Voice of the Dinosaur

Newsletter of the Kawartha Rock and Fossil Club

Dec. 2011 ~ Volume 23 ~ Issue 10

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LAST MEETING
Nov. 8, 2011

The meeting was chaired by the President Mark Stanley and began with the regular business meeting and committee reports given as applicable. Minutes had been distributed to members earlier via email and snail mail so were accepted without being read at meeting.

1. **Treasurer's Report - Report accepted as given.**
   a. **Members were reminded that a new Treasurer must be chosen at the AGM in January for the Club to continue.**
2. **Field Trips' Report - None scheduled for the rest of this year.**
   a. **Members were reminded that a Trip Co-ordinator must be chosen at the AGM Meeting in January or there may not be field trips in 2012.**
   b. **George Thompson, Trip Leader for the Lacy Mine trip reported that the trip was a successful one as many good apatite, mica and pyroxene crystals were found.**
3. **Show Committee Report**
   a. **Bob Beckett reported that there will be fewer tables supplied by the OMC Centre and other costs will be up.**
4. **Correspondence**
   a. **Two "thank you" notes were received from the Bancroft Gem and Mineral Club:**
      1. **Thanks to the KRFC for the $5000.00 contribution to their Museum for a large display case and extended Honouary Membership for one year to all KRFC members**
      2. **Thanks for donation of two Faraday Mine mineral specimens, prehnite and datalite which will be displayed in the new museum.**
5. **Web Site - Nothing new to report. The site looks very good and members are encouraged to visit it.**

Feature Presentation

Nothing was scheduled, but Mark had set up a table with mineral and fossil samples and suggested the members try to identify the objects.

A silent auction was held during the coffee break.

NEXT MEETING - Dec. 13, 2011

Place - Orientation Centre, Peterborough Zoo
Time - 7:00 pm.
Agenda - Regular business meeting followed by a Christmas Party. Bring some sort of 'goodies" to share with others.

Bring in your interesting fossil and mineral finds of the past season to show everyone.

THE ANNUAL GENERAL MEETING - January 10, 2012

It may seem early, but this is a reminder of the AGM which will preceed the January regular meeting. Elections will be held as stated in the Constitution and Bylaws for Executive positions:

- **President**
- **Vice-President**
- **Secretary-Treasurer**
- **Field Trip Co-Ordinator**
- **Show/Swap Chairperson**
- **Newsletter Editor**

At this time, the Secretary-Treasurer position has been split into Treasurer and Recording Secretary. The Recording Secretary is responsible for recording minutes of all regular meetings. In this case all other secretarial duties for the Club are the responsibility of the President or his/her designate. The Treasurer handles the financial matters for the Club.

We <u>must</u> select a new Treasurer as our present Treasurer, Brenda Beckett is retiring from the position. She has served faithfully and well for many years and we thank her for her service to the Club.

As well as Treasurer, we <u>must</u> select a Field Trip Co-Ordinator. This person will not have to actually take part in field trips as many members have offered to lead trips, but will be responsible for trip plans.

You, as members, are responsible for the success of the Club. If you enjoy being a member, your involvement is invaluable. Over the next month, seriously consider a position on the Executive. The members who are now serving, have served over the years in many capacities and there is a need for a new perspective.

THE MEMBERS' CORNER

The following is an interview one of our members, Sue Kehoe held with Bernard "Bruno" Cournoyer. A 97 year old retired merchant seaman and former miner. As you read it, think about what your children or grandchildren are doing or did at 7 or 8, or 11 or 12 years old! Times have changed!!
June 23, 2011
Havelock, Ontario

BRUNO

Q: How did you get started in the mining business?
A: My family had a 300 acre farm up near Queensboro. We didn't have the mineral rights to the land but I helped get the mine started on our property. It was called the Silver King Mine. I handled the horses and helped dig the shaft.

Q: How old were you then?
A: About 7 or 8.

Q: Did you go to school?
A: I went to Moore's Corner public school and finished Grade 8 and helped on the farm. My teacher was Miss Gawley. I helped clear the snowdrifts in the winter time using a team of horses and a shovel. Sometimes the drifts were five feet high.

Q: When did you go out to work?
A: I went to work in Madoc at the mine when I was 10 years old. The mine was called the Henderson Mine and it was right on the lake. The talc was very fine. Pressure from the lake water caused the tunnels to weaken and eventually the mine had to be closed. Later the new shaft was put in and it became the Taylor Mine. Later it was Canada Talc.

I worked with a fellow named Dave Genereaux. He later died of TB. We worked down in the shafts filling the cart with talc, then pushed the cart on the rails to the shaft. At the shaft there was an electric hoist that took it up. When you wanted to come up you rang the bell, and if they

heard you, they started the hoist. I also worked with Bill Baker, Jack Storey and Albert McCaw. I boarded at Don Golden's farm house and so did Dave.

