Voice of the Dinosaur

Newsletter of the
Kawartha Rock and Fossil Club

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NEXT MEETING
September 11, 2012

Place - Orientation Centre, Peterborough Zoo
Time - 7:00 pm.
Agenda:

1. **Regular September Meeting**
2. **Another of Tom's popular silent auctions.**
3. **Fun mineral quiz.**

Please bring along some of the minerals and fossils that you found this summer.

A Message from the President

Steve Wesley has notified me that, because of work requirements, he must resign as our Treasurer.

We will need to fill this position at our September meeting. The ideal situation would be for a member to take on this responsibility now and continue into 2013 in this position. Please keep in mind that the members of the Executive will help the new Treasurer in every way they can. Also, Brenda Beckett, who has held this position for the last couple of years, has everything prepared and organized so the new Treasurer can easily take over.

Our year will be coming to a close in a few months. It is time to start thinking about running for an Executive position. The positions of President, Vice President, Secretary, Treasurer, Field Trip Co-Ordinator and Show Chairperson will all be up for election at our Annual General Meeting. While some of the current members who are serving the club in an Executive position, may choose to continue for another year, there will be positions that need to be filled. Personally, I have held an executive position for the last 19 years, (Show Chairman and President). It is time for me to step down and allow someone else to enjoy the experiences I have had and to bring new ideas and enthusiasm to the club. If you have been a member for one or more years and have not yet been a member of the Executive, it is now your turn.

Sincerely,
Mark Stanley
President

THE FOSSIL CORNER
2012 Fossil Collecting - Trip 3
By Kevin Kidd

Sunday, June 3

Today was a special day for me; not only did I get to go to a site that was new to me, but I was accompanied by a host of other fossil freaks. Our group consisted of me, my paleontologist friend, a museum curator from Quebec, another French collector from whom I purchased a few nice pieces, and three trilobite aficionados including the probable top trilobite collector in Ontario, if not all of Canada. The quarry has both the Bobcaygeon and Verulam formations exposed, but we concentrated on the former. There was lots of rock, but unfortunately no new blast (Figure 1).

It seems as though the quarry is idle this season as there is no equipment of any kind to be seen.

Figure 1.
Overview of quarry.
There is no obvious mark to separate the Bobcaygeon and Verulam Formations, but both are likely present here.

Despite the pile being previously picked over, I still managed to find a *Bumastoides* trilobite (Figure 2) and a good sized *Isorophusella incondita* edrioasteroid (Figure 3). I also found part of a rare trilobite, *Cybelloides*, but there wasn't enough left of it to bother saving.

Figure 2.
***Bumastoides* trilobite**

Figure 3.
Isorophusell incondita
An edrioasteroid

Saturday, June 23

Just a quick trip to my regular quarry. The heat was brutal and I only lasted until around noon, but it was worth it. Not only did I find my best enrolled *Flexicalymene* trilobite of the year (so far), but I also came away with a complete *Bumastoides* (uncommon) in a prone position (rare) and fully inflated (quite rare) (Figure 4).

Figure 4.
Bumastoides* & *Flexicalymene
trilobites as found.

When they are found prone, they are normally found flattened, as was my find from the previous trip. This one was upside down in a talus pile and all I saw was the tip of the underside of his head when I bent to pick up something else. I figured it was just another fragment of an *Isotelus*, the most common trilobite at this site, but still, I flipped it over for a look and am I ever glad I did.

Editor's note:
Figure 5 shows an example of *Bumastoides* in two views.

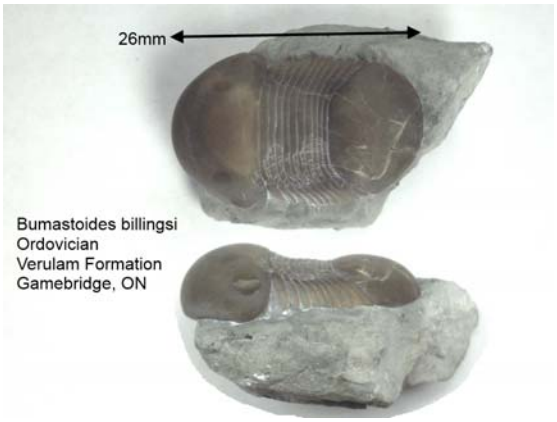

Figure 5.
***Bumastoides* trilobite**

Saturday, July 7

Another trip back to Arkona/ Hungry Hollow, this time with fellow club member David D'Andrea. We also met Peter Lee there as well as a friend who makes one or two trips per year up from Philadelphia. There was a lot of chatting to go with the collecting, but it kept things interesting. I found the only trilobite of the day, an enrolled *Phacops rana* in the South pit (Figure 6).

