



Bulletin of the MPE

The MPE is 20 years old!

On Sunday, October 4, 2015, the *Musée de paléontologie et de l'évolution* celebrated its 20th birthday! To celebrate this unique event, members of the Board of Directors invited members and friends to a birthday party at the laboratory for conservation and research - MPE.



Several founding members were present at the party. From left to right: Michel Chartier (front, left), Mario Cournoyer (blue T-shirt), Martin Dubreuil (to the right of Mario), Jacques Lachance (middle, back) and Nathalie Daoust (at right). More recent but nevertheless important members could also be seen such as Alexandre Guertin-Pasquier, our vice-president (at the back, between Michel and Mario) and Ha-Loan Phan, Advisor (just right of Alexandre).

Nearly forty people came to participate in these celebrations. The MPE was incorporated on October 4, 1995 in Montreal, as a non-profit organization. This incorporation is mandated to bring together all people who have an interest in paleontology and related sciences such as geology, biology and evolution. But its primary goal (which is always on the agenda) is to open a natural history museum for the general public, where visitors will have the chance to enjoy Québec's fossil heritage and learn the workings of the evolutionary processes. You can view pictures of the event on the next page.



The MPE is 20 years old! (cont.)

Clockwise, starting at right right: our president, Jean-Pierre Guilbault (center) discussing recent fossil gifts with Deirdre Potash of *Art comes to school*; afternoon tea was offered on this beautiful fall day; a brief presentation was given by Mario Courmoyer recounting the 20 years' history of the MPE; great encounters took place on this day, as here between Pierre J.H. Richard (left) and Gilbert Prichonnet (right), two pillars of Quaternary studies in Québec; new members were also present: Véronique Lemay (left), Audreanne Loiselle (middle) and Eric Plourde (right).



Espace pour la vie

In March 2015, we received a visit by prominent members of *Espace pour la vie*: its director, Charles-Mathieu Brunelle, the Director of the *Biodôme*, Rachel Léger, and the Director of the Planetarium, Pierre Lacombe. This visit followed a first meeting with these people at the event "Je fais Mtl" in February 2015. "Je fais Mtl" is a program started by the City of Montreal with some corporations and NPOs to reinvigorate Montreal by promoting grass roots projects initiated by citizen groups. We had been introduced to the people in charge at *Espace pour la vie* by Manon Gauthier, President of the Commission for Culture and Communications at the City of Montreal, as well as by the efforts of Ms. Karine Boivin Roy, city councilor and Ms. Diane De Courcy, monitoring office director for "Je fais Mtl." The meeting on March 8, 2015 was held at the MPE lab. Our visitors were able to see our conservation methods and admire our collections and the many major specimens the MPE holds. But the purpose of this meeting was much more important than just a tour of our collections: it was meant to establish a first contact with people at *Espace pour la vie* and convey our aim for the establishment of a paleontology museum in Montreal, ideally located adjacent to the four science museums that belong to the City of Montreal.



From left to right - Rachel Léger, Director of the Montreal *Biodôme*, Charles-Mathieu Brunelle, Director of *Espace pour la vie* and Mario Cournoyer, your director, examining some of the star specimens of our collections. The people from *Espace pour la vie* were very impressed by the scope and organization of the collections.

We have offered to present a major paleontology exhibition at *Espace pour la vie*. This exhibition could serve as the first step towards a future museum of evolution and paleontology. The addition of this new science museum in Montreal would fill the thematic vacuum (natural history) between the Montreal Planetarium (which presents the early universe up to the formation of the Earth) and the other three institutions, the *Biodôme* (ecosystems and biology of modern faunas), Insectarium (modern insects) and the Botanical Garden (modern flora), to form one of the largest science complexes in North America.

On June 2, 2015, we were invited to a meeting at the Montreal Planetarium, where *Espace pour la vie* offered us the opportunity to produce a temporary exhibition to be presented at the Montreal *Biodôme* in 2018. We could not expect better! The Montreal *Biodôme* is now entering a phase of reconstruction and will reopen in 2018 (formal inauguration in December 2017 and public opening in February 2018). Our exhibition will be part of this new *Biodôme*. It will have a minimum area of 60 m² and will last at least until the fall of 2018. As noted above, it may serve as a "pilot project" to measure public interest in the subject. It will be accompanied by a market study. Visitors will be approached and asked to respond to questions such as: do you like this exhibition? Will you recommend it to your friends? How did you hear about it? Etc. The answers will then be compiled to assess the viability of the concept. This exhibition will be much more technologically advanced than what we usually do. There will be videos, animations, interactivity. Costs will be higher and we will need to seek corporate sponsorship. We will still appeal to your generosity to support the financing: it is a tradition that the MPE does not intend to give up.

Espace pour la vie (cont.)

An exhibition committee has been formed. From the Biodôme we have Martine Bernier, museologist (with whom we worked as part of the exhibition "Dinosaurs and co." in 2001), Etienne Paquette, museologist, Yves Paris, head of programming, and Johanne Gravel, scientific animator (geologist by training). On the MPE's side, Mario Cournoyer, Ha-Loan Phan and Alexandre Guertin keep track. An expert committee, consisting of members and friends of the MPE, will review and propose improvements to the concept and content, and undertake scientific validation. This expert committee will include, among others, our president Jean-Pierre Guilbault, Michel A. Bouchard, Richard Cloutier and Michel Chartier.

Due to an administrative delay (on the part of the City of Montreal), the early conceptual work has been somewhat delayed, but it has nevertheless started. The first step is to produce a preliminary design, supported by illustrations, and cost estimates by the end of January 2016. This document will be used to solicit prospective donors, partners and sponsors.
J.-P. G. et M. C.