Q: What did your work involve?
A: I helped shovel the pieces of talc into the cart and move it to the hoist. After a couple of years I helped to set the dynamite charges.

Q: What were conditions like in the mine?
A: It was hard work, and tough going. There was no safety equipment - no safety helmets. I wore a fedora hat with a c
you hit your lamp on the side of the shaft and knocked off your hat. Then you were left crawling around in the dark trying to find your lamp.

Q: What was the pay like?
A: I was paid $1.00 a day. My supervisor was Jack Storey.

Q: How deep was the main shaft?
A: It went down about 800 feet.

Q: Did you ever have any problems down there?
A: I was working with Albert McCaw, drilling in the drift when some wedges started to move, and the tunnel started to cave in. We got out of there as quick as we could, crawling on our hands and knees towards the main shaft. When I got out of there I was really scared and I ran home (it was about 3 miles, we lived in Madoc then). I quit the job.

My dad wanted me to get another job, so I tried up at the gold mine in Gilmour. Went up on the train and walked in about 20 miles. The foreman said I was too young (11 years), but let me work in the cook house for a couple of days. I walked back to the train tracks, but had missed the train so I walked back to Queensborough. It was well after dark when I got home and I could hear the coyotes howling.

Q: What was done with the talc?
A: When the talc got to the surface it was taken to processing plant and made into talcum powder. There was a train that ran from Maynooth through Bancroft, and Tweed to Belleville.

Q: What did you do then?
A: For awhile I worked with a drilling crew at Actinolite. They were from a Sudbury company called Smith and Traveller's Diamond Drilling. I worked with Eldon (?Ellison, ?Elsid) Langois, who was a driller from Sudbury. When he went back to Sudbury, I went back, too.There were a lot of guys looking for work but because I had worked with dynamite and drilling, they pulled me out of the line-up and I got a job right away at International Nickel as a mucker (shovelled the ore), then got promoted as a driller, and eventually became foreman over about 30 guys.

Q: Weren't there any age restrictions about working?
A: Not then. I was 12.

Q: How long was your work day?
A: We worked a 10 hour day, 2 men in a bucket.

Q: Did you ever get hurt on the job?
A: I lost my left eye from a welding accident.

Q: How long did you work in Sudbury?
A: I joined the merchant navy as a fireman when I was 16 or 17.

THE FOSSIL CORNER

Fossil Shark Teeth

By Kevin Kidd

Not that I haven't enjoyed writing about other fossils for the past several months, but this month is a real treat for me–something I can really sink my teeth into (sorry, had to say it). My fossil collecting started out exclusively with shark teeth, thanks in no small part to a show I saw on "Shark Week" on the Discovery channel–the show hasn't been repeated since-and a lifelong fascination with sharks. Not to brag, but I'd put my collection up against anyone else's in Canada as far as quality and variety of species goes.

The earliest confirmed sharks are from the Devonian, with the oldest articulated specimen being found in New Brunswick and dated to about 409 million years old. Older scales, believed to be from sharks have been found in the Silurian and possibly even the Ordovician. There are over 3000 extinct species and about 450 living species of shark. As a comparison, the dinosaurs, with only 700-800 species currently known, arrived on the scene about 200 million years after sharks and went extinct 65 million years ago.

Sharks are a member of the class Condrichthys, along with skates, rays and chimaeras. The common factor with all Condrichthyians is a skeleton made of cartilage, not bone. Since cartilage doesn't fossilize well, quite rarely actually, the majority of extinct sharks are known only from teeth. Generally sharks have several rows of teeth in various stages of development within the gums.
Figure 1 shows a prepared Lemon shark jaw. The front row is the "working" teeth, and new teeth are constantly rotating forward while the old ones fall out, like a conveyor belt. This way, the shark always has a sharp set of teeth. The enamel is formed first, and the root last.