Figure 6.
***Phacops rana* trilobite**

We met another collector, a local who frequents the site, just as he was emerging from a walk along the riverbank. He had the find of the day: a small piece of rock with at least two dozen *Hyperoblastus filosa* blastoids exposed on the surface (Figure 7). I won't say I'm not a bit jealous, but I can't be too upset as this same collector presented me with the piece I'd been searching for over the past couple of years. If you remember my report in the May newsletter, I was desperate to find a *Heteroschisma* blastoid, the ice-cream cone. My search is now over, but I still wouldn't mind finding a few more (Figure 8).

Figure 7.
***Hyperblastus filosa* blastoids**

Figure 8.
Example of a *Heteroschisma* blastoid

Saturday, July 21

Figure 9.
18 Mile Creek looking East

Better late than never, I finally went international. About 20 minutes over the border in New York, along the Lake Erie shore, is a great place for Devonian fossils -18 Mile Creek. The formations exposed here are roughly equivalent in age to those at Arkona, and the rock itself is quite similar, but the fauna is a bit different (Figure 9). The best trilobite layer is near the bottom and is exposed when the water level is low. The limestone slabs come from a layer near the top called the Tichenor limestone and below that is the Wanakah shale member of the Ludlowville formation

At Arkona, the prevalent fossil is horn coral while at 18 Mile Creek, it is a toss-up between the brachiopod *Athyris spiriferoides* and the trilobite *Phacops (Eldredgeops) rana*. The *Athyris* are much larger here than at Arkona, and the first time I was here, I picked up nearly 100 of them. This time I limited myself and only brought home a couple; they're just so large and inflated, I can't pass them up (Figure 10).

Figure 10.
***Athyris spiriferoides* brachiopods**

I met a friend who lives in the area who showed me what he's learned about the site since last year and took me to his favorite spot for trilobites. Once we cleared all the talus, the soft Wanakah shale was exposed and at this level, it is full of trilobite pieces. Right off the bat, fragments of *Phacops* were being pulled out. Literally, we could not go more than a minute without some part of these critters being unearthed, but so far, it was only pieces. I found the first complete example, and it's my first prone *Phacops* from anywhere, so I was thrilled (Figures 11 and 12).

Figure 11.
Phacops (Eldredgeops) rana
as found

Figure 12.
Phacops (Eldredgeops) rana
after prepping

This was what I had come here for. I also found plenty of "possibles" as well - heads and bodies with no visible tails, bodies and tails with no visible heads. These will

need a quick prep to see if they're complete, but if even ¼ of the stuff I brought home is, then it was a great day (Figures 13 and 14).

Figure 13.
My little trilobite "foxhole" with my finds burying my backpack.

Figure 14.
My glove is on the tree branch to give a sense of size. Everything came from this small excavation.

I dumped the first pile of pieces in the car and we walked to the beach along Lake Erie (Figure 15). Not much was found here, and there were other collectors as well in the same spot, so we walked through the creek, it was only ankle deep, to hunt on the opposite bank from where we began. This side, the north, seems to have a more diverse fauna, likely due simply to the way the layers are sloped. Here you can easily find small horn corals and crinoid debris that we didn't see at all on the south side, but we were still after trilobites. My partner found a couple of nice prone examples, while I came away with one partially enrolled specimen and several more "possibles". The sun was beating on us, me (the redhead) particularly, and seeing as I'd been up since 4:00am and on the move since 5:00, we called it a day around 4:00pm. One last stop I wanted to make was to a rock shop in nearby Blasdell. I'd been here last year, and they have a nice selection of fossils for sale, I assume an equally good supply of minerals although I didn't look, and a full line of supplies as well as a small museum in the back.

Figure 15.
The Lake Erie beach at the mouth of the creek looking South.

After having my picture taken with their replica set of megalodon shark jaws (Figure 16) I feasted on what else –Buffalo wings, filled my tank with cheap American gas and made my way home. Surprisingly, it took longer at the border in the morning than on the way home. No problems, just exhausted, but another great day of collecting.

