



# Voice of the Dinosaur

## Newsletter of the Kawartha Rock and Fossil Club

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**LAST MEETING February 8, 2011****Report from Pres. Mark Stanley**

Last month's meeting began with our regular business meeting followed by a discussion of some Ontario Quartz's brought in by Tom Jenkins and local fossils that Kevin Kidd displayed.

The night was finished off by George Thompson and Tom Jenkins conducting the sale of the Mineral Collection that had been donated to the club. The majority of the collection consisted of Calcites and Datolites that were collected in 1959 and 1960 underground at the Faraday Mine at Bancroft. The sale was organized so that all club members were given equal opportunity to purchase the individual specimens. While 90% of the collection was sold at the meeting, the remaining samples will be offered at our club show to the general public.

Many thanks to George, Tom and Bob Beckett for their effort and time organizing this event; to club members Frank and Wendy Melanson who helped establish the selling prices; and to Paul Costek who donated the collection.

Flyers and signs announcing the club's annual sale were available and distributed among members present. These will be placed by members in strategic areas around Peterborough beginning Feb. 28. Any member who was not present may pick up flyers from Bob Beckett. Contact Mark Stanley if you wish to place signs.

**NEXT MEETING - March 8, 2011**

**Place** - Orientation Centre, Peterborough Zoo

**Time** - 7:00 pm.

**Program** - Calcite and Trilobite Night

**Agenda** - There will be a short monthly business meeting followed by a discussion of the calcite and trilobite specimens brought by members.

This will be a good opportunity to share with other club members.

After the discussions on members specimens, the evening will continue with the feature presentation.

**Feature Presentation** - Club member George Thompson will advise us on cleaning minerals.

This is a topic of great interest. How many of us have collected samples that are now languishing in corners of basements and garages because they are not quite presentable enough to be displayed? Bring in those cleaning challenges for George to see and discuss.

# 17<sup>th</sup> Annual Peterborough Gem, Mineral & Fossil Show

Saturday, March 5 and Sunday, March 6, 2011  
Evinrude Centre, 911 Monaghan Road, Peterborough

10:00 am to 5:00 pm each day  
By Bob Beckett, Show Co-Ordinator

## **We need your help to make this show a success!**

**Children's Sand Box** will be open both days of the show. We need a very large volume of simple mineral & fossil samples. For those extra specimens that are too good to throw away, but are not good enough to put into your collection, this is a great way to put them into the hands of kids with the hope of sparking an interest in nature. The sand box is a very important part of the show because for many of the kids this is their first exposure to collecting rocks. Please bring your donations directly to the show.

The **Club Table** is located in the Display area. Its purpose is to serve as somewhere people can go to learn about the show and our club. This is our greatest opportunity to tell the public who we are and what we do. We need club members to man this during the show. All you have to do is answer any questions the public may have. If everyone could volunteer for one or two hours each day we can all help. Contact Mark Stanley if you want to volunteer.

**Competitions** for the **Best Self Collected Minerals & Fossils**. These two separate competitions are limited to specimens that were collected in the previous calendar year. The specimen must have been self-collected and you had to have been a member when it was collected. Entries are limited to a single mineral specimen and/or a single fossil specimen per member. Your entries must be placed in the display case on the Club Table in the display area by 10:00 am Saturday morning and picked up at 5:00 pm Sunday afternoon. All members are invited to cast your votes for your favourite entries on Saturday morning. If you have collected something in 2010, then you are eligible to enter your favourite piece.

**Display Cases** for minerals, fossils and lapidary. Displays should be attractive and labelled. This is our first year that all of the displays are not competitive. Everyone is encouraged to fill a display case. If you feel that you only want to show one or two specimens, you are welcome too.

Our displays are greatly appreciated and enjoyed by the public and your fellow collectors. From the feedback we have received, the displays have become a major attraction to other collectors who attend our show.

The club has a limited number of display cases available for our members to use. **Please contact George Thompson (613 395 5896) to reserve a display case.**

**Silent Auctions** each day, one auction with specimens suitable for children, and two auctions for adults. We always need mineral and fossil samples suitable for both age groups, but especially for the adult auctions. While the auctions for this year's show are already organized and prepared, we still need donations for future years.

**Live Auction** will be held Saturday at 4:00 pm. This is open to everyone who would like to sell rocks, lapidary equipment, books and anything else that is involved in our hobby. Please deliver your items to the Live Auction area Saturday morning. The club charges a small commission to sell your items.