From left to right - Ms. Rachel Léger, Director of the Montreal *Biodôme*, Mr Charles-Mathieu Brunelle, Director of *Espace pour la vie*, Sergio Mayor, Secretary of the MPE, Mario Cournoyer, general manager of the MPE, Karine Boivin Roy, Councillor at the City of Montreal, Pierre Lacombe, Director of Rio Tinto Alcan Planetarium, Jacques Lachance, Treasurer of the MPE and, at bottom center, Jean-Pierre Guilbault, President of the MPE.

Saint-Sulpice Library

For those who listen to Radio-Canada, it is impossible not to have heard at some point in the spring that the Museum would soon be moving into the former building of the Saint-Sulpice Library. As a result of misunderstandings, this was erroneously announced on a news program. Two members of the Museum's Board of Directors are indeed Acfas employees and it was during the 83rd annual conference of this organization, held in Rimouski in May and extensively covered by the media that the misunderstanding occurred. In short, an interest in the building was expressed during an interview, an interest that was quickly swelled by other media (since the Library was already in the news) and became the following statement "The MPE will move into the library building to open its museum". That is incorrect! With its style and its columns, it really looks like a museum. It is tempting. Unfortunately, it is old, alterations may be required (cost unknown), it must be expensive to heat, it has no parking space and is not close to the major point of attraction for nature lovers that is *Espace pour la vie*. In summary, the MPE could not afford to move to the St-Sulpice Library unless it received a substantial annual grant that would cover all building maintenance costs.
J.-P. G.

Our fundraiser, "An expanding laboratory", is nearing its goal!

On November 25th, 2015, the MPE fundraiser reached a total of \$ 20,872; leaving a little less than \$1,200 to raise in order to reach the \$22,000 we're hoping for! We sincerely thank our supporters for their contributions and congratulate them for having supported us again.

Remember that the purpose of this campaign is to pay for the expansion and improvement of the *Laboratory for Conservation and Research - MPE*. Our facilities had become too exiguous. They measured 500 square feet and we have increased this to 750 square feet. The goal was to increase the storage capacity for the growing number of collections that are being given to us, particularly in the expectation of a major university collection. We also had to find a way to control both the temperature and humidity. The estimated cost of the project: \$ 22,000.

The main expenditures are:

- costs of building materials for the expansion \$ 8,500
- purchase of the high density mobile storage system \$ 9,500
- Purchase of a humidity/temperature control system \$ 4,000

Regarding the remaining \$ 1,200, we appeal to all our friendly readers of this News Bulletin who haven't already contributed to the campaign: now is the perfect time to do so!

Liste of donors:

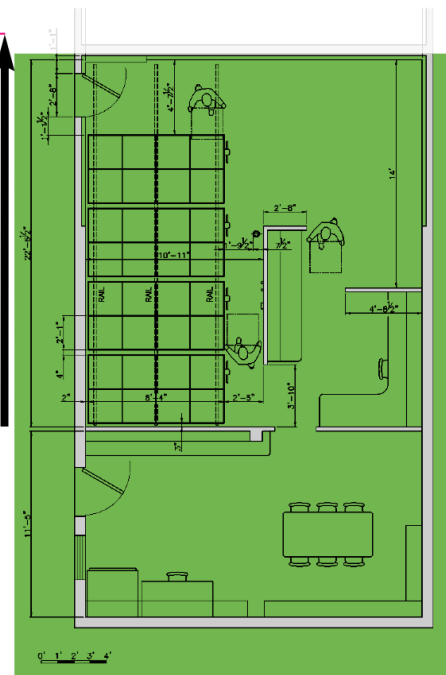
\$500 and higher

François Habets;
Jean-Pierre Guilbault, president of the MPE;
Mario Cournoyer, director of the MPE.
Francino and Michel A. Bouchard, members of the MPE;
Richard (Dick) Harington; Kevin Brett;
Pierre J.H. Richard, member of the MPE;
Hanson Brickyard of La Prairie (Daniel Renaud);
Jean-Marc Ethier; Nathalie Daoust, member of the MPE.

Less than \$500

Stéphane Perron, member of the MPE; Michel Chartier, member of the MPE;
Robert Holmes; Sergio Mayor, Board member of the MPE;
Jacques Letendre, member of the MPE; Richard Léveillé;
Bernard Lauriol, member of the MPE; Pierre Bédard, member of the MPE;
Edward Patrick, member of the MPE; Dave Rudkin; Alisson Murray;
James C. Brower; Margareth Griffin; François Therrien;
Marguerite Hayde, member of the MPE; Robert Sensenstein;
Michèle Drapeau, member of the MPE; Gilbert Prichonnet, member of the MPE;
Sylvie Pinard; Jean Barbeau; Jacques Lachance, treasurer of the MPE;
Ha-Loan Phan, Board member of the MPE; Paul Racicot;
Sylvain Charland, member of the MPE; Lucille Sylvain, member of the MPE;
Alexandre Guertin, Board member of the MPE; David Marshall;
Raymond Auger; Bruno Landry, member of the MPE; Isabelle Bécharde;
Elise Thierry, member of the MPE; Pauline Beaudet, member of the MPE;
Marguerite Blais, St-Henri-Ste-Anne Deputy; Julie Talbot;
Edeline Gagnon, member of the MPE; José Quiroz, Board member of the MPE;
Suzie Nantel, member of the MPE.

22000\$
20872\$



M. C.

24 hours of science - 2015 edition

The 2015 edition of our "general public" fossil dig in La Prairie last spring, was a success! This annual event, part of the "24 hours of science" program was, according to the organizers, one of the busiest. Nearly 75 participants of all ages came to enjoy this beautiful day and the unique experience of discovering fossils and learning about our distant common past.

In the spring of 2014, this event was cancelled because of spring rains and flooding of the pit. This is a typical risk our organizers are confronted with when planning outdoor activities. This time, Mother Nature was on our side, giving us perfect weather. Five members of the MPE acted as guides. They were there to answer questions from participants and to make sure they found fossils.