Until next month – Happy Hunting!

Figure 16.
Yours truly in front of the store window. The shark jaws in the background are a replica of what would have been a medium sized *Carcharocles megalodon*, the largest shark and largest fish ever.

THE MINERAL CORNER
Calcium
Compiled by Sue Kehoe

Nomenclature

From the Greek word for lime "chalix" or the Latin word "calx."

Sir Humphry Davy discovered the element calcium in 1808 while conducting experiments in electrolysis. He used a voltaic cell to separate elements in mixtures of different substances, in this instance, lime and mercuric oxide. He also discovered potassium, magnesium, barium and boron using the same method.

One of his other contributions was in the invention of the Davy lamp, as a safety lamp in the mines. By inserting an iron mesh inside the lamp to contain the flame, it prevented the flame from igniting methane (the cause of many mine explosions). The Davy lamp had limited success as it reduced the amount of light given off, but also the iron mesh eventually rusted.

Chemical composition

Calcium carbonate - $CaCO_3$

Figure 1 shows the atomic structure of calcium carbonate depicting the alternating layers of calcium and carbonate atoms on the c-axis. Calcium interacts with 6 oxygens from 6 different carbonate molecules.

Calcite shares its composition with its polymorphs aragonite and vaterite. Aragonite will change to calcite at temperatures of 380°-470°C.

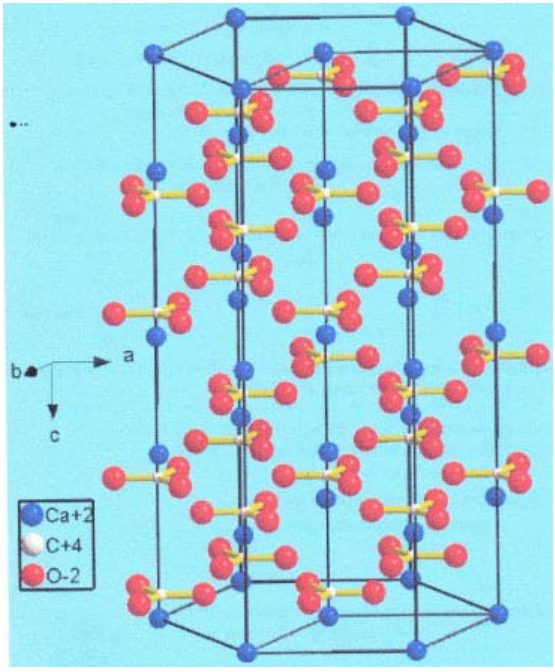

Figure 1.

Crystal Structure, Form and Habit

There are five basic forms of calcite crystals: pinacoid, prism, rhombohedron, scalenohedron and dipyramid. The prism and pinacoid are considered open forms, and the latter three are closed forms (Figure 2, next page).

Calcite is known to exist in at least 800 documented forms.

Calcite was the subject of scientific investigations during the 1600-1800's as its properties were intensely scrutinized. Erasmus Bartholinus observed double refraction in Iceland spar in 1669. This laid the foundation for the studies of Christian Huygens into the propagation of light , refraction, and birefringence and later others developed wave theory.

The cleavage of calcite was examined by Rene Just Hauy supposedly after he dropped a crystal and it shattered showing its characteristic pattern that he was able to repeat over and over down to a minute crystal. Subsequently, the theory of crystallography (crystal structure) was developed down to the concept of the unit cell.

Nicholas Steno (1638-1686) recognized the specificity of the angles on adjacent edges of the rhombohedron. These angles were later determined to be 101°52', 78°8' and 105° by Huygens who also noted that the cleavage always ran parallel the rhombohedral faces.