**Promotion Campaign** is well underway, we need your help with the placement of our small wire framed signs around the city. If you have not yet picked up signs, but wish to place some, contact **Mark Stanley (705-639-2406)**.

Basically, we need everyone to be involved with our show. If you receive this newsletter, attend meetings or take part in our field trips, you are already benefitting from the success of the show. By taking part and helping with the show, you will be giving something back to the club.



## THE FOSSIL CORNER

### TRILOBITES 101

By Kevin Kidd

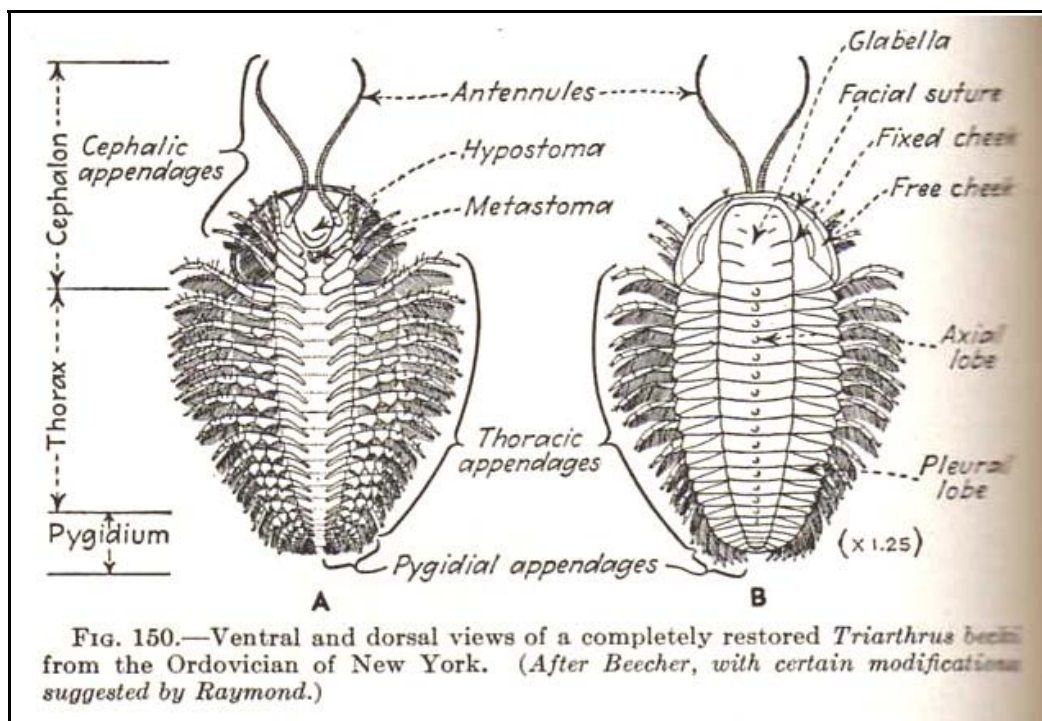
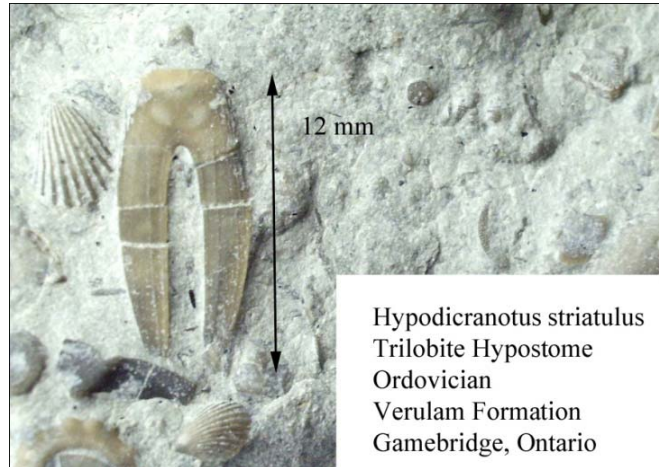


Figure 1.

Trilobites were strictly marine arthropods, hard shelled creatures with multiple body segments and jointed legs such as modern crabs, shrimp, insects and spiders, from the Palaeozoic era and their fossils can be found on all continents. They first appeared during the early Cambrian epoch 521 million years ago, and reached their greatest numbers during the late Cambrian/early Ordovician, with 63 known families. With the emergence of predators such as giant cephalopods in the Ordovician, and especially the true fishes in the Devonian, trilobites were doomed. At the close of the Devonian, there was only one order and 4 families left and those gradually died off until the last trilobites went extinct at the end of the Permian epoch, 251 million years ago, when 90% of all species on earth were wiped out. In all, there are over 20,000 species of trilobites, ranging in size from under a millimetre, to the huge 720 mm (28 3/8") *Isotelus rex*, from Churchill, Manitoba. Here in Ontario alone, there are over 100 different species.

