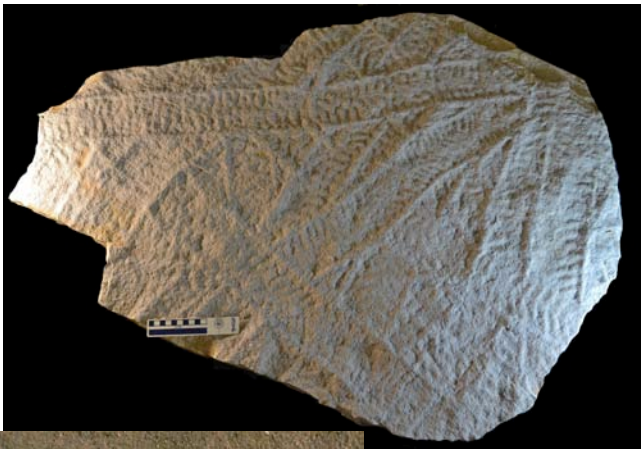


Donation of fossils

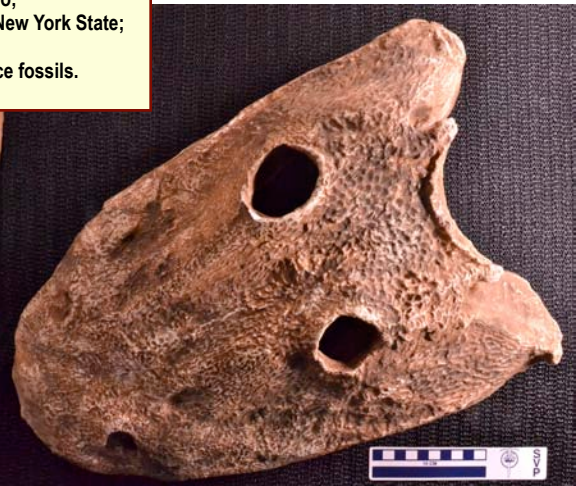
At year end 2012, we received a large donation of fossils, the donor preferring to remain anonymous. This collection of 191 specimens actually contains a bit of everything; both biological and geological. The collection also includes a number of trace fossils, mostly from the Potsdam Group regions of Valleyfield / Beauharnois and Covey Hill.

Otherwise, the Quebec portion of the collection includes a trilobite and a sponge from Anticosti and a few specimens from the Gaspé region, including a coral from Port Daniel and a cast of a *Bothriolepis* from Miguasha.

There is also a wide variety of invertebrates of all ages from several U.S. states and Lake Simcoe in Ontario. With this donation, we now have a number of beautiful ammonites, including a large specimen (40 cm) of *Perisphinctes*, from the Jurassic of Madagascar. In terms of fossil plants, we received, in addition to some Carboniferous ferns, fine examples of fossil wood. Vertebrate material include vertebrae, a humerus, teeth and other fragments of dinosaurs and Tertiary mammals, in addition to many casts. In particular, there is an (next page)



Clockwise:
a Jurassic ammonite from Madagascar;
a skull cast of *Eryops*, (a Permian amphibian);
a starfish from the Ordovician of Morocco;
a trilobite of the genus *Dipleura*, from the Silurian of New York State;
a crab from the Pliocene of Italy,
and a slab of Potsdam Sandstone filled with trace fossils.



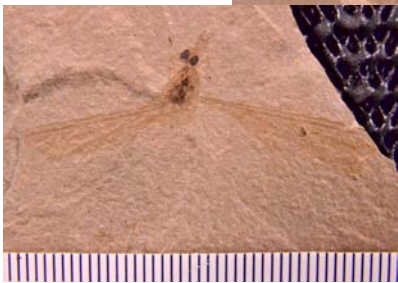


Donation of fossils (cont.)

Eryops skull, a *Denderpeton acadensis* of Nova Scotia and especially an *Archaeopteryx* cast (made from a mold of the Berlin specimen kept at the Redpath Museum). Another important specimen is a cast of the holotype of *Mictomerus melochevillensis*, an arthropod which is one of the only fossils ever found in the Potsdam of Melocheville, Qc.

Two sub-collections are particularly important. One comes from the Paleocene of northern Mali and includes the remains of freshwater fish, turtles and snakes. Given the political conditions in the region, it is likely that it will be some time before anybody can return there. The other is more conventional: it is leaves and insects from the Eocene of Parachute Creek in Colorado's Green River Formation.