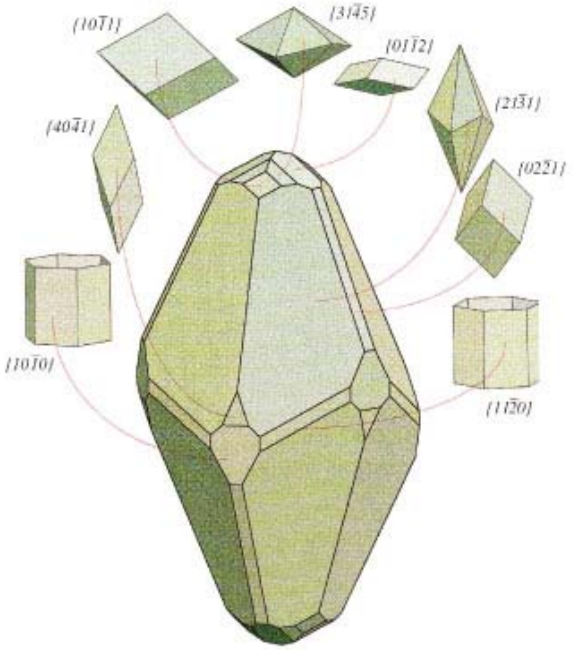

Figure 2.
Eight different crystal forms are combined in this calcite habit:
4 different rhombohedra
2 different scalenohedra
2 different prisms

Arnould Carangeot (1742-1806) formulated the law of constancy of angles.

Twinning occurs under four twin laws where twins occur all on the c-axis at:
180° on {0001}, 127°30' on {0118}, 90°46' on {1014} and 53°46' on {0112}.

The development of crystal faces (Figure 3) is related to a number of factors such as the type of solution present, the temperature, pH and ratio of calcium to carbonate crystals. For example, cool solutions with higher calcium produce steep rhombohedrons while hot solutions with high carbonate proportions form tabular crystals with pinacoid faces. If the calcium and carbonate are proportional and balanced then rhombohedrons tend to form.

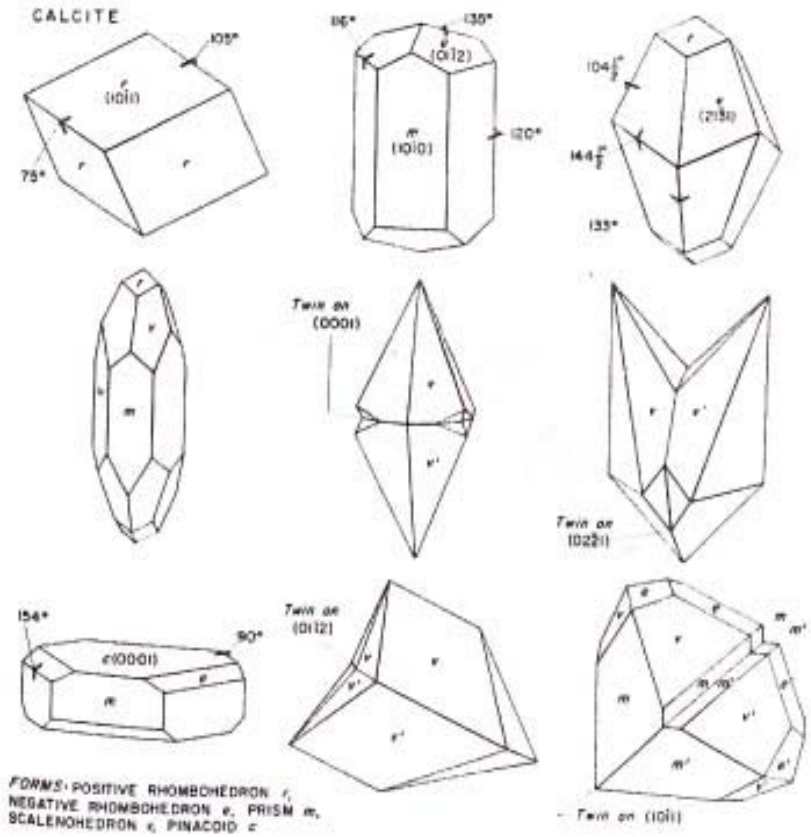

Figure 3.

Calcite is trigonal while aragonite is orthorhombic. They are differentiated mainly by their cleavage.

