



# Voice of the Dinosaur

Newsletter of the  
Kawartha Rock and Fossil Club

December 2012 ~ Volume 24 ~ Issue 10

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**LAST MEETING**

November 13, 2012

The meeting was chaired by the President, Mark Stanley and began with the regular business meeting. Minutes of the October meeting had been distributed to members earlier so were accepted without being read at the meeting.

Committee reports were given as applicable and approved.

Kevin Kidd, using visual aids, gave a much appreciated presentation covering some methods of fossil preparation and exhibited a few of the tools he uses.

Once again Tom Jenkins held one of his very popular silent auctions.

**NEXT MEETING**

December 11, 2012

**Place** - Orientation Centre, Peterborough Zoo

**Time** - 7:00 pm.

**Agenda** - Regular December Meeting

**Feature Presentation:** Don Doel, Jr. who will give a presentation on "Collecting in Nova Scotia".

**All memberships expire on December 31, 2012. Bring the completed Renewal Form with you when renewing at the meeting, or send dues and Form to Club address. A Renewal Form is included in this Newsletter.**

Our annual Christmas party will be held after the meeting proper, so bring some goodies to share with others. Along with the party, Tom will hold one of his popular silent auctions.

There is no specific mineral or fossil of the evening, but if you have something of interest, bring it.

👉 Annual General Meeting 👈

January 8, 2013

**Place** - Orientation Centre, Peterborough Zoo

**Time** - 7:00 pm.

**Agenda** - AGM and elections of Executive members to be followed by the regular January meeting.

**Open Executive Positions:** President, Vice-President, Secretary, Treasurer, Field Trip Co-Ordinator. As well, the positions for Recording Secretary, Newsletter Editor, Archivist and Librarian are open.

**THE FOSSIL CORNER**  
**2012 Fossil Collecting - Trip 7**  
By Kevin Kidd

Sunday, October 21

I met with new club member Bob B. and made another trip to my favorite quarry. Bob was eager to find a trilobite (who isn't???) and I was hopeful that we'd be able to today. Seeing that there was no new blast on the bottom level, we walked around the pit at ground level starting from the west side. The quarry is likely going to expand to the north and this uppermost layer has been cleared in preparation for that. There's lots of fresh rock exposed, and this is a very fossiliferous layer, but luck wasn't on our side today. It was cold and windy, it rained for a bit, and decent fossils were few and far between. From this top layer, I picked up a few brachiopods and gastropods, but the only thing really of any significance was a large bivalve with either original shell material present, or a mineral (weathered pyrite?) coating (Figure 1). Either way, much more uncommon than the regular limestone casts one usually finds. Original shell material from this age is exceptionally rare on bivalves, gastropods and cephalopods. Bob wound up with some partial trilobites, but nothing complete.



Figure 1.  
Bivalve

Moving down a level, Bob went left and I went right. I was again finding a few common things when I noticed a small slab of hardground. This material would have been hard back in the Ordovician as well, and I knew that this was where edrioasteroids could be found, as they needed a hard surface to anchor themselves on. Picking up the piece, it had several bryozoan colonies that I know are also associated with edrios, and sure enough, there was a broken one on the edge of the piece. After a closer look, I was happy to find a near complete juvenile specimen (Figure 2). The arms aren't clearly visible, but at 5mm diameter, this is the smallest example I have found yet. After an uneventful climb on the crush pile, we decided to call it a day.



Figure 2.  
Edrioasteroid

While walking to our cars along the south edge of the quarry, I made my last find of the day; a small piece (Figures 3 & 4) almost entirely made up of *Anazyga recurvirostra* brachiopods. I have other pieces with the same brachs covering one surface, but this was top, bottom and all the way



Figure 3.  
Dozens of *Anazyga* brachiopods. The trilobite head was a nice bonus.



Figure 4.  
Side view of same piece. Brachiopod concrete.

through. There must be hundreds contained within this small slab.

Bob had found several fossils, but no complete trilobites. I hoped he wasn't too disappointed, but this is the end of the season and the pit was pretty picked over.

I got a nice surprise when I got home. My hardground piece with the edrioasteroids had dried off and, when I cleaned the loose mud off, I was greeted with another edrio that had been buried (Figure 5).



Figure 5.  
The bonus edrioasteroid (*Isorophusella incondita*) after a quick visit to my abrasive blaster. 1 cm. in diameter and pretty much perfect. The broken example is just to its right.