The trilobite body (Fig. 1) is composed of 3 main parts –the cephalon (head), the thorax (body) and pygidium (tail). The name itself is derived from the fact that all trilobites have an axial lobe running the length of the body and flanked by left and right pleural lobes. This is common to all trilobites, despite the great variety of size and form. Attached to the underside of the cephalon, is the hypostome (Fig. 2), which was believed to be the trilobite’s mouth-plate. These hypostomes varied in shape from species to species, with some being fork-shaped, and others resembling a shield.



Hypodicranotus striatulus  
Trilobite Hypostome  
Ordovician  
Verulam Formation  
Gamebridge, Ontario

Fig. 2

Trilobites were among the first creatures to develop sight, and the first to leave good fossil evidence of their eyes. There are several species of blind trilobites, including some who, through evolution, lost their eyes, but the majority could see. Some had tiny eyes, some had huge eyes and some had eyes raised up on stalks, all depending on the habits of the particular species. The eyes were made up of precisely oriented crystals of calcium carbonate, unique in the animal kingdom.

There are 2 main types of trilobite eye:

*Holochroal* eyes are the most common. They ranged from a few individual lenses, to over 15,000 per eye. The lenses were in direct contact with each other, and 1 cornea covered all the lenses. (Fig. 3)

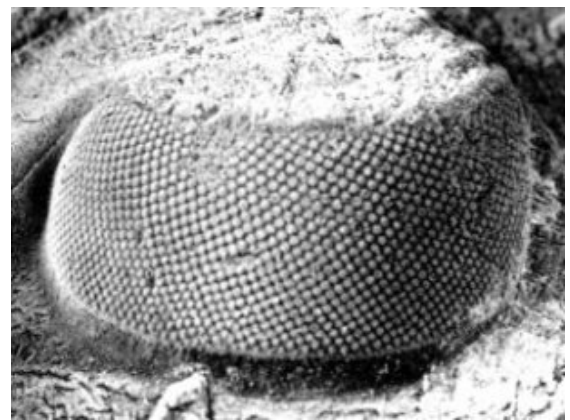


Fig. 3

Schizochroal eyes are found only in some phacopidae. They typically have fewer lenses, up to 700/eye, but each lens is larger than the holochroal type. The lenses are separated by exoskeleton material, and each individual lens has its own cornea. (Fig. 4)

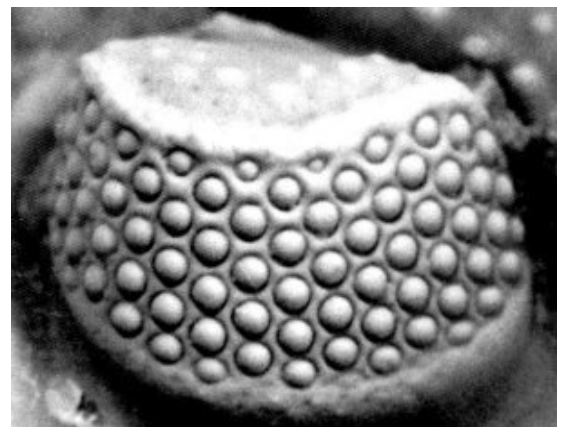


Fig. 4



Trilobites grew by shedding their old, rigid exoskeleton in a process called ecdysis, or more commonly, moulting. This is the same process still used by modern insects and crustaceans. The animal grew while the new shell was soft. The discarded exoskeleton is referred to as an exuvia. The most common fossil remains of trilobites are these exuvia, which due to their large size and light weight, could be easily moved and concentrated by wave motions and currents. Since trilobites moulted several times during their life, it stands to reason that each individual left a multiple fossil record.

There are 3 stages in a trilobite's development. In the first, the protaspid stage, the shell is a tiny, undivided oval. The next stage, the meraspid, is marked by the appearance of a joint between the cephalon and pygidium. Successive meraspid exoskeletons contain an increasing number of thoracic segments, until the set number is reached for that species, anywhere from 2 to over 100. The final stage, the holaspid, continues to grow and moult, but no further segments are being added.