Physical Characteristics

Hardness:	**3 on the Mohr's scale**
Cleavage:	**Perfect on {1011}**
Fracture:	**Conchoidal**
Lustre:	**Glassy**
Density:	**Pure as in Icelandic Spar 2.71 g/cm^3, Impure 2.6-2.8 g/cm^3**
Streak:	**White**
Colour:	**In its pure form white or yellow. Substitution of other elements that have 2+ valence (2 atoms in the outer electron ring) will give colour. Examples are Cobalt for calcium gives rose red cobaltian calcite; manganese for calcium gives a pink manganoan calcite, and other colours such as green, red, blue, gray and black may also occur. Irradiation is known to change colours from red-brown to black.**
Luminescence:	**Fluoresces yellow, red, blue, and orange under longwave and shortwave UV light. Some crystals have multicoloured fluorescence, or will fluoresce after exposure to radiation. Manganese will fluoresce to orange-red under shortwave, Eu^{2+} blue under SW and pink under LW.**
Refraction:	**Birefringence n_o-n_e=0.172**
Habit:	**Tabular, equant, prismatic, acicular, shallow to steep rhombohedrons, massive.**
Solubility:	**Effervesces in all acids and dissolves readily in cold, dilute hydrochloric acid.**

Occurrence

Calcite is a very common mineral occurring in igneous, metamorphic (e.g. marble) and sedimentary rocks (limestone and dolomite). It precipitates in hot springs and in caves, forming stalactites, stalagmites, curtains, straws, helictites, lamps, lily pads and cave ice. It is also formed in hydrothermal veins.

Carbonate sedimentation occurs in the world's oceans where there is an abundance of calcium and bicarbonate ions in sea water.

$$Ca^{2+} + HCO^{-} \quad < \quad > \quad CaCO_3 + H^{+}$$

This solution of calcium plus bicarbonate occurs in a steady state being slightly supersaturated in warmer waters, and slight undersaturated in cooler waters and is also influenced by the influx of fresh water from rivers. There is a constant deposition of debris from mud, minerals, and deceased ocean creatures that precipitates out and over time forms either calcite or aragonite. Over millenia, aragonite will turn into calcite and eventually into limestone. The sedimentation is mostly made up of the shells of organisms that extracted the calcium carbonate from sea-water to form their shells in the first place. In tropical seas, the shells may survive but in colder waters the shells tend to dissolve. This process also occurs in freshwater lakes and in

corals. Ancient sea creatures betray their origins in their chemistry, trilobites had unique compound eyes where calcite formed the lenses of their eyes, and sea urchin spines are literally chains of calcite crystals.

Calcium and other carbonates crystallize in the form of either calcite or aragonite. Ions smaller than the calcium atom produce minerals with the structure of calcite (trigonal) while ions larger than calcium tend to produce minerals with orthorhombic structure of aragonite.

Examples are:

magnesite	**$MgCO_3$**	**otauite**	**$CdCO_3$**
gaspeite	**$NiCO_3$**	**calcite**	**$CaCO_3$**
sphaerocobalite	**$CoCCO_3$**	**aragonite**	**$CaCO_3$**
siderite	**$FeCO_3$**	**strontianite**	**$SrCO_3$**
smithsonite	**$ZnCO_3$**	**cerussite**	**$PbCO_3$**
rhodochrosite	**$MnCO_3$**	**witherite**	**$BaCO_3$**

<u>Uses</u>

Calcite has a multitude of uses. As a building material it can be used as block marble or limestone. It is a main ingredient in Portland cement. It increases the elasticity of mortar mixes. It has a major role in reducing the pH in everything from raw sewage to industrial waste where it can decrease the acidity of runoff water from industrial sites. In agriculture it is often used in powdered form to decrease the acidity of soil. It is used to absorb precipitates and and impurities from gases such as sulphur emissions from the petrochemical production plants. It is a key ingredient in the production of glass where quartz, sodium carbonate and calcium carbonate produce calcium silicate as glass. It can be used as whitewash, and also is a component in abrasive cleansers.

Calcium carbonate is used for mine safety to spray onto tunnel walls to decrease the amount of coal dust in the air, thus reducing fire risk. Lime and coke produce calcium carbide which is a precursor to acetylene and calcium cyanamide (fertilizer). Calcite is used as a flux in the smelting of acidic iron ores to lower the viscosity of the slag. It is also used to reduce metal oxides such as titanium, beryllium, zirconium, molbydenum, tungsten, thorion and uranium.

It was used as an optical polarizer in microscope lenses and Nicol prisms. During W.W.II it was used for aircraft bomb sights and anti-aircraft weaponry as polarizing filters, to eliminate glare and make targets more visible in bright sunlight.

It is used in drugs such as antacids to neutralize stomach acid and as elemental calcium. As crushed limestone it is used as a dietary supplement in livestock feed to replenish calcium lost in milk and egg production.