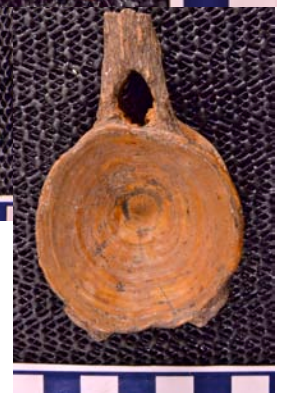
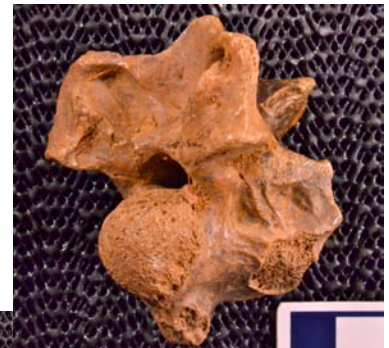
Two fossils from the Eocene of Parachute Creek, Colorado. On the right, a leaf of a plane tree and below, an insect.



Finally, the paleontology spotlight. We received a diorama depicting a fight between a *Tyrannosaurus* and *Triceratops* (see photo at right). It measures about 1.50 m long, is made of plastic, and is hand painted. It is a product of CM Studios, directed by Charlie McGrady, famous for their natural size reconstructions.



Three Paleocene fossils from northern Mali. On the right, a big snake vertebra, lower right a fish vertebra, and bottom left, a jaw portion of a fish.



These make a considerable donation. The evaluation of some of the most important specimens was done externally by two different evaluators, Mike Leveille of Ottawa and Fossils Plus of Montreal. The rest was assessed internally.

In summary, this collection will increase our ability to produce educational exhibitions on a variety of topics. In addition, the Potsdam trace fossils are consistent with our mission of preserving and promoting Quebec fossils. J.-P.



Ontario trip

From April 26 to 29, Mario Cournoyer and Jean-Pierre Guilbault went into Ontario territory. They went to visit paleontologist Kevin Brett, a well-known Canadian paleontological community collector. For many years, Kevin has searched in every quarry in Ontario, and sampled some in several other countries as well. After university, Kevin spent most of his life collecting fossils, preparing and sharing them; his main interest being trilobites. In his fifties, he suddenly shifted his interest to archeology, and then moved accordingly from Scarborough, Ontario, to Alberta. We wanted to visit him before he moved his collection, because he had expressed his intention to give us some fossils. He kept his word and gave us the fossils, mainly from the Ordovician of Ontario. He also gave us a tour of the Lake Simcoe quarries.



A unique opportunity! Kevin Brett (left, rear) has lucked out in finding the base of a newly opened quarry, where there is a "hardground" preserved, that is to say a seabed cemented upon its formation. This kind of seabed allows organisms to fix to it. It is not common to have access to an area of this size. Also in the photo: Jean-Pierre Guilbault (center back), Ron Gratton (center front) and François Habets (right, front). Photo below: We see in this picture, many edrioasteroids, small stars inscribed inside circles. These are echinoderms, cousins of sea stars and sea urchins. The edrioasteroids need a solid substrate on which to settle and live.

These quarries are mostly closed due to security requirements of insurance companies. But Kevin knew some corners in which he could give us a tour. The excursions permitted us to meet people we knew and some we did not know: François Habets, Ron Gratton, Kevin Kidd, etc.

On the way back, we stopped in Kingston to meet another collector, Phil Isotalo. Phil is a model of organization. His fossils, all identified, are mounted on shelves, often inside illuminated glass cabinets, all in a nicely finished basement with wall-to-wall carpeting. Finally, Phil was kind enough to give us a few fossils as gifts.
J.-P. G.