Guides for the MPE (wearing orange bibs) showing a simplified geological time scale made from a measuring tape.

24 hours of science (cont.)

The Hanson brickyard site in La Prairie is perfect for entertaining large groups during a fossil dig. It is safe and it contains an inexhaustible number of fossils, which are, incidentally, easy to collect. It is accessible for "explorers" of all ages!

One of our members, Pierre Bédard, a lecturer at *Ecole Polytechnique* in Montreal, took the opportunity to bring his drone and film the activity. The video can be found on YouTube. Please click on this link:

<https://www.youtube.com/watch?v=1QHYIDLv84U>

M. C.



Photo above left: two young researchers at work. Photo above right: participants of all ages ready to start hunting for fossils. Photo below left: this field trip is a great opportunity for families to enjoy the outdoors and to learn more about our part of the country. Photo below right: Pierre Bédard (left) makes his drone ready to film the site of the dig and the participants.

Hiring summer students in 2015



Cynthia Le Duc

In the summer of 2015, in keeping with tradition, the MPE employed students and received their visits. To break with tradition, the main person employed this summer was a communications specialist who had been hired in response to the need, expressed in the previous article, to increase our public presence. In previous years, cataloging the collection had priority over everything. In fact, the only person hired to do anything other than cataloging was Vanessa Jetté who spent the summer of 2010 designing a paleontology gallery and a gallery of evolution for our future museum. It should be noted that this summer we once again received a subsidy from the Canada Summer Jobs program. In the summer of 2014, for the first time since 2010, we did not win a grant.

This summer, at the instigation of the younger members of the Board, we hired Cynthia Le Duc and gave her the mission to increase our visibility on the Internet. First, to update our Wikipedia page (yes, we do have one, but it will be improved over time), then load our website's photo galleries on Wikimedia Commons, which

is not yet fully working. An increased presence on Wikimedia Commons will make referencing point more directly to the MPE. In addition, Cynthia has improved the leaflets we distribute at exhibitions and public events. As well as being a communications specialist, Cynthia has a background in Earth Sciences in which she begins her Masters this fall.

However, we did not entirely stay away from the tradition of cataloging. The number of fossils given by our supporters is such that it is impossible not to catalog. During two weeks in July we were provided with the services of a Mexican trainee, Sidney Segura-Muñoz, leant from the Construction Engineering laboratory of the *Ecole de Technologie supérieure* by Professor François Duhaime, whom we thank. Her stay in Canada was financed by the MITACS Globalink program. Mitacs is a Canadian NPO that supports study curricula, research and training in Canada.

J.-P. G. et H.-L. P.



Sidney Segura-Muñoz and Mario Cournoyer cataloguing at the laboratory.



José Quiroz

Communications Policy

We spent some time recently on our as yet non-existent communication policy, our public image, etc. The arrival on our BofA of Jose Quiroz, communications specialist, is behind this sudden interest. Changes are planned to the museum's website in order to optimize its visibility on the web. Also, we made a special effort to produce a printed promotional document summarizing in thirty pages the Museum's activities and history, in addition to presenting the best of its collection. Finally, we plan to make a promotional video, a project that has been on the table for a long time, but should start moving soon.

J.-P. G.

Interns from Chris Cameron's laboratory, the start of a research partnership

During the winter session of 2015, three interns from Chris Cameron's research laboratory at the University of Montreal (UofM), have conducted introductory research projects on some of our Ordovician echinoderm fossils from the Québec City area. At the UofM, Chris's research laboratory focuses primarily on molecular evolution: among the seven students on the course, four are working on the molecular transcriptome of a crinoid, a starfish, a sea cucumber, and two hemichordates, for genes involved in the regulatory network of the skeletal development of the the Purple Sea Urchin. The other three, who summarize their work in the following pages, have an internship with us to study fossil echinoderms from our province. So, in one way or another, all of them are working on the skeletal development in echinoderms.

A word about Dr. Jim Brower who accompanies us on these projects. I contacted Jim back in August 2013, about crinoid collections from the Québec City area that we have acquired during the last five years. I suspected that these fossils were, for the most part, important and that they were undoubtedly new records for the fossil faunas of Quebec and even new species. From the start Jim had confirmed the importance of these fossils. Not only did he inform us that there were at least half a dozen new species, but furthermore, that, some specimens could contribute to the paleobiological, palaeoecological and sedimentological knowledge of North American Upper Ordovician echinoderm faunas. Jim is currently working on the taxonomy of our crinoids; he is preparing a series of articles in which these new species are going to be described. Meanwhile, we asked him to support us with student projects. Together, Chris Cameron, Jim and I have targeted three projects that our students could work on. The results of these projects will be used in future publications.

A final word about the person who discovered all those fossils: John Iellamo. All our echinoderm specimens from the Québec City area were discovered by John during the last decade. In my opinion, his field work is second to none: when we look at his field work, it is obvious that he is an outstanding collector, and I can assert this from my own long-standing field collecting experience. Believe me when I tell you that discovering fossil echinoderms in the field is not an easy task. These fossils are often hidden under a thin layer of sediments, suggesting a vague or even ghostly shape. Often, they only reveal themselves when prepared with a sandblaster. John tells me that when preparing a fossil, time and again he discovers new facets on his specimens. All these fossils indeed been prepared by John, with a micro-sandblaster. He is an accomplished fossil preparator !

M. C.



In the spring of 2015, Chris Cameron (standing with hat) wanted to introduce his students to field work. You can see our three interns on this photo: Simon La Charité-Harbec (in the background, to the left), Auréanne Loiseau (handling the shovel) and Emilie Housego (white sweater). We went to the Hanson brickyard in La Prairie. Auréanne was lucky that day: she found something unusual, a block of shale that contained some complete crinoids!