It is the repository of carbon dioxide all over the world, and releases that gas whenever it is used in all types of chemical reactions.

<u>References</u>

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"Calcite" from www.en.wikipedia.org
Figure 1 from www.en.wikipedia.org (License:NIMS.office at en.wikepedia)(atomic structure)

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THE MEMBERS' CORNER
Kirkland Lake Trip
by Ken Fox

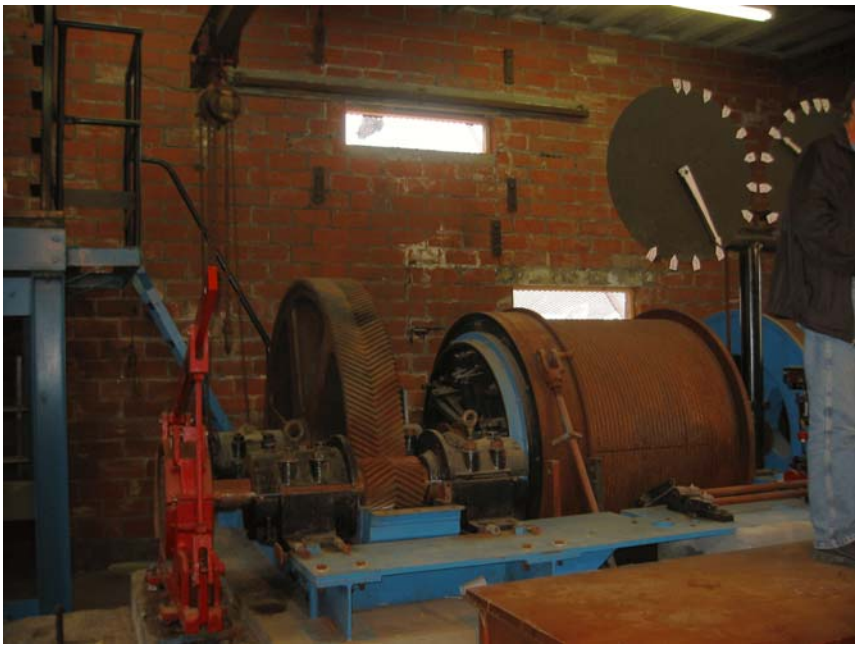
We made a trip to Kirkland Lake this summer just to see what was there since I grew up there and have never been back long enough to see what was happening so here's what we found.

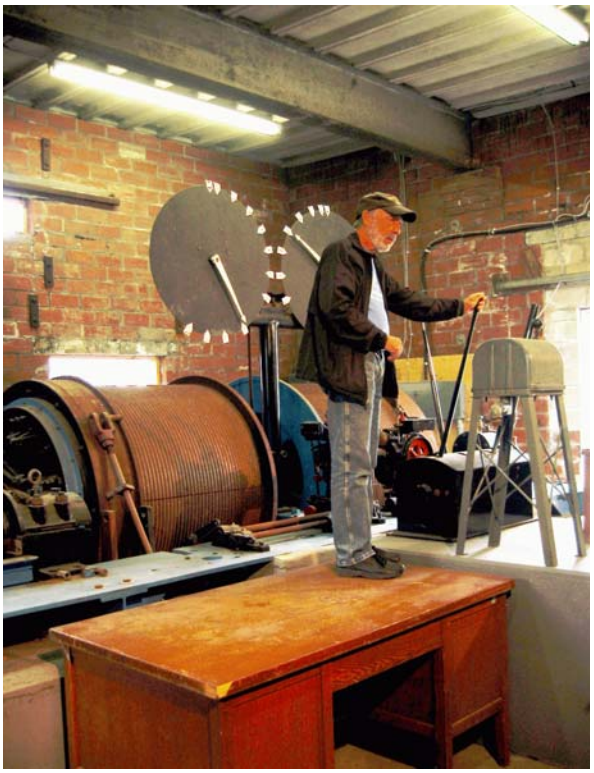
The old Toburn gold mine where I worked has been shut down for many years and is now a museum. Many of the buildings are gone but the head frame and hoist room are still there and are used for visitors' tours. The sign says tours are Sunday at 1:00 pm and as I would not be there Sunday we went looking. Eventually, at the Harry Oakes Museum, the staff contacted the tour guide, Mike Leahy (spelling?) and he kindly agreed to a special showing. When we got there we found a whole gang of people who were also anxious for a tour so Mike's time was well spent (at $5.00 per person).