Figure 1
Lemon Shark Jaw

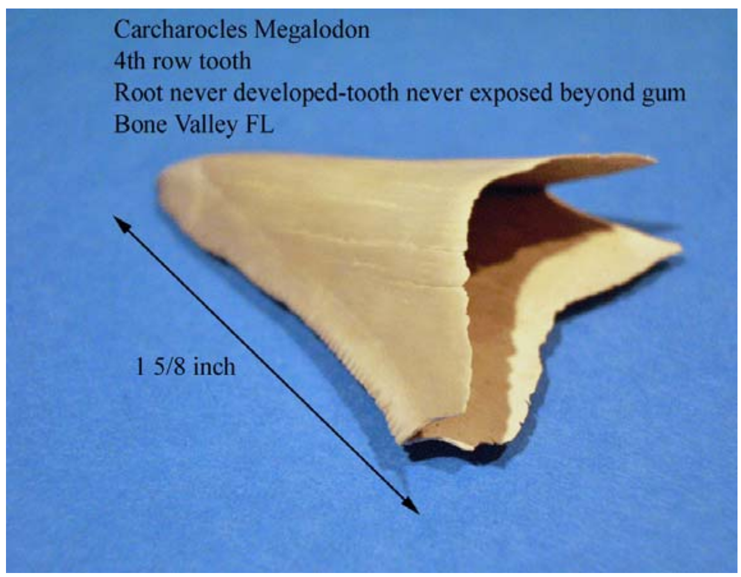

Figure 2
Empty Enamel Shell

If you find an empty enamel shell (Fig 2), it came from a dead shark as such a tooth is never exposed from the gums. With each shark going through potentially several thousand teeth in a lifetime, thousands of species of sharks and over 400 million years of existence, it's no wonder that even with only a small percentage surviving as fossils, shark teeth are the most plentiful vertebrate fossils around, as well as the most collected.

Figure 3 (Page 5) shows basic tooth terminology. The labial side is the side facing the lips, the lingual side, most often the display side, faces the tongue. Teeth can be either anterior, lateral or posterior in both the upper and lower jaws and also the right and left side of the jaw. Following those guidelines, a specific tooth can be described something like upper right A1 (a first anterior) or lower left L4 (fourth lateral). If there is a single tooth in the center of the jaw, it is called a *symphyseal* tooth.

The tooth shape depends on the type of prey the shark eats. Some teeth are serrated, some have small cusps on each side of the crown, the cow sharks have several small cusps like a comb, some are flat for crushing shellfish etc. Size also varies greatly. Shark teeth are usually measured from the tip to the furthest point on the root. Early Devonian teeth are often quite small, pretty much microscopic in some cases, while the largest teeth can exceed 7 inches.

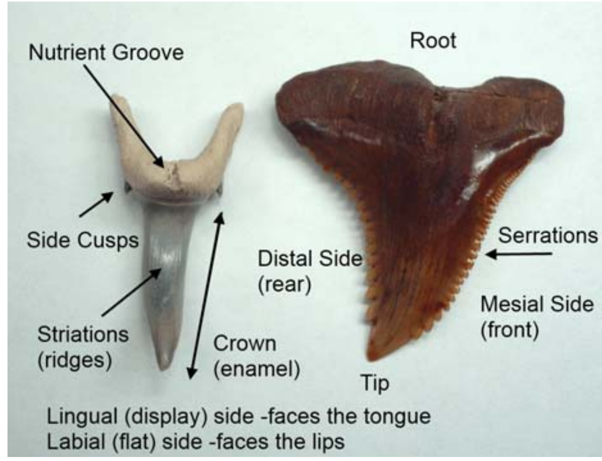

Figure 3
Basic Tooth Terminology

Figure 4 shows a life-sized cutout of the largest unrestored length shark tooth, a *Carcharocles megalodon* measuring just over 7.1 inches. Sitting on it are teeth from the 3 largest living species. The white one is a modern Great White, which will get about half an inch longer, and is one of the rare cases where a modern tooth is more valuable than a fossil. On the Great White are the larger species, a Whale shark (L) and a Basking shark (R), both of which feed on plankton, small squids and jellyfish.

Colour is not an indicator of age, but is a result of the surrounding sediment a tooth was buried in. Pretty much any colour is possible, with true white being the rarest. Certain locations have distinct colours, such as Bone Valley in Florida, but most do not, so colour isn't a reliable trait to say where a tooth was found. The value of shark teeth depends on species, colour, location, size and condition. A common species at one site may be rare at another and command a huge premium. Certain colours at a given site could be rarer than others and the difference between a 6" tooth and a 5.9" tooth is much more than between 5.8" and 5.9".

Figure 4

Shark tooth identification can be a real challenge. With teeth having different shapes depending on their jaw position, lower teeth from one species can look like uppers from another; anteriors from one can look like laterals from another and so on. I know at least one professional dealer who hates sorting certain types of teeth, but it has to be done. In figure 5, (in) the top row are 5 different species of Carcharhinus. The upper jaw teeth look similar enough, but the lower jaw teeth are all nearly identical (only one pictured). There are also many more species within this genus to complicate it further. The bottom row of teeth is 5 different genuses in 4 families and a mix of uppers and lowers. If you didn't know where a tooth was found and the age, you can see it's quite a chore to figure out.

Figure 5

Shark teeth are found worldwide on all continents, including Antarctica, and in all types of places, from coal mines to high in the mountains and from deserts to the deepest ocean depths. There are teeth to be found in Ontario, in the Devonian exposures in the southwest. They are tiny and you have to know what you're looking for, but they are there. To find teeth of any considerable size, you'd need to travel to New Jersey or around the Chesapeake Bay area and anywhere south. If it's the big megalodons you're after, the southeast USA is the prime area, with Georgia, Florida and the Carolinas being the best. There are even specific boat charters to take you to go diving for teeth.