Interns from Chris Cameron's laboratory (cont.)

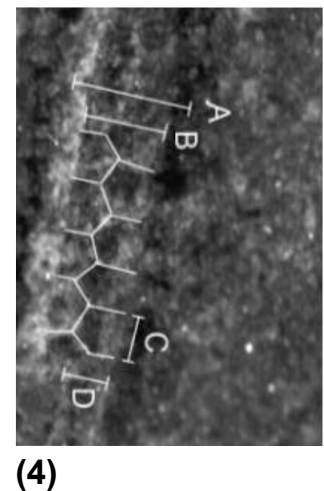
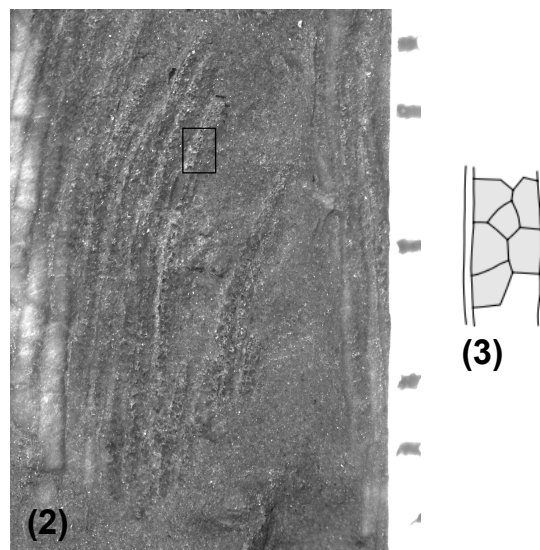
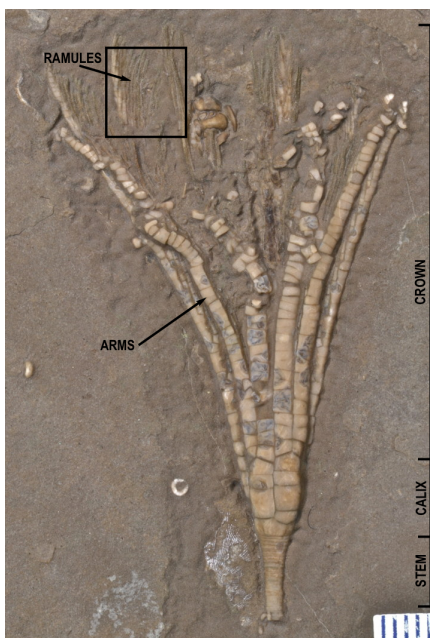
Filtration model applied to Québec City area specimens of *Ectenocrinus simplex*: characterisation of their environment. **Audréanne Loiselle**

The focus of this research project was to examine ramules of five specimens of *Ectenocrinus simplex*, an extinct species of crinoids from the Upper Ordovician, collected in a quarry located east of Québec City. These fossils are found in the Neuville Formation of the Trenton Geological Group. The goal of this study was to add data to what is already known on this species from other different specimen samples (found in the United States). It is therefore an



introduction to much wider research already underway. Specimens were photographed with a stereomicroscope and morphological parameters were measured and compared to known data from other sample groups of specimens. Filtration parameters were then calculated with the morphological data and compared to known information. They were then examined in an ecological perspective to reach conclusions on the nature of the environment that would have been suitable for the species. *Ectenocrinus simplex* is a morphologically intermediate species between open filter groups and pinnulated groups, showing significant intraspecific variations. It could have lived in environments with variable current velocities that were not too deep.

Photo above: Your Director, Mario Cournoyer and Andréanne Loiselle, at the stereomicroscope, in search of food grooves (Note: the Canadian Geological Foundation has graciously given us this Leica Stereomicroscope). What are food grooves? They are channels from which small tube-feet (not preserved) transported particles of captured food towards the mouth of the crinoid. Photos below: (1) Crown of crinoid showing arms and ramules; (2) Enlarged section where you can see the ramules; (3) Schematic diagram showing the structure of a ramule: on each side, the edges of the ramule and in the center, the platelets covering the food groove; (4) Zoom on a ramule: (A) the width of ramule, (B) the width of the food groove, (C) height of the cover plate, (D) width of the cover plate.



Interns from Chris Cameron's laboratory (cont.)

Ontogeny and description of the crinoid *Ectenocrinus simplex* from the Neuville Formation of Québec (Upper Ordovician). Simon La Charité-Harbec

This research focused on the description of eleven crinoid specimens of the Upper Ordovician (Neuville Formation) species *Ectenocrinus simplex*, found in a quarry located east of Québec City. The goals of this research are to compare specimens from this geological formation to other individuals found in New York State and Minnesota and to describe the ontogeny of this species. Measurements of stem length, cup height crown height were taken. The specimens studied were quite different from those found in the United States because of their immature stage. No complete adult specimen was measured from Québec. The ratios between stem length and height of the crown show that at first the stem grows faster than the crown. The rapid positioning of the organism in order to have access to higher drifting food particles in the water column has been put forward to explain this phenomenon. The measuring of other characters could allow further comparisons between the different North American sub-populations.