Here's a picture of the mine head frame as it stands now and it has the best paint job I've ever seen on it.

A key part of the operation of any underground mine is the hoist so here are a few pictures of it, or what's left of it. Obviously some parts have been removed, probably cannibalized for some other hoist.

This shows the left drum of the hoist; the right drum is barely showing at the edge but it is the same. The drum brake has disappeared with nothing left of it but the operating rod. The red device at the left side is the pinion brake which is used as an emergency stop if something goes wrong. It gives quite a violent stop so is used only when absolutely necessary. The big dials above the drums show the positions of the cages in the shaft. The motor is also gone but it was mounted to the left of the pinion brake





Here is another view of the hoist with Mike demonstrating. His hand is on the left drum brake lever and the device in front of him at about belt level is the speed controller which the hoist man used to control the speed. The red device at about knee level is the lilly controller which is a safety switch used to keep track of speed and cage position and to trip the hoist off and set the brake if the speed got too high for the cage position in the shaft, that is, in the centre of the shaft a high speed is allowable but as the end is approached the speed must be reduced or the lilly controller it will trip off.

Shaft sinking bucket

Cage

Two types of conveyance were used on this hoist. Above left is a shaft sinking bucket used only for digging the mineshaft deeper. It sat on the bottom and miners shoveled broken rock into it then it was hoisted to the surface and dumped. Above right is the normal working cage with yours truly standing in it. This was used for moving either people or cars of ore or waste.

Here is the top end of the shaft at ground level. The two compartments are shown with rails going into each one for loading or unloading carloads of freight. Cars of ore or waste rock were unloaded on the level above this. Unfortunately, or perhaps fortunately the actual entry to the shaft has been covered with a metre or so of concrete.

This picture shows ore haulage machinery used underground.

At the right end is an electric locomotive which used a lead acid battery in the box on top. Just to the right of the battery is the speed controller. In the middle there are two ore cars capable of carrying about 1 ton each. At the left end is a "mucking machine". This machine was air powered and would ram its scoop into the pile then lift it over the body of the machine and dump it into the ore car right behind it. They were dangerous machines to use.

Photos by Bev Fox

THE EDITOR'S CORNER

My thanks this month go out to Ken Fox, Sue Kehoe, Kevin Kidd, Ulrik Kullik and Mark Stanley. Without their input you would not have a newsletter. As I have mentioned many times in the past, all submissions pertaining to subjects relating to rockhounding, etc. are very welcome. Just submit an article in your regular word-processor format. If your article includes illustrations or photos, simply submit them separately as "jpg" files and indicate in your article where they are to appear.

My husband, Ken and I proofread the Newsletter each month. However, little typos do slip by us. If they are extreme, let me know.

If you ever do not receive your Newsletter, let me know. You can always go to our Website and see a copy there. Even if you do not have a computer, you can go to your local library and someone there will show you how to view our Website; just remember our Web address: www.rockandfossil.com Chances are, you can even print out a copy. The world is becoming more digitized and, as postage becomes more expensive, it is likely that the time will come when Newsletters will not be mailed out.

As our President, Mark Stanley has pointed out, elections will take place in January. There are now members who have been in the Club for at least a year and have never held a KRFC Executive position. The members who have been in the Club for many years have all taken their turns on the Executive. Now is the time for newer members to step up and assist. If you enjoy the Club, please help out so it can continue to function.

In early March 2013 we'll be presenting our yearly Rock, Mineral and Fossil Show. This is an opportunity for members to enter their prized specimens of minerals or fossils that they have collected on field trips, in competition for the Club prizes for Best Mineral and Best Fossil and/or to enter an unjudged display of some sort relating to rock collecting, geology, etc. These displays are always big crowd pleasers. Also, there will be the opportunity for members to help with setting up and taking down of tables, display cases, etc. and to assist at the actual Show.

NOTE: Tom Jenkins is still accepting clear, clean milk bags. Please keep on collecting, and cleaning them and give them to Tom when you can. They are much tougher than regular sandwich bags and are great for wrapping samples for the Kids Auctions, etc. With group participation, Tom should have a good supply by the 2013 Show.