### Saturday, November 3

Collecting season is winding down fast, but I wanted to make a visit to a site I'd been to once before, but not yet this year. This trip had me heading back to New York to the Penn-Dixie site in Bladell, about 10 minutes over the border (Figure 6). This site, like 18 Mile Creek (see my summer report from the September newsletter) is Devonian, but slightly younger, exposing virtually the entire Windom shale member of the Moscow formation. What's interesting about this site is that, through geological processes, the sedimentary layers don't rise vertically and parallel to the ground, they're angled. What this means is that, although the site is relatively flat, dropping only a few meters, there is over 40m. of Windom shale exposed and you get older and older the farther away from the main gate that you walk (Figure 7).

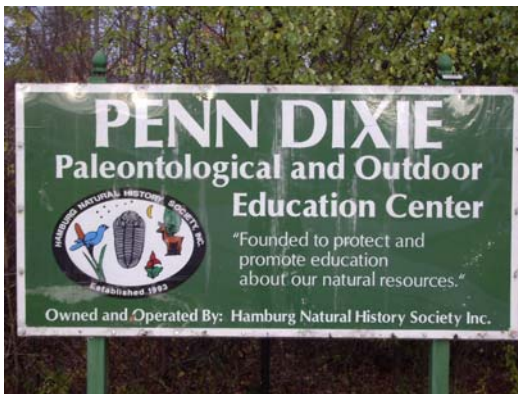


Figure 6.



Figure 7.

Penn-Dixie, the site of a former cement company quarry, as viewed from the front gate. Once the gate is opened, you can park near the closest shelter.

The site is well known for trilobites, mostly *Eldredgeops (Phacops) rana*, but there is a typical Devonian fauna to be found. The trilobites are most common at the back of the site in a layer known as the "Smoke Creek trilobite beds". Partial specimens are everywhere but one should be able to find complete examples as long as you put in the effort. They are found by splitting the soft rock, so you'll need a hammer and chisel and I recommend a pry bar to get the rock out of the ground (Figure 8).



**Figure 8.**  
The caretakers of the site dig trenches in the spring exposing the “Smoke Creek trilobite beds”. Your job is to work these trenches, pulling out and splitting rock to find the fossils.



**Figure 9.**  
One view of this little piece of trilobite infested rock. Two rollers are visible on top and there's a head poking out from the side (bottom in photo).

Most likely, you would find the trilobites enrolled, but prone examples do come up with regularity. Plates with several examples are rare, but do occasionally turn up as well. The trilobites, when cleaned, are black, making for a nice contrast with the gray rock. Once again, I brought home several “maybes” but my best potential find was a small piece of rock with five enrolled thoraxes exposed (Figure 9). With that many bodies that close together, hopefully some have heads and tails as well. I did also find the most uncommon piece of the day. In a ditch on my hands and knees, I noticed a glint of silver. I reached out and picked up a 1972 US half-dollar- ironically also the year I was born.

At the back of the site is a drainage gully (Figure 10) which cuts into the Wanakah shale of the Ludlowville formation, the same strata exposed at 18 Mile Creek. In the gully, the layers have the typical horizontal stacking and there are plenty of large brachiopods to be found in the matrix, as well as potential trilobites (Figure 11). The



**Figure 10.**  
Both sides of this gully are easy to collect from, but the fossils are brittle when wet. I don't know how far back it goes, but the further you walk the deeper into the Wanakah shale you get.



**Figure 11.**  
Potential trilobites.

west section of the site exposes the “pyrite zone” (Figure 12) and while I wasn’t over there this trip, it offers several small species of brachiopods not found in other spots of the site.

Penn-Dixie is a pay-to-dig site, charging \$7.00 for the day or offering yearly memberships. There is staff on hand to answer any questions you may have, as well as seats and shelters if the weather turns bad or you want to take a break. You can keep everything you find. Their website is <http://penndixie.org>

Until next month – Happy Hunting!

Photos by Kevin Kidd



Figure 12.

The area where the cones are is the “pyrite zone”. No mineral collector specimens, but many of the fossils are completely pyritized including brachiopods, cephalopods and, rarely, blastoids.

## THE MINERAL CORNER

### Actinolite (Ray stone)

Compiled by Sue Kehoe

#### Nomenclature:

Actinolite derives from the Greek word “aktinos” meaning ray, referring to the radiating habit of prismatic crystals. It is a member of a group of minerals referred to as *amphiboles* also derived from the Greek, from the word “amphibolos” meaning ambiguous as this group is hard to distinguish from a variety of others.