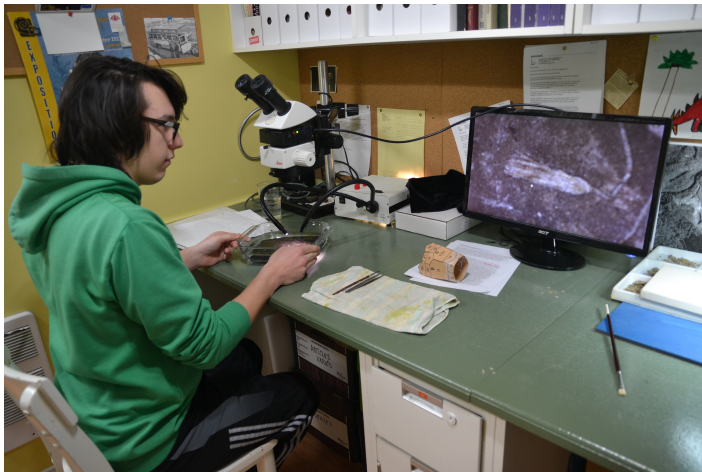
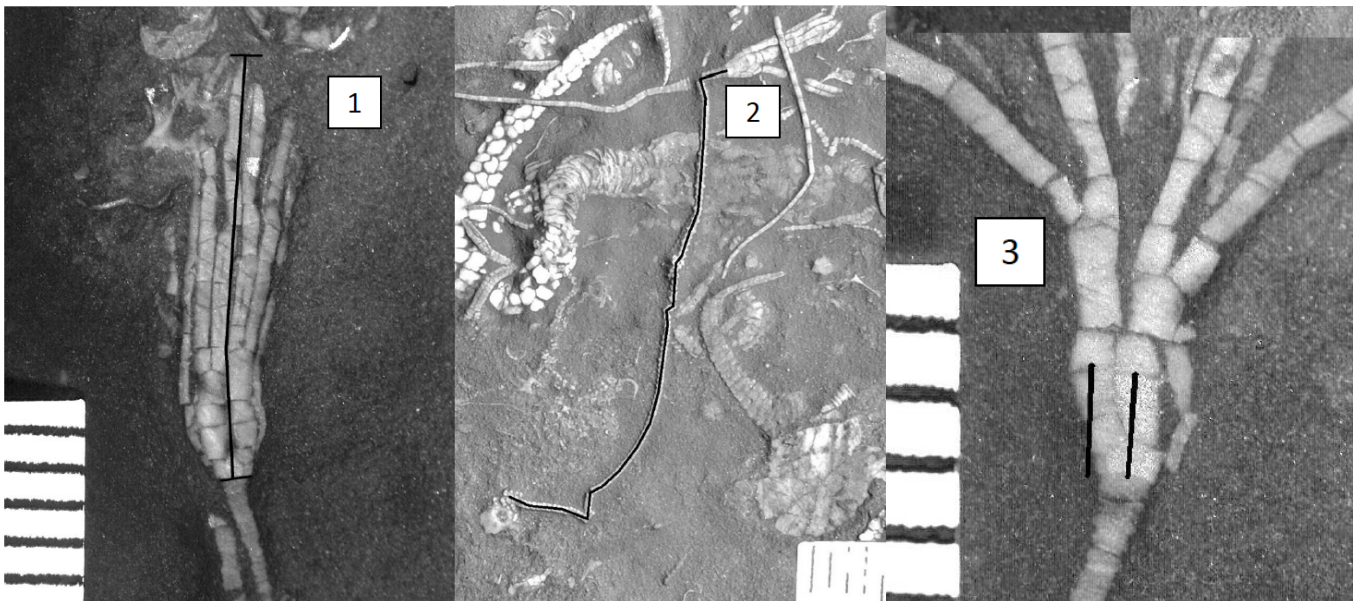


Photo at left: Simon La Charité-Harbec, using our stereomicroscope, is taking pictures of immature crinoids. Photos below: (1) Height of a crinoid crown; (2) Length of stem of an immature crinoid (you can see on the bottom left, the disc-shaped root); (3) Height of a crinoid calyx.



Interns from Chris Cameron's laboratory (cont.)

Glyptocystitoid rhombiferans of the Neuville Formation (Québec): data collecting for the description of a probable new species. Émilie Housego

There is very little scientific literature regarding "cystoids", or more appropriately named Glyptocystitoid Rhombiferans, since most species did not leave an abundance of specimens in the fossil record. This lack of abundance can be explained by their restricted geographical distribution and small population sizes. The collections at the *Musée de paléontologie et de l'évolution* have important samples of "Cystoids" from the Upper Ordovician Neuville Formation (Québec City area). These fossils, for the most part complete, show seldom seen anatomical parts and represent various ontogenic stages. Therefore, the objective of this project was to collect ontogenic and anatomic data from these fossils. To do so, measurements were taken of various anatomical parts from seven specimens. The life stage of each specimen was estimated in order to compare the data obtained. The second objective of this project was to compare the Québec specimens to those of *Cheirocrinus anatiformis* from Michigan, in order to determine if their taxonomy differs. (NOTE: Dr. Colin Sumrall from the University of Tennessee, a "cystoid" specialist, is also involved on this project. During the summer of 2015, Emilie's internship project was transformed into a project to produce a scientific publication on these fossils).