Trilobites were able to enrol themselves as self-defence against predators, much the same as the modern pill/potato bug. Once enrolled, the legs, antennae and all the soft body parts would be protected. (Fig. 5, 6, 7)

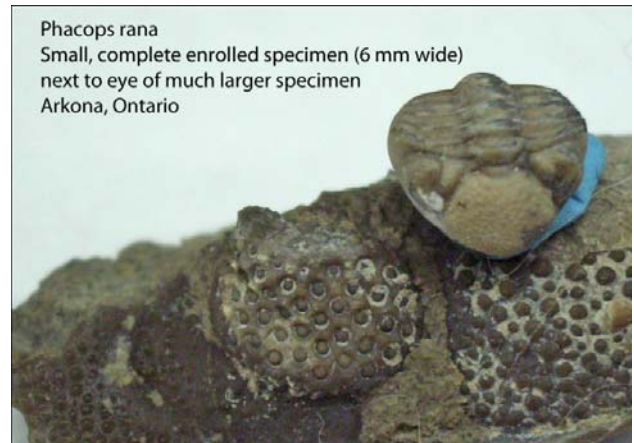


Fig. 5

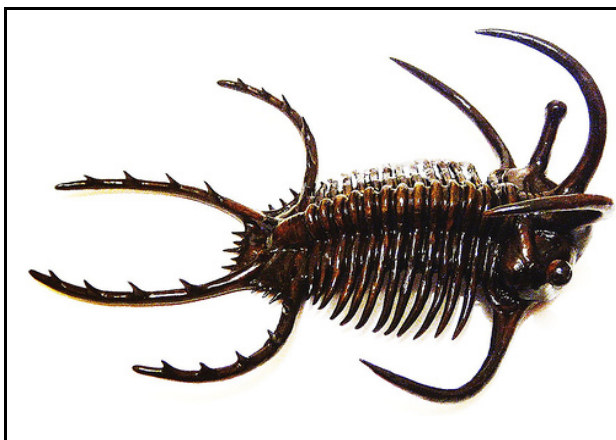


Fig. 6



Fig. 7

The bizarre, spiny trilobites, in an enrolled state, would be especially unappealing to predators. The spines may have served other purposes as well. It's possible that they were used as stabilization structures for those species that lived in loose substrate or as floatation and stabilization for species who may have been slow swimmers.



*Ceratarges sp.*

From the Devonian of Morocco -  
spines on spines!

Fig. 8

Photo credits: Trilobite anatomy- from the book Invertebrate Palaeontology by Twenhofel & Shrock, C.1935

Ceratarges: [www.Flickr.com](http://www.Flickr.com)

B&W trilobite eyes: [www.trilobites.info](http://www.trilobites.info)

All others: Personal collection, Kevin Kidd.



## THE MINERAL CORNER

### CALCITE

Compiled by Bev Fox

Calcite ( $\text{CaCO}_3$ ) is a common mineral on earth. It is not a silicate, but occurs abundantly enough to qualify as a rock-forming mineral. It, along with dolomite, is found in near-surface continental rocks which we know as limestones. Calcite derives its name from "calx", the Latin word for lime. It is estimated that "Calcareous rocks constitute 4% by weight of the earth's crust and cover 40% of its surface."<sup>(1)</sup>

Physical characteristics of calcite often used for identification are:

hardness of 3 on Mohs' scale

produces a white streak on a streak plate

cleavage is perfect in three directions forming rhombohedral fragments

brittle

easily effervesces (bubbles up) with weak acids

Other physical characteristics of some calcites is the ability to fluoresce (show a colour by glowing) under UV light, some will even phosphoresce (continue to glow) after the light is turned off.

Calcite is known as a calcium carbonate mineral because of its chemical composition ( $\text{CaCO}_3$ ). However the same chemistry is found in aragonite and vaterite so they are considered polymorphs (Latin for “many shapes”) with calcite. Their differences are expressed in crystal structure and symmetry resulting in a diversity of crystal shapes as well as a diversity in their stability and availability in nature under differing conditions of temperature, pressure and environment. Calcite is the most stable form. Aragonite is a common mineral, but over time, will convert to calcite. Vaterite is extremely rare.

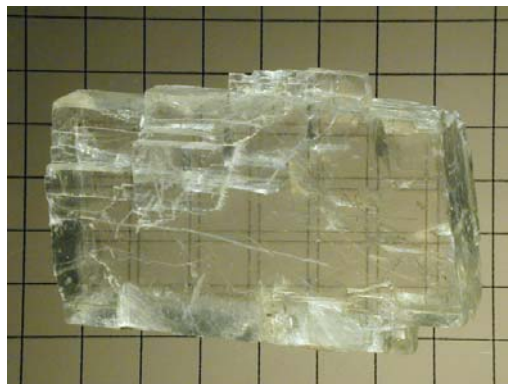


Figure 1.