Figure 1a.  
Actinolite - crystal form



Figure 1b.  
Actinolite - asbestos form

#### Chemical Composition:

Actinolite belongs to a family of minerals called double chained *inosilicates*, composed of two chains of  $\text{SiO}_4$  tetrahedra joined at the vertices, generally containing magnesium and/or iron within their structures.

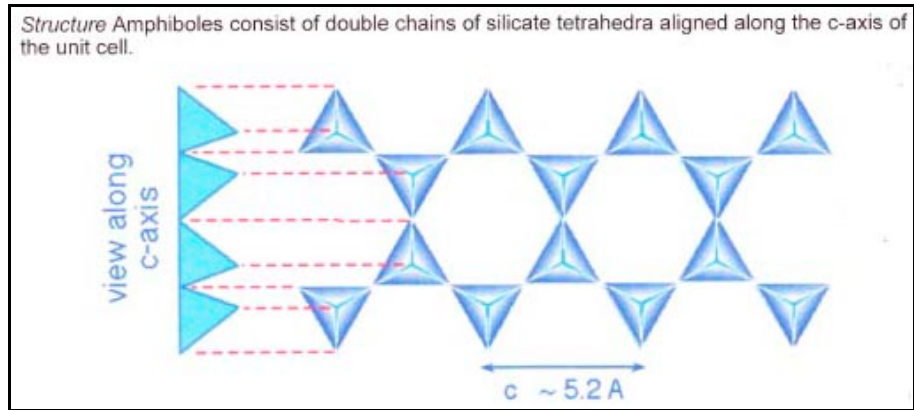


Figure 2.  
Amphibole structure.

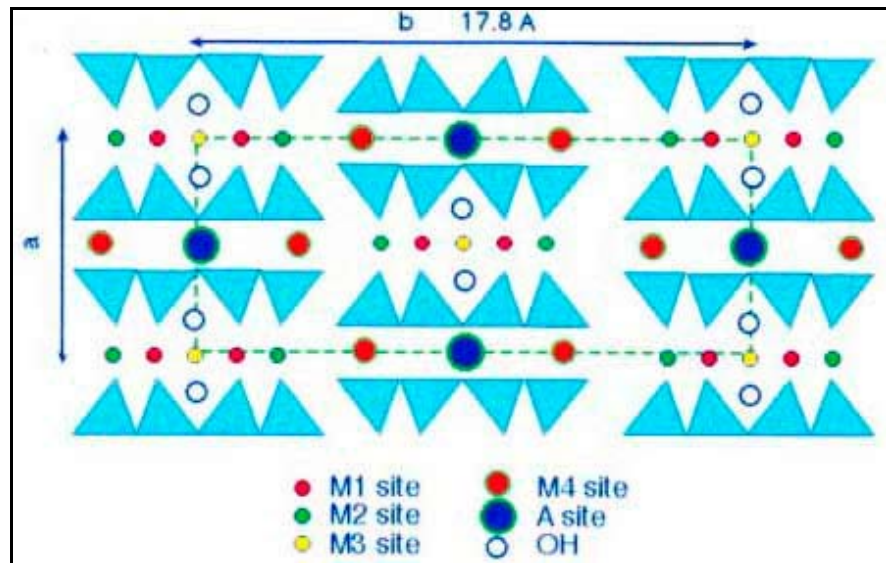


Figure 3.  
Amphibole structure with chain-linking cations as projected along the c-axis of the orthorhombic unit cell.

In the above figure the M1, M2 and M3 sites are octahedral and contain magnesium ( $Mg^{2+}$ ) and iron ( $Fe^{2+}$ ). M4 sites generally contain calcium ( $Ca^{2+}$ ). The A-site may contain  $Na^+$  or can be vacant.

The basic formula for the amphibole group is:



W represents the A-site which can contain Na, Ca or K, or be vacant.

X represents the M4 site which can be 6 or 8 sided and contain Ca, Na, K, Mg, Fe.

Y represents the octahedral M1, M2 and M3 sites and contains Mg,  $Fe^{2+}$ ,  $Fe^{3+}$ , and Al.

Z represents the tetrahedral sites with Si and Al.

There are multiple areas where exchanges can occur in this solid solution series.