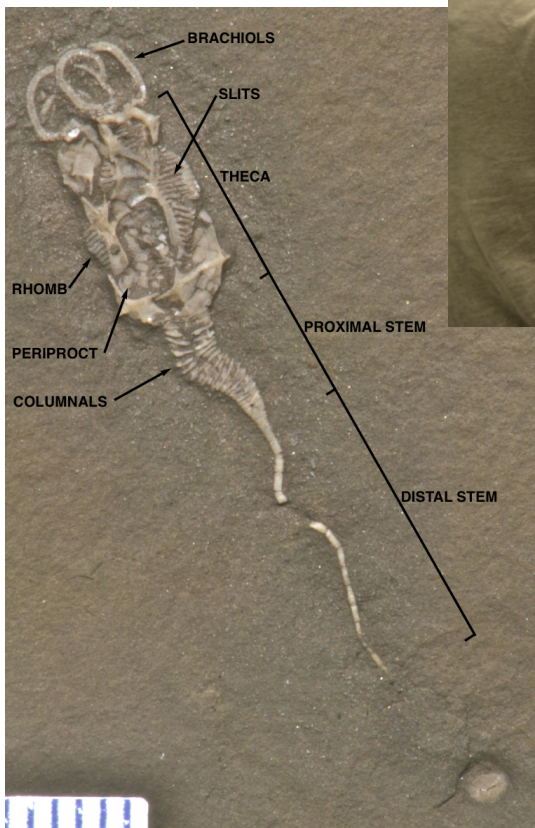
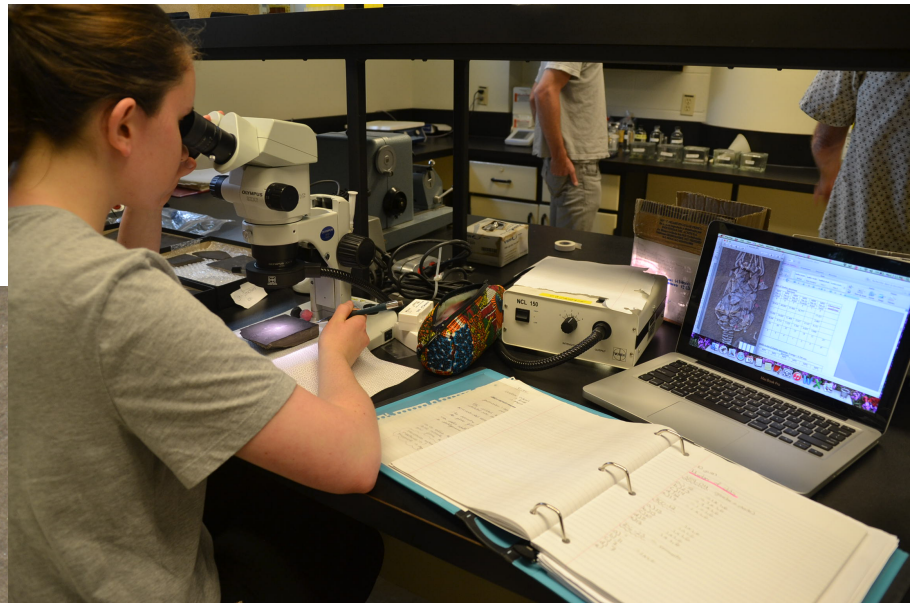


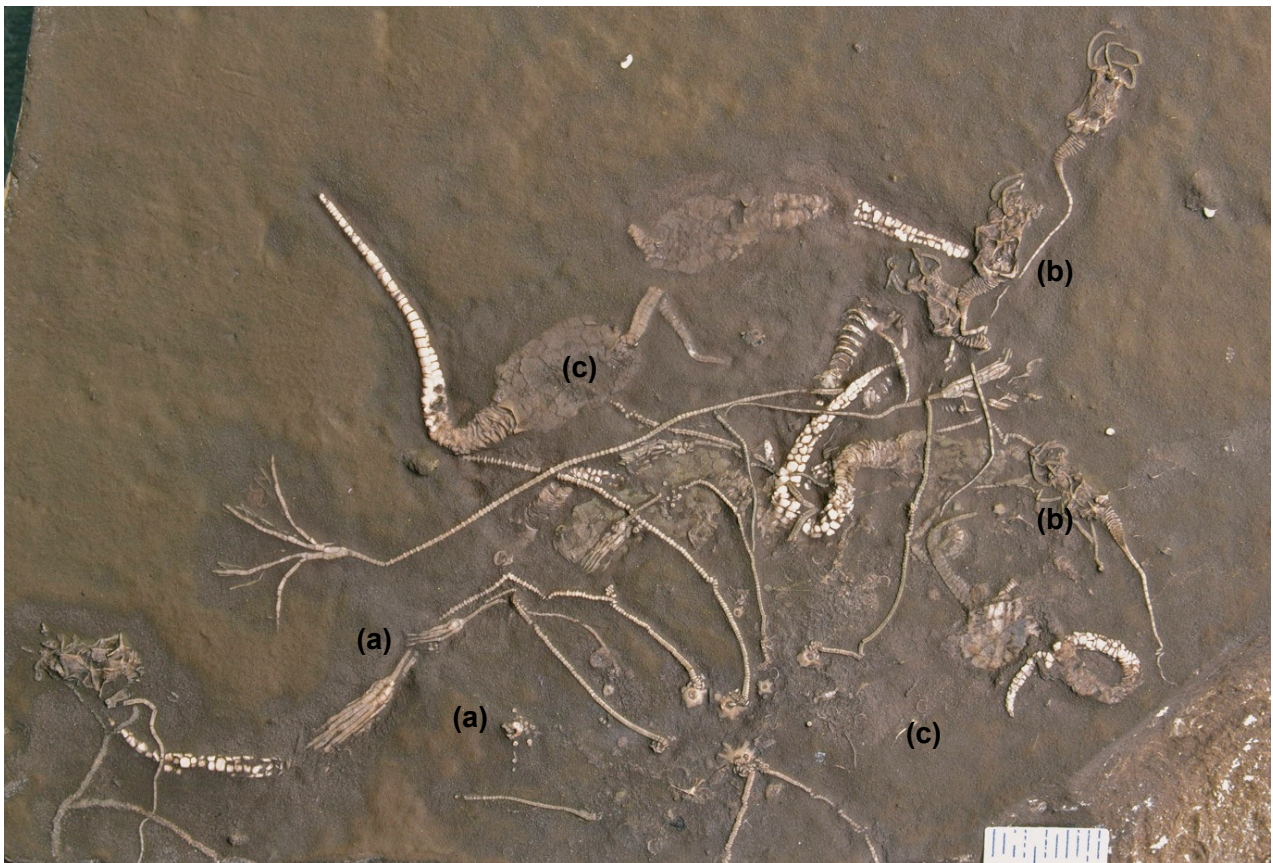
Photo above: Emilie Housego studying our "cystoid" specimens at Chris Cameron's laboratory, at the Department of Biology of the University of Montreal. Photo on the left, one of the specimens studied by Emilie. These fossils show anatomical parts rarely preserved: these include the "arms" or brachioles, and the distal portion of the stem.