***Editor's note*: Information re: ages outside the photos are furnished by me and Ken had no input. Any mistakes are mine.**

Figures 6-8 are from the Pennsylvanian sub-Period (or Upper Carboniferous Period, Paleozoic Era) approximately 318 to 299 Ma (million years ago).

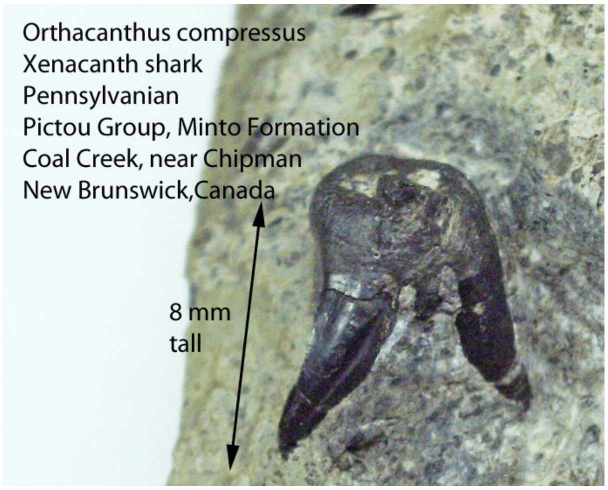

Figure 6

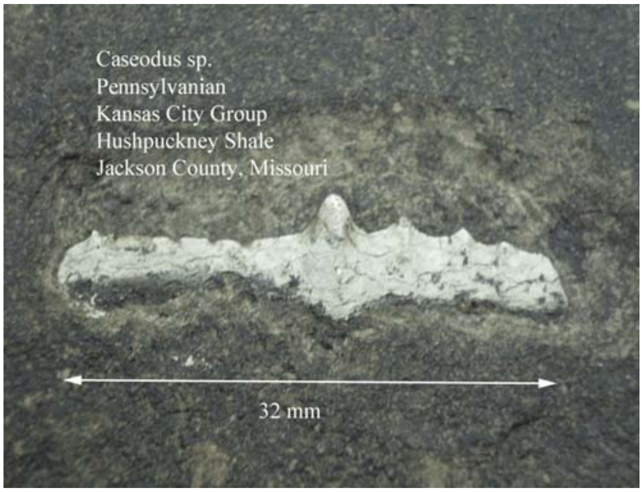

Figure 7

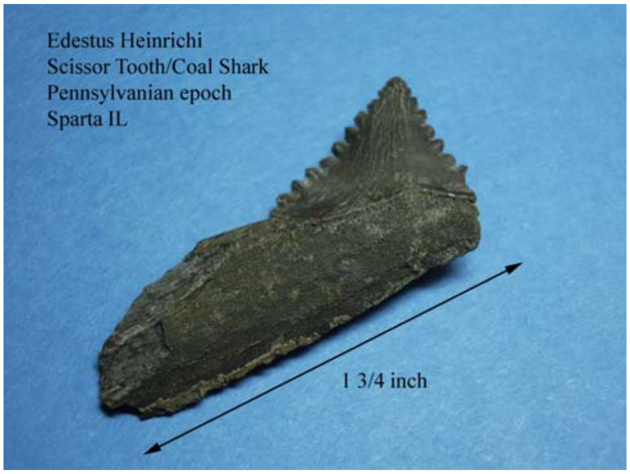

Figure 8

Figure 9 is from the Triassic Period (Mesozoic Era) approximately 245 - 208 Ma.

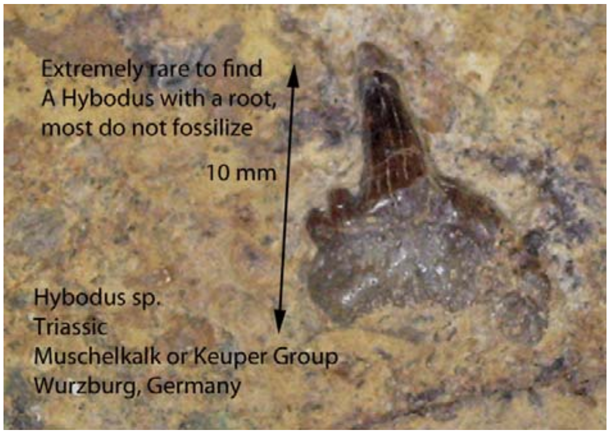

Figure 9

Figure 10 is from the Cretaceous Period (Mesozoic Era) approximately 146-65 Ma. Teeth well adapted for slicing.