## Crystallography

Crystal structure is monoclinic with forms as prismatic crystals; straight, fibrous, compact forms as asbestos; felted crystals such as “mountain leather”; very compact massive forms such as nephritic jade; and long acicular forms such as byssolite. Crystals can be bladed, fibrous or radial.

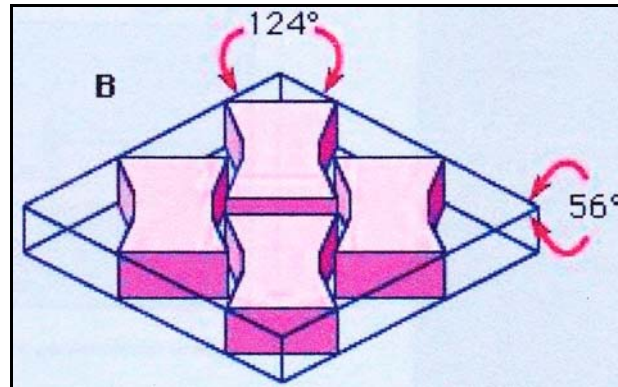


Figure 4.  
Angles in unit cell.

In prismatic crystals, the unit cells form with identifying angles of 56° and 124° as shown in Figure 4.

The amphibole group contains the following minerals in the monoclinic series and they tend to exchange ions freely between each other.

Hornblende       $\text{NaCa}_2(\text{Mg,Fe,Al})_5(\text{Si,Al})_8\text{O}_{22}(\text{OH})_2$

Actinolite       $\text{Ca}_2(\text{Mg,Fe})_5\text{Si}_8\text{O}_{22}(\text{OH})_2$  - calcium magnesium iron silicate hydroxide

Tremolite       $\text{Ca}_2\text{Mg}_5\text{Si}_8\text{O}_{22}(\text{OH})_2$

Other members of this series are: Cummingtonite, Grunerite, Glaucophane, Crocidolite, Arfvedsonite, Richterite, Pargasite, Winchite and Ferro-Actinolite.

There are two members in the orthorhombic series: Anthophyllite and Holmquistite.

### Physical Characteristics of Actinolite Specifically

Colour:	Light to dark green due to iron content, yellowish green and black white, gray and colourless in asbestos form.
Lustre:	Vitreous, silky
Streak:	White
Fracture:	Uneven to subconchoidal, splintery
Hardness:	5.5 - 6.0
Cleavage:	Perfect on {110}
Specific Gravity:	2.9 - 3.3
Diaphaneity:	Transparent to translucent
Refractive Index:	1.60 - 1.66
Birifringence:	0.025 - 0.027
Pleochroism:	In some varieties moderate yellow to dark green
Fluorescence:	None

**Biaxial:** (-)  
**Solubility:** In Hydrofluoric acid.

### Occurrence

Actinolite forms in metamorphic rocks around cooled intrusive igneous rocks such as granite, diorite and andesite from olivine, under high pressures but low temperatures. It is also found in magnesium rich limestones that have been subjected to contact metamorphism. It is often a constituent of greenschists.

### Mineral Associations

Actinolite is often found with albite, barite, chlorite, talc, epidote, muscovite, serpentine, quartz, lawsonite, and glaucophane. Uralite is a pseudomorph of actinolite after any mineral of the pyroxene group, particularly Augite.

### Uses

The nephritic variety is often used for beads, cabochons, sculptures and carvings. Small statues and masks of jade have been found in Mayan tombs in Central America. Burial suits of jade pieces were found in ancient Chinese tombs. It was prized by the ancient peoples. A chatoyant form is known as cat's eye actinolite or in the trade as jade cat's eye. Transparent forms are rare and can be faceted.

At one time actinolite was used for its asbestos qualities but the health risk of inhaling the minute fibres into the lungs causing fibrosis of lung tissue has eliminated this use for insulation purposes. Actinolite is a poor heat conductor and is still used in fire retardant devices for heat protection. It has been used for brake shoes and pads and as roofing granules.

### References

"Rocks and Minerals of Ontario", *Geological circular 13*, pp.19-20, Ontario Department of Mines and Northern Affairs, D.F. Hewitt, Toronto, 1978.

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*Handbook of Rocks, Minerals and Gemstones*, p.86, Walter Schumann, Houghton Mifflin, New York, 1993.