Discovery in the Neuville Formation : a fossil worth a thousand words ?

James C. Brower¹, John Iellamo² and Mario Cournoyer²

Over the past year, I have been working with Mario Cournoyer and John Iellamo on an exceptional assemblage of Upper Ordovician seafloor invertebrates from the Neuville Formation near Québec City, Canada. This occurrence of early Paleozoic suspension feeders is truly exceptional because they occur on 'hardground' surfaces that formed during early marine cementation and lithification of small carbonate grains during an interval of low sedimentation. These organisms were then buried rapidly in relatively deep water by mudflows or distal turbidity currents that flowed down the basin slope. As such, the seafloor communities that existed in this area at this time yield highly informative assemblages of intact echinoderms that are preserved exactly where they lived.

These assemblages contained two passive suspension feeders, who caught microscopic plant and animal food particles from the surrounding water currents with small 'tube feet' that extended from their arms or similar structures. As is the case today, and as has been over most of the past 500 million years, suspension feeding niches are defined by a variety of factors including the mode by which the feeding organisms were attached to their substrates, the elevations that feeders attained above the seafloor, and the size of the food items that each type of feeder caught and consumed. One of the Québec City suspension feeders is a crinoid (*Ectenocrinus simplex* for the aficionados) that had a small discoidal holdfast that was cemented directly onto the Ordovician hardground surface; their stem lengths suggest that the animals fed 2 to 5 centimeters above the hardground surface.



Surface of a hardground assemblage from the Upper Ordovician Neuville Formation near Québec City, Canada (specimen MPEP706.2). The thinner elongate organisms (a) are the crinoid *Ectenocrinus simplex* with the smooth crowns, long stems, and small discoidal holdfasts. The smaller forms (b) are the cystoids *Cheirocystis anatifomis*, each with a theca with strong ridges and a tapering stem with no holdfast. The largest specimens (c) are carpoids with tapering mobile stalk that were filled with muscle.

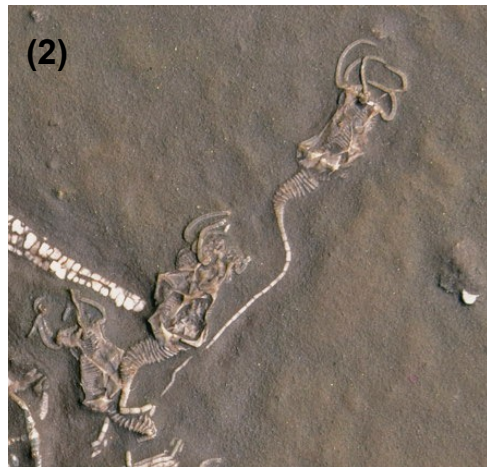
Discovery in the Neuville Formation : a fossil worth a thousand words ? (cont.)

James C. Brower¹, John Iellamo² et Mario Cournoyer²

The members of the other group (a 'cystoid' named *Cheirocystis anatiformis*) lacked such attachments, and a large part of their distal stems therefore probably lay directly on the hardground, giving rise to an average elevation of only 6 mm above the hardground. Judging from the sizes of the food grooves and covering plates of the crinoid and the brachiolo grooves of the cystoid, the latter caught considerably larger food particles. Inasmuch as the two suspension feeders lived at different elevations and largely ate different sized food items, it seems unlikely that they competed for food and space. A third species that lived on the hardground is an as yet undescribed species of a group of echinoderms called 'carpoids' that are generally visualized as bottom dwellers that slowly wandered over the seafloor. Their most likely feeding habits comprise browsing on minute animals, plants, and organic detritus on the seafloor; they were largely ecologically separate from the associated crinoids and cystoids. This is all very exciting because this one small assemblage conveys a great wealth of ecological information. As such, unique occurrences as these can and should serve as key paradigms for interpreting much of the fossil record. Certainly fun, and I think important research.

1 : Heroy Geology Laboratory, Syracuse University, Syracuse, New York 13244-1070

2 : Musée de paléontologie et de l'évolution, 541, rue de la Congrégation, Montréal, Québec, H3K 2J1



(1) Two complete crinoids of the species *Ectenocrinus simplex*, from root to crown. Note that the distal portion of the stem is dislocated from the (disc-shaped) root. (2) Three "cystoids" of the species *Cheirocystis anatiformis*. The right one shows the various anatomical parts of a typical "cystoid". (3) A complete "carpoid", and another one, partial, of a yet undescribed species. This enigmatic echinoderm has not fully revealed its lifestyle (4) At least five roots, with associated stems are visible on this rock, an extremely rare occurrence among fossils.

Fossil donation from Daniel Saint-Laurent

In-kind donations continue to arrive at the MPE. Earlier this summer, we received a collection of fossils, reproductions and reconstructions belonging to Mr. Daniel Saint-Laurent from Carleton (Gaspé Peninsula). Mr. Saint-Laurent is an amateur who had enough fossils to open up his own museum, in his Carleton property, which was open to the public for several years. His collection is notable for its life-size copies, for example, of two *Gorgosaurus* (formerly known as *Albertosaurus*) skulls, the originals of which are at the Canadian Museum of Nature in Ottawa, and also of a *Smilodon* skull. More interesting are reconstructions of fossil human heads. Mr. Saint-Laurent had learned forensic facial reconstruction techniques; he obtained casts of fossil hominid skulls (*Homo erectus*, *Australopithecus* spp., etc.) and applied this technique to see what would happen. The result is interesting (see photos). The collection also includes many original fossils, all of excellent quality. Unlike other donors, Daniel Saint-Laurent gave us a lot of books on fossils. These includes several modern books, but also some classics. Notably, two volumes from the "Règne animal" by Georges Cuvier, published posthumously between 1834 and 1841, and the "Traité de paléontologie" by François Jules Pictet, published in 1853; it is complete and in perfect condition. Two key additions to our library. J.-P. G.