Figure 11 is from the mid-Cretaceous Period approximately 120-90 Ma. Teeth more adapted to crushing.

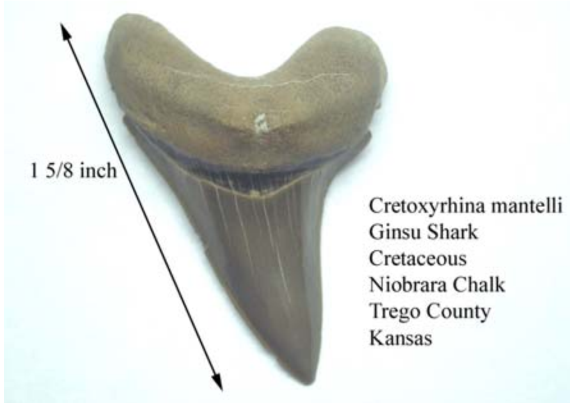

Figure 10

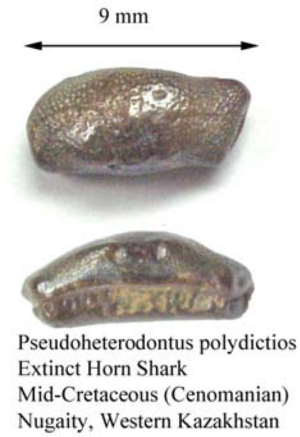

Figure 11

Figure 12 is from the Early Eocene Epoch (Paleogene sub-Period, Tertary Pariod, Cenozoic Era) approximatlly 55-48 Ma.

Figure 12

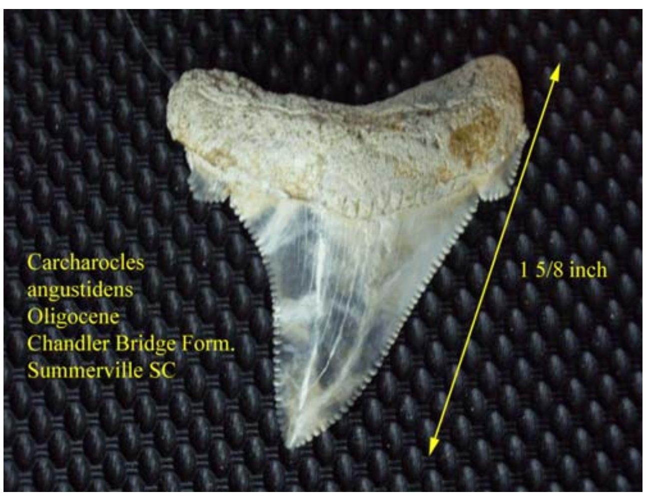

Figure 13

Figure 13 is from the Oligocene Epoch (Paleogene sub-Period, Tertary Period, Cenozoic Era) approximately 33.7-23.8 Ma.

Very sharp, very serrated teeth for cutting and tearing.

Figure 14 shows an upper jaw tooth from the Oligocene Epoch approximately 33.7-23.8 Ma and a lower jaw tooth from the Miocene Epoch 23.8-5.3 Ma, (both from Paleogene sub-Period, Tertary Period, Cenozoic Era).