Many sea creatures both past and present have utilized calcite and aragonite in their shells or hard structures. Trilobites were unique creatures as they had calcite crystals in their eyes. Levi-Setti<sup>(2)</sup> suggested that these eyes made use of calcite’s optical properties of double refraction. When a beam of light passes through a particularly clear crystal of calcite, the ray is split into fast and slow beams, which when exiting the crystal, are bent into two different angles called angles of refraction. If a reasonably clear crystal is placed on a straight line or printed word, two lines or words can be seen (Fig. 1) Rotate the crystal and the light travels straight through and the word or line appears as one. Put simply, in the case of a trilobite, a light shining perpendicular onto the calcite lens went straight to the back of the eye. If the light came in at an angle, the double refraction would still bring the light to the back of the eye. Objects near and far could be instantly in focus.<sup>(3)</sup>

Calcite crystals are found in “literally a thousand different shapes by (the) combining (of) the basic forms of the... rhombohedron, various scalenohedrons, prism and pinacoid.”<sup>(4)</sup> The colours are variable and range from light pastel shades of yellow, orange, blue and pink to darker shades of red brown, green, black and gray. Because of the many varieties and colours of calcite, and many of its other properties, it is considered a very collectable mineral.

## REFERENCES

1. *Simon & Schuster’s Guide to Rocks and Minerals*, © 1977, 1978
  2. Levi-Setti, Riccardo, *Trilobites*, 2<sup>nd</sup> Ed., © 1975, 1993 by the University of Chicago
  3. <http://shkrobious.livejournal.com/34422.html>
  - 4.. <http://www.galleries.com/minerals/carbonat/calcite/calcite.htm> - most of the information was from this Web site
- Figure 1- <http://gccweb/gccaz.edu/earthsci/imagearchive/calcite.htm>



## THE EDITOR'S CORNER

Dear Readers,

If you find mistakes, they're probably mine, please report them to me. If you would like to write an article that you believe would interest "Rockhounds", please do so and send it to me. Many of you have had years of experience collecting and would have some interesting tales to tell. Each year clubs lose the valuable memories that older members have. You do not have to be an accomplished writer. Jot down your experiences. Between us we can put together many interesting articles.

Thank you.

Your Editor,  
Bev Fox



## COMING EVENTS

### **March 5 & 6, 2011 - 17<sup>th</sup> Annual Peterborough Gem, Mineral & Fossil Show**

Evinrude Centre, 911 Monaghan Road, Peterborough

10:00 am to 5:00 pm each day

Features: Gem, mineral, fossil & stone dealers

Fine jewellery, supplies, beads

Door prizes

Each day - 1 silent auction for kids, 2 for adults

Competition for best self collected fossil and mineral

Displays showing fossils, minerals and lapidary items

Admission: Children 12 & under - Free. Adults and children 12 and over - \$3:00

### **April 2 and 3, 2011 - 39<sup>th</sup> Annual Brantford Lapidary & Mineral Society Show**

Paris Fairgrounds, 139 Silver Street, Paris, ON

10:00 am to 5:00 pm each day

Features: Gem, mineral, fossil & stone dealers; Lapidary equipment, supplies

Fine jewellery, supplies, beads, demonstrations, exhibits

Silent auction Sat. & Sun.; 'Mine for Gems ' Display

Admission: Adults \$5.00, children 12 and under - Free

Contact: [www.brantfordlapidaryminerals.ca](http://www.brantfordlapidaryminerals.ca) or [robert@roberthalloriginals.com](mailto:robert@roberthalloriginals.com)

or John Moon - 519-752-9756

### **April 14-17, 2011 - 38<sup>th</sup> Rochester Mineralogical Symposium**

Website: <http://www.rasny.org/MinSymposium/MineralSymp.htm>

### **May 6-8, 2011 - Canadian Micro Mineral Association 48<sup>th</sup> Annual Symposium**

Brock University, St. Catharines, ON

Speakers: Lance Kearns and Scott Ercit

Contact: Bill Lechner at 416-438-8908 or [bill.lechner@rogers.com](mailto:bill.lechner@rogers.com)

Registration form available by request to the above

Website: <http://canadianmicrominerals.ca>