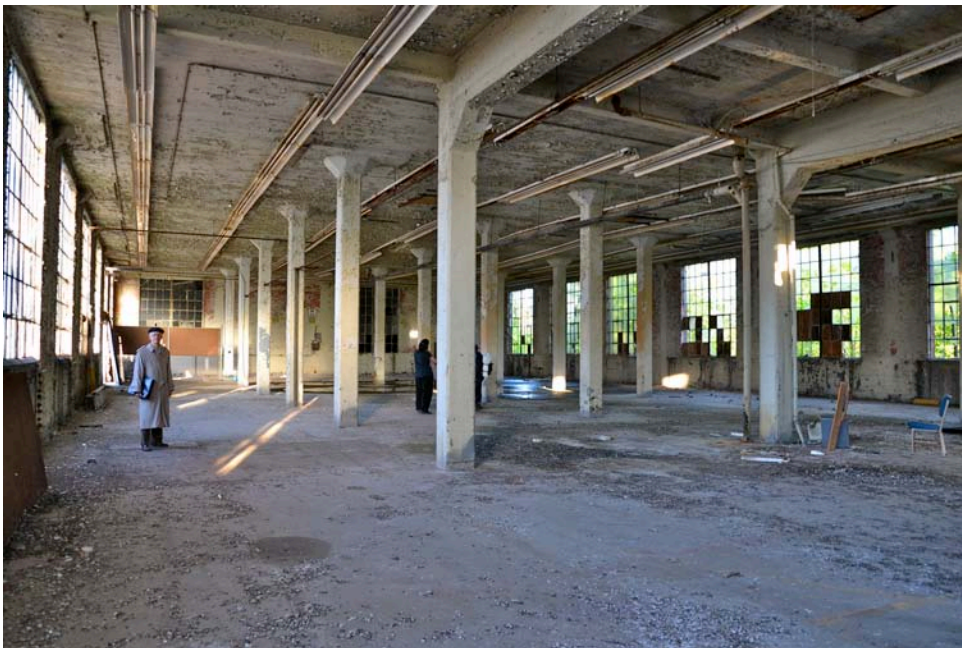


Visiting “building 7”

In the March Bulletin, we told you that there was little news in regards to Building 7 (aka CN Shop). The collective “7 à nous” had been approached by the owners of the site, the Mach Group, for all of Building #7, 6 meters of land around, required decontamination and \$ 1 million for urgent repairs. The building could be renovated and rented to artists, clubs and ... museums. Mostly, NPOs.

On May 14, we had the opportunity to visit Building 7 with Leila Brener of the collective “7 à nous.” We were accompanied by representatives of several other groups that have expressed interest in renting a space. The appearance of the building was not encouraging. There was a lot of debris everywhere, some hanging from the ceiling, ripped tiles, broken windows with the result of pigeons entering and leaving their droppings. At one end, the office sector is almost perfect and needs only a good cleaning. At the other end, one of the outer walls is practically in ruins, and 30 meters must be rebuilt. This could take \$200 000 - \$300 000 of the \$1 million planned for emergency repairs. The second floor is solid, and the roof even with leaks, seems in pretty good condition and has no breaks on the exterior. There is a huge cleanup job to do and the floors will have to be redone and partitions added. The electricity and plumbing also must be redone, some stairs added and a lift for wheelchairs, and we have not yet spoken of heating and air conditioning. In addition to repairing the wall, the first million is expected to seal the windows and the roof, and install water and electricity. In total, the costs of reconstruction can be estimated at 7 or 8 million, but some say rather 10. Here it must be said that there are two segments to Building 7; the large one, 140 m long, is described above. Half is already reserved by La Fonderie Darling, a group of artists. Beyond a now demolished segment, there is a second building of 60 m in length, 40 m of which consist of a large high room (no second floor) with a surface of a little more than 10,000 square feet, suitable for the museum as conceived in the Desjardins plan. Our director is very enthusiastic about it. The Fonderie Darling has not yet claimed it.

The best news since March, is that it is likely that the Mach Group will cover the decontamination costs. Given the level of contamination in this area of the city, this is a huge weight off the shoulders of “7 à nous.” Otherwise, the collective remains optimistic about collecting for the money, in this they would have no choice but to do. They hope to lease space at \$ 10 / square foot / year, which is the rent reserved by the consultant who designed our business plan. For Montreal, this price is very low, but we will have to see the quality of the product offered. J.-P. G.



The big room of 10,000 square feet; able to house a proper museum.



Canada Summer Jobs, 2013

For the fourth consecutive year, the government program "Summer Jobs Canada" approved our application. Again, the MPE hired a university student to perform various tasks in the laboratory. This year we returned to Fannie Dubois, who was one of our students during the summer of 2011. Fannie is currently in the process of completing a master's degree in museology. During the eight weeks she spent in the laboratory, she aided Mario Cournoyer, head of the laboratory, in cataloging the remaining samples of the Allen Petryk collection that the Geological Survey of Canada gave us in 2012. In addition, they have cataloged different field samples, collected during recent excavations in Ontario and Quebec.

Fannie also digitized field photos and pictures of activities organized by the MPE, some dating back to the early 1990s. In addition, she digitized photographic archives taken by Drs T. H. Clark and Yvon Globensky. These photographic archives, which we inherited in 2011 through Suzie Nantel, a geologist at the Ministry of Natural Resources of Quebec, are actually field photos that have been published in the geological reports on the St. Lawrence Lowlands.