Figure 14

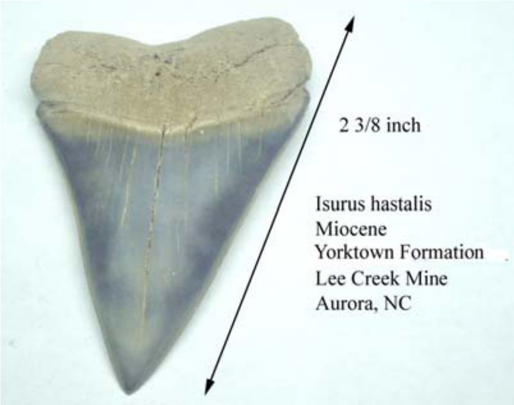

Figure 15

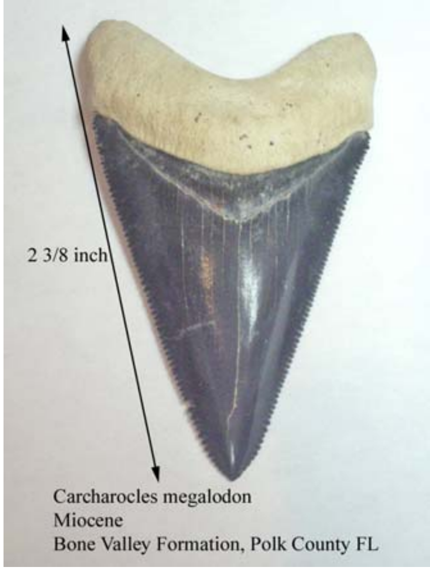

Figure 16

Figure 17

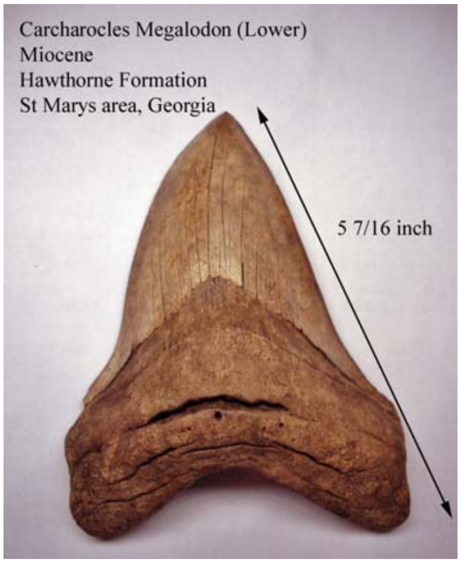

Figure 18

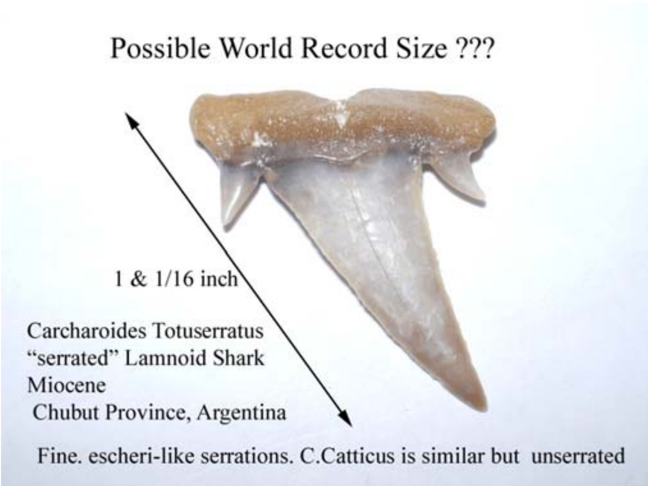

Figure 19

Figure 20

Figures 15-20 showing teeth from the Miocene Epoch approximately 23.8-5.3 Ma (Neogene sub-Period, Tertiary Period, Cenozoic Era.

(Figures 15-20 continued) Note serrations on edges of teeth in Figures 16 and 19 and how most of the teeth come to a point. Figure 20 teeth appear to be more for crushing.

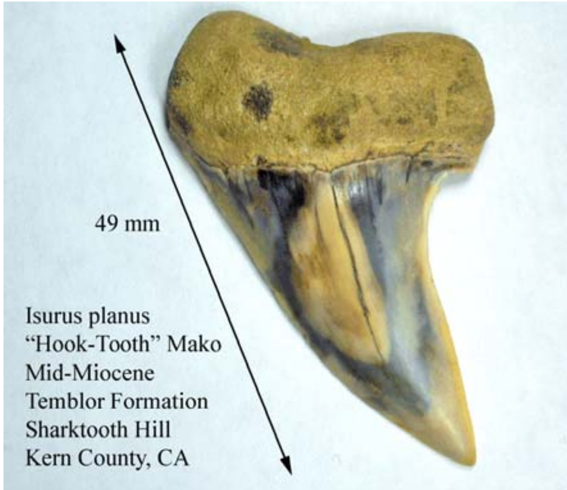

Figure 21

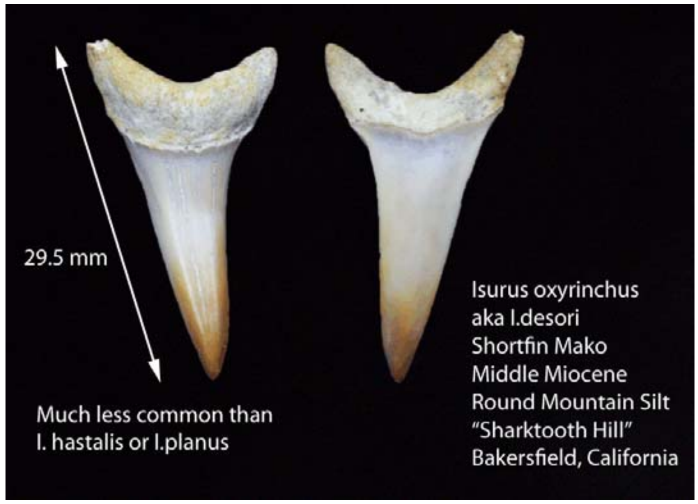

Figure 22

Figures 21 and 22 show teeth from the Middle Miocene Epoch approximately 14.8-14.5 Ma (Neogene sub-Period, Tertiary Period, Cenozoic Era). During this time there was a major cooling causing some extinction of aquatic and terrestrial life.