FIELD TRIPS
List for Fall 2012
Prepared by Ulrik Kullik

Please, if you want to join a trip let me know SOON!
Any questions contact me: ulrike.kullik@gmail.com or phone 705-778-3787

Sept 9, Sunday - Princess Sodalite Mine Dumps
Meet at 10:00 am at the Princess Sodalite Store
There is a fee. Last time we payed $10.00 for the first 10 pounds and each additional pound $1.50. I do not know if the rate is the same this time.
Sept 15, Saturday - Smart & Meany Mine, Miller Property, Eganville, ON
If there are enough members to take part we can collect here.
Please let me know SOON. Note: It is a long drive.
Fee - $10.00
Sept 22, Saturday
Tory Hill Miller Mine
Meet at 10:00 am at corner of Highway 503 and Highway 118.
Nice parking spot.
The drive in is very rugged and parking at the collecting site VERY limited.
Good idea to car pool if there are vehicles with higher clearance.
Sept 29 - Saturday
Lacey Mine near Kingston, ON
Please contact trip leader George Thompson if you want to go.
Email: TrueNorthMiner@aol.com or phone 613-395-5896
Sept 30, Sunday
CCFMS fossil field trip to Bowmanville, Quarry

See http://www.ccfms.ca/Events/Bowmanville.html for information on applying, etc.

Oct 13, Saturday

Malone Pinchon Quarry

Meet at 9.30 am at the Tim Horton's in Marmora on Highway 7

Oct 21, Sunday

Kevin Kidd will lead a fossil trip to James Dick quarry in Gamebridge, ON

Please contact me if you would like to go.

Meeting place and time will be announced later

NOTE: If you do sign up for a trip and then have to cancel, please inform Ulrik or the trip leader at least a day ahead of time.

COMING EVENTS FALL 2012

Sep 15-16 **Wonders of the Earth" - The 43rd Scarborough Gem & Mineral Club Show**
Sat. 10-6, Sun. 11-5.
Don Montgomery Community Centre, 2467 Eglinton Avenue East, Scarborough
Admission: adults $5, children $1
Contact: Gem & Mineral Club of Scarborough scarbgemclub@lycos.com
Website: www.scarbgemclub.ca

Sep 19 **Mineral Identification Night at the ROM, 4:pm to 5:30 pm.**
President's Choice Entrance on Queen's Park, doors nearest Museum subway stop.
Website: www.rom.on.ca/programs/id_clinics.php

Sep 28-30 **Ancaster Gem, Mineral, Bead & Jewellery Show**
Try on the latest in fashionable jewellery. See crystals, fossils & magnificent rocks from all over the world! Shop at over 30 dealers.
Take a free seminar on rocks, fossils or crystals.
Friday: 9:30 a.m. to 6:00 p.m.
Saturday: 10:00 a.m. to 6:00 p.m.
Sunday: 10:00 a.m. to 5:00 p.m.
Ancaster Fairgrounds, 630 Trinity Road, Ancaster, Ontario (corner of Hwy. 52 & Hwy. 53)
Admission: $8, under 12 Free
Contact: inquiry@roberthalloriginals.com (519) 448-1236 or 1-800-360-2813
Website: http://www.roberthalloriginals.com and click on Shows and Events
E-mail: rockshow@roberthalloriginals.com

Sep 30 **CCFMS Field trip to St Mary's Cement Quarry in Bowmanville.**
Collecting is limited to the first 100 pre-registered CCFMS members in good standing. Current 2012 Club membership cards need to be shown at the quarry gates prior to entry.
Arrive before 8:30 a.m. Sign in as soon as you arrive.
Safety talk at 8:45 a.m. sharp.
Safety gear must be worn.
Liability waiver must be signed.
Collectors need to be over 16 years old.

Time: 9.00 am to 4 pm
*** Meet at St Marys Quarry entrance as shown on the map and more information on this quarry can be found at:**
http://www.ccfms.ca/Events/Bowmanville.html
Contact: Randy Ernst 416-494-4276 or e-mail: rernst1004@rogers.com

Oct 13-14 **43rd Annual Gem Show and Sale sponsored by the Kingston Lapidary and Mineral Club.**
Sat. 10-6, Sun. 10-5
Portsmouth Olympic Harbour, 53 Yonge St., Kingston, ON.
Features: Over 30 dealers; Children's mine, Jewellery Workshop
Information: Contact Les Moss, Show Chairman at emoss@cogeco.net
Website: http://www.mineralclub.ca