Clockwise, starting with the top left photo: two reconstructions of fossil human heads with, to their left, corresponding skulls; two petrified wood trunks, the largest weighing about 300 lbs; a limestone slab with two *Eurypterus remipes* from New York State (left) accompanied by a partial cephalopod from Anticosti Island (right); skull replicas of a *Gorgosaurus* (on the right) and of a *Smilodon* (on the left).



Fossil donation from Christine Cadoux

Mrs Cadoux had inherited her husband's collection of fossils that he had purchased in France back in the 1970s. This collection was assembled during the course of the 20th century by an unknown collector and purchased as is, as a whole, by Mr. Cadoux, several years before his marriage to Christine. Therefore, she knows nothing about the origin of the collection. In the early 1990s, after their marriage, the Cadoux couple moved to Canada with the collection. Mr Cadoux passed away two years ago. Last February, when she wanted to get rid of the collection, Mrs Cadoux called us and we immediately suggested that she could give it to us in exchange for a receipt for income tax purposes (a positive initiative that we recommend to all our readers). The collection had been stored since the early 1990s in Eastman in the Eastern Townships and had not been opened. We have found fossils mainly from France with some additions from Belgium and England. There were boxes containing astronomical amounts of small shells from all stages of the Cenozoic of France and various stages of the Jurassic and Cretaceous. There were also beautiful Carboniferous fossil plants. But the highlight of the collection was a good number of marine fossils from around Ste-Colombe-lès-Avallon in Burgundy. In the late 19th century, a series of quarries located near this village had been exploited for their soft limestone, which was used to produce cement to rebuild the sewers of Paris. This deposit was of Toarcian age (Jurassic). In it were found ammonites, fish and one of the finest ichthyosaur sites ever found. We have not had much luck on ichthyosaurs, but there were still a number of interesting specimens, including an ichthyosaur thorax and tail, as well as some isolated vertebrae. The most spectacular part of the collection consists of many fish reaching up to 50 cm, especially of the genus *Pachycormus*. In summary, even though we have few representatives of the ichthyosaurs, we have a good idea of their pantry.

J.-P. G.



Clockwise, starting with the photo top left: thorax, tail and some isolated vertebrae belonging to an ichthyosaur from Sainte-Colombe-lès-Avallon (France); two fishes of the genus *Pachycormus*, also from Ste-Colombe; a box containing a large number of Cenozoic fossil shells from France; some specimens of Carboniferous plants from France.



Visitors from the United States and Ontario

Last summer we received a visit from Markus Martin of Gold Bugs (New York State). He was accompanied by Phil Isotalo from Kingston, Ontario. Both have brought fossil donations to the MPE. Markus has given us, among others, 4 pyritized trilobites of the genus *Triarthrus* from his site in New York State. These trilobites have the distinction of having their legs preserved (soft parts). This is very rare and we are very happy to now have some in our collections (see description of the highlight fossil, at the end of this newsletter). Moreover he gave us several Cambrian trilobites from the United States, and two Devonian phacopid trilobites that preserve small spots attributed to coloration impressions (see this publication: C.A. McRoberts et al., 2013. Original spotted patterns on Middle Devonian phacopid trilobites from Western and Central New York. *Geology*, 34, 158-1). Phil also gave us many fossils from his collection, including an important crinoid specimen from the Quebec City area, which preserves three individuals belonging to a new species.

J.-P. G. et M. C.



Photo above left: A trilobite of the species *Eldregeops rana*, preserving spots allocated to coloration impressions, given by Markus Martin. Photo above right: Phil Isotalo (left) and Markus Martin (right) arriving from Ontario, with fossil donations. Photos below: Phil and Markus participating in a dig at La Prairie. Markus wants to investigate the Shales from the Nicolet River Formation, whose fauna, environment and age are similar to that of the Beecher's Trilobite Bed in New York State, hoping to find new sites, with the same type of preservation, that is to say, with fossils preserving soft parts.



Descriptive card of the specimen

Specimen number: MPEP711.1
 Genus and species: *Triarthrus eatoni*
 Identification: Complete individual
 Age: Upper Ordovician
 Locality: Beecher's Trilobite Bed, New York State
 Lithological Unit: Lorraine Group, Whetstone Formation

The genus *Triarthrus* spp. is one of the most common forms in the Upper Ordovician of northeastern North America. It belongs to the order Ptychopariida and the family Olenidae. What is most often found is the glabella, which is in the middle of the cephalon. Less common: a complete cephalon. A little more rare: a complete specimen with thorax and pygidium. Some species of *Triarthrus* have genal spines and a spine at the rear of cephalon or at the end of pygidium. A specimen with all these appendages is rare. If it is more pyritized, this increases its aesthetics and is even rarer. But the ultimate perfect *Triarthrus* is a specimen whose pyritization is so successful that the legs are still visible. You must understand that *Triarthrus* are often found in sediments formed in an oxygen-free environment, facilitating the preservation of organic matter, including legs and antennae. The absence of oxygen also enables the formation of pyrite (through bacterial action), which replaces the material of the legs and makes them visible, preserving their shape permanently. Such preservation is extremely rare. These fossils come from a famous site in New York State: the Beecher's Trilobite Bed. We have received some this summer, a gift from Markus Martin, whom we thank warmly.



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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