Figure 23 shows a tooth from the Miocene-Pliocene Epoch approximately 5.3 Ma (Neogene sub-Period, Tertiary Period, Cenozoic Era).

Figure 24 shows teeth and part of jaws from the Early Pliocene Epoch approximately 5.3-3.6 Ma (Neogene sub-Period, Tertiary Period, Cenozoic Era).

Figure 25 shows teeth from the Pliocene Epoch approximately 5.3-1.8 Ma (Neogene sub-Period, Tertiary Period, Cenozoic Era).

Figure 23

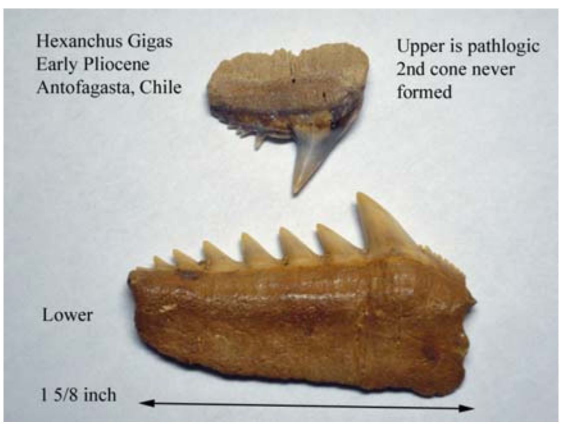

Figure 24

Figure 25

Weather permitting, I'll try to be at the December meeting so if you have any teeth you'd like identified, I'll be happy to have a look. To anyone I don't see, happy hunting and all the best for 2012.

Photo credits- All personal collection

THE MINERAL CORNER

A copy of the following pages was given to me by Stan Nowicki. They are excellent for introducing anyone interested in minerals to crystal shapes. The pages are from:

Minerals and How They Occur: A Book for Secondary Schools and Prospectors

by Willet G. Miller

Provincial Geologist of Ontario and
former Professor of Geology in the School of Mining, Queen's University.

PART II

A.–PHYSICAL CHARACTERS OF MINERALS

Some of the chief physical characters of minerals depend upon the arrangement of their molecules, or, in other words, upon their crystallization.

Crystals.-There are six systems of crystallization, to one or another of which all crystals belong. Substances which are not crystalline, that is, their molecules are not arranged in any definite order, are said to be amorphous[1]. Glass is one of these. The term crystal is sometimes, therefore, wrongly used in such, expressions as "crystal glass" or "clear as crystal," meaning a bright, transparent substance. While some crystals are transparent, such as those of quartz and calcite (which may, however, be opaque) and the gem varieties of the diamond and other minerals, the majority are opaque or at times translucent.

A knowledge of crystallography, the science of crystals, is not only of value in the determination of minerals, but use is also made of it in chemistry. Many salts prepared in the laboratory can be identified by the forms in which they crystallize when the solutions, in which they are dissolved, evaporate under favorable conditions.

The Systems of Crystallization.--

1. **The Isometric or Regular system possesses three axes, or imaginary lines of equal length, which cross at right angles, as shown in Figs. 23, 24.**
2. **The axes of the Tetragonal system, which are three in number, cross at right angles, the two horizontal ones being of equal length but longer or shorter than the vertical (Fig. 25).**
3. **The Orthorhombic system has three axes of unequal length. which cross at right angles (Fig. 26, *a*).**
4. **In the Monoclinic system the two horizontal axes cross each other at right angles, while the vertical, axis is inclined to one of the other two (Fig. 26, *b*. No two axes are the same length.**
5. **In the Triclinic system no two of the three axes cross each other at right angles. The axes are of unequal, lengths (Fig. 26, *c*),**
6. **There are four axes in the Hexagonal system, three horizontal ones, of equal length, which make angles of 60˚ with one another, and a vertical one which stands at right angles to the other three (Fig. 27).**

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(1) Certain minerals occur, at times, in *imitative* shapes; such terms as the following are then used in describing them – nodular, mossy, filiform or thread-like, dendritioc or branching tree-like, reticulated or net-like, reniform or kidney-shaped, botryoidal, *i.e*, consisting of a group of rounded prominences (from Greek botros, a bunch of grapes).