Finally, she also did the following:

- Completed processing of a sample of sand containing fossil vertebrae of capelin from the sand pit of Saint-Nicolas;
- Took measurements on whelk shells from deposits of the Champlain Sea, in order to facilitate the identification of different species;
- Continued the inventory of the library.

We would like to thank her for her excellent work!
(photo below) M. C.



New spaces

We made a big step in decongesting our laboratory. Thanks to Daniel Savaria, outgoing director of the Center for Early Childhood (CPE) Pointe-Saint-Charles, the institution has made a basement space available. Due to recent expansions, the CPE is now the owner of the building, with part of the basement unused. An agreement has been ratified by the CPE which allows us to use an area of 18 x 20 feet in their basement in exchange for a modest annual donation for the next five years. The contract is renewable. The agreement was a little delayed due to insurance related reasons. During the month of April, our director, Mario Cournoyer, built a room within the basement with walls and a locked door. We only need to install an electrical outlet. The room is heated and lit. It measures 18 x 20 feet, (360 square feet), with a ceiling 12 feet high. In comparison, the MPE lab is 500 square feet. Shelves were built on two of the four walls. The materials were paid for by the MPE and the work was done entirely by Mario in three days, plus an evening for the shelves. Congratulations Mario!

J.-P. G.

Transfer of Ownership of Carboniferous plant fossils to the Museum of Nova Scotia

In 2010, the Museum cataloged a collection of fossil plants of Carboniferous age from Nova Scotia. These fossils were collected by Nathalie Daoust and Mario Cournoyer during the years 1992 to 1994. At the time, the fossils that were found belonged to us, but this is no longer the case, since the Province of Nova Scotia has recently changed some laws that ensure that any fossil from their territory is considered property of the Crown, even retroactively.

To comply with this situation, the MPE informed the Museum of Nova Scotia (MNS) that we held a collection of fossil plants from their province. The MNS has suggested to transfer ownership of these fossils, which could stay here in Montreal with the MPE as the guardian of this collection. To do this, they provided their catalog numbers, which were placed on the specimens and added to the corresponding records in our database. Subsequently, we sent them a report with all the information about the location, collection and identification of specimens. (next page)



Transfer of Ownership of Carboniferous plant fossils to the Museum of Nova Scotia (cont.)

The collection includes 172 specimens, mostly of Carboniferous age plants from eight different sites. We thank Ms. Deborah Skilliter, curator at the Museum of Nova Scotia, who facilitated the transfer of this collection. We also wish to thank Mrs. Marie-Eve Boisjoli, and Fannie Morland, who wrote the specimen numbers. M. C.



Clockwise, starting top left:
a partial *Alethopteris* sp. sprig;
a *Sphenophyllum* sp. stem;
some trunks of *Calamites* sp.;
a partial sprig of *Neuropteris* sp.;
two pieces of *Sigillaria* sp. bark;
one piece of a trunk;
one *Alethopteris* sp. pinna.
The fossils are all from the region of Cape Breton Island, Nova Scotia.

**Descriptive card of the specimen**

Specimen number:	MPEP556.1
Identification:	Complete test
Genus and species:	<i>Isorophusella</i> sp.
Age:	Upper Ordovician
Geologic formation:	Verulam
Locality :	Brechin, Ontario
Discoverer :	Mario Cournoyer
Date :	April, 2012

The early Paleozoic experienced a variety of types of echinoderms which shows nature's attempts to occupy every conceivable ecological niche. Here is the result of one of these attempts: an edrioasteroid. It is a body with 5 arms that resembles a starfish. But these arms are actually attached to the surface of a round sessile body; it lived attached to a solid surface like a barnacle. The mouth, located at the central meeting point of the arms is visible in this picture, while the anus is the round structure between the two arms just below the middle.



This specimen belongs to the genus *Isorophusella* and was collected by Mario Cournoyer in the area of Brechin, near Lake Simcoe, Ontario. This is from the Upper Ordovician Verulam Formation. Edrioasteroids are mostly small, but some could reach 9 cm (*Giganticlavus*). They lived throughout the Cambrian to the Pennsylvanian. This Ediacaran genus pictured left, called *Arkarua*, almost identical to edrioasteroids, shows uncalcified details. We do not observe the presence of tube feet. Could this be the ancestor of all echinoderms? Some think so.



Memberships

Just as at the beginning of every year, we wish to inform you that your membership must be renewed. Attached to this newsletter, you will find a copy of the membership renewal form. Remember that you can also make a donation; the Museum is a charitable organization duly registered with the Canada Revenue Agency (No. 890282445RR0001) and therefore authorized to issue receipts for income tax purposes.

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