*Smithsonian Rock and Gem*, pp.278-281, Ronald Louis Bonowitz, DK Publishing, New York, 2005.

Figures 1a & 1b - photos personal collection

Figures 2 and 3 - [www.jaegar.earthsci.unimelb.edu.au](http://www.jaegar.earthsci.unimelb.edu.au)

Figure 4 - [www.britannica.com/amphibole](http://www.britannica.com/amphibole)

[www.geology.about.com](http://www.geology.about.com)

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## **IN REMEMBRANCE**

### **Edie Midgley**

On November 28, 2012 the life of Edie was celebrated with song, poetry , personal, often humorous, anecdotes and prayer. Pete, her husband, along with family members and friends gave us a picture of Edie as the resourceful, talented and loving person that we knew. After the prayers given by Canon Ron Davidson, the many friends left the chapel of the Comstock Funeral Home with uplifted spirits and retired to another room to share refreshments and memories.



Here is part of a lovely poem that was presented at the service:

“Remember when your thoughts do turn to me,  
know that I would not have you cry,  
but live for me, and laugh for me.  
When you are happy, so am I.  
Think once of me when you are glad  
And while you live, I shall not die.”

## CLUB CORNER

As noted earlier, the Annual General Meeting will be held on January 8, 2013. This is a very important meeting as the Executive members, who will guide the Club during the year, will be elected. We are fortunate in that Don Doel, Jr., who has been working with Bob Beckett, the Show Co-Ordinator, will now take over that position. It would be expedient for someone to assist Don with the 2013 Show with the idea of eventually assuming that post.

The Club can only function if its members are willing to assist. The present Executive is composed of members who have served the Club many years in various capacities. It is time for other members to step forward and make a contribution by showing a willingness to serve on the Executive. Anyone who is willing to put his/her name forward for election will know that help from older members is always there. For those still employed, the experience gained from Club participation is always useful in various aspects of work and can be helpful when listed on a resumé.

If you would like to stand for office or nominate a member in good standing for office, contact the President, Mark Stanley.

Since only paid-up members may attend meetings, vote or hold office, or participate in field trips of any kind, make sure your dues are paid. A Renewal Form is included with this Newsletter. Be sure to fill in all information including the release at the bottom if you wish to allow your information to go to other members. In any case your information does not go outside the KRFC.

## CLUB SHOW

March 2 - 3, 2013

Our annual Gem, Mineral and Fossil Show is held in the Evinrude Centre. It is lots of fun and many people outside the Club look forward to this event, so the turnout is always good. There are more dealers wanting to participate than there is room to accommodate them.

Soon Don will be asking members to volunteer for setup and takedown of equipment, to help with the Kid's Auctions and sandbox, to help with the Club table and many other tasks. This is an excellent way to become more involved with the Club, even if you cannot become a member of the Executive.

Don't forget the competitions for the best fossil or mineral sample collected in 2012. If you have found a choice fossil or mineral this past season, why not put it in the applicable competition. Also, you may set up a display relating to rockhounding, mining, geology, etc. The Club has display cases for your use. If you do not have enough

items to fill a case, join with one or several other people to fill a display case. The displays, while not judged, are always interesting to attendees at the Show.

### **THE EDITOR'S CORNER**

This is the final edition for this year. My thanks to Sue Kehoe and Kevin Kidd for consistently producing excellent articles for each issue and to all the other members who have contributed to the Newsletters for this year. Without your input, the Newsletters would be nothing more than rather dull monthly letters. As always, I invite you the readers to submit articles or ideas for articles to me.

My thanks must include my husband Ken, who reads every Newsletter and endeavours to pick up the mistakes I often overlook.

Have a happy and safe Holiday Season.

Bev Fox

**KAWARTHA ROCK & FOSSIL CLUB INC.**

**2013**

**MEMBERSHIP APPLICATION \_\_\_\_\_ or RENEWAL \_\_\_\_\_**

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(If a family, list each person's name - parent/legal guardian followed by children. Please include children's ages.)

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Club memberships are due by December 31, 2012 . Members who do not renew before the Annual General Meeting in January are dropped from the membership list so will not be able to participate in KRFC or CCFMS field trips or other Club activities and will not receive the newsletter.

**If you want your information kept confidential, please do not complete the following section.**

I hereby give my permission to release my name, telephone number and email address for inclusion in a KRFC Contact List to be issued only to KRFC members in good standing.

Signed: ..... Date: .....