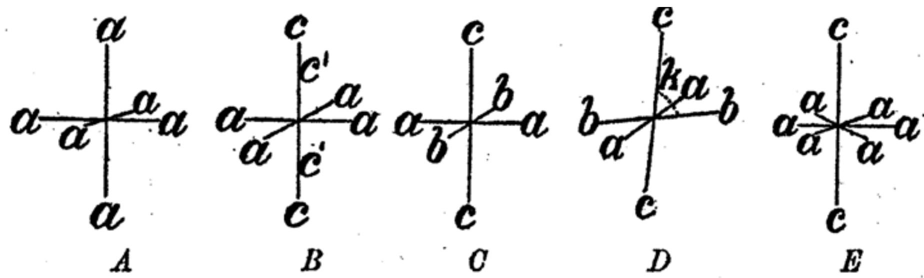

Figure 23

<u>Axes of crystal systems.</u>--*A*, Isometric; *B*, Tetragonal (the vertical axis, *c--c* or *c'--c'*, being longer or shorter than the horizontal axes); *C*, Orthorhombic; *D*, Monoclinic (the axis *c* making an oblique angle, *k*, with the axis *b*); *E*, Hexagonal. In *C* and *D* the horizontal axes *a--a* and *b--b* should be interchanged to conform with the usage adopted by many authors.

MODELS OF CRYSTALS.

The relations of the forms in each system will be seen from the figures. The reader will, however, understand these forms better if he makes models of them. Models suitable for preserving in a collection are commonly cut out of wood Or, the faces of the different forms may be made of pasteboard, glass or celluloid, and cemented or glued together. If glass or celluloid models are used, these materials both being transparent, the axes can be represented by threads within the model.

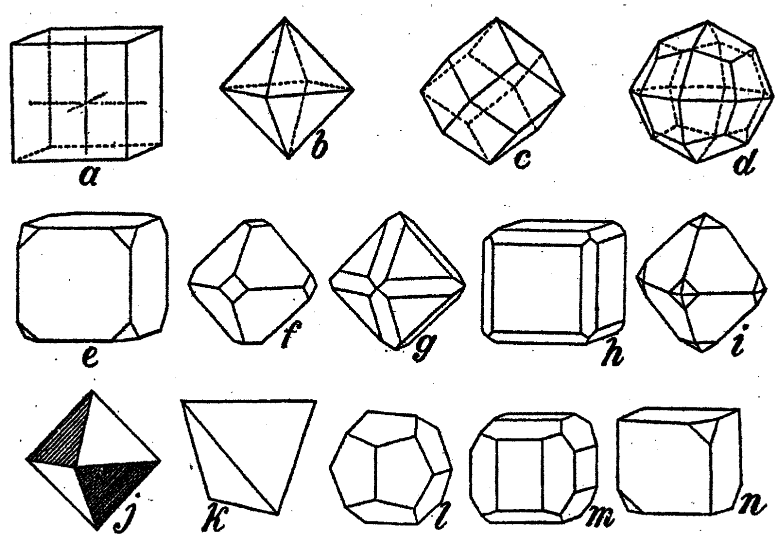

Figure 24

1. Important simple forms:– *a*, Cube showing axes; *b*, Octahedron; *c*, Rhombic Dodecahedron (a solid with twelve rhombic faces); *d*, Trapezohedron (a solid bounded by twenty-four trapeziums).

2. Combinations of two forms :– *e, f,* Cube and Octahedron; *g,* Octahedron and Rhombic Dodecahedron,; *h,* Cube and Rhombic Dodecahedron; *i,* Octahedron and Trapezohedron.

3. If we consider alternate faces of the Octahedron to be suppressed, as in the shaded faces of *j,* a *half-form* with four triangular faces, known as the Tetrahedron, *k,* results. The Pentagonal Dodecahedron, *l,* is another common half-form of the Isometric system; *m* is a combination of this form with the cube, and *n* is a combination of the Cube and Tetrahedron.

For practice in making models and in studying the derivation of one form from another in a system, the author has found paraffin, such as is commonly sold in drug stores, one of the most suitable materials. It is easily cut, and the shavings and fragments can be melted into a mass and used over again.

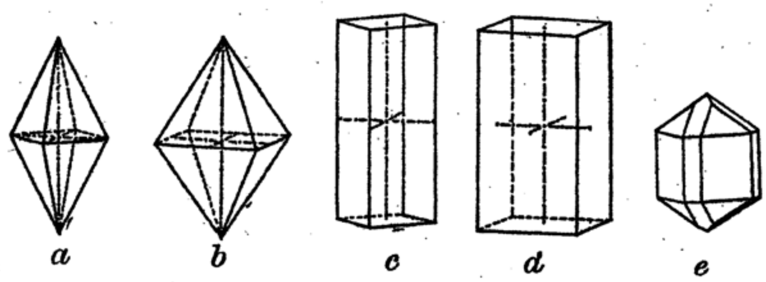

Figure 25 – Tetragonal System

a **and** ***b*** **Pyramids,** ***c*** **and** ***d*** **Prisms, owing to the position of the axes** ***a*** **is known as the pyramid of the** ***first*** **order and** ***b*** **of the** ***second*** **order. Similarly** ***c*** **is the prism of the first order and** ***d*** **of the second order.** ***e*** **is a combination of the forms a, b, c, d, the basal planes being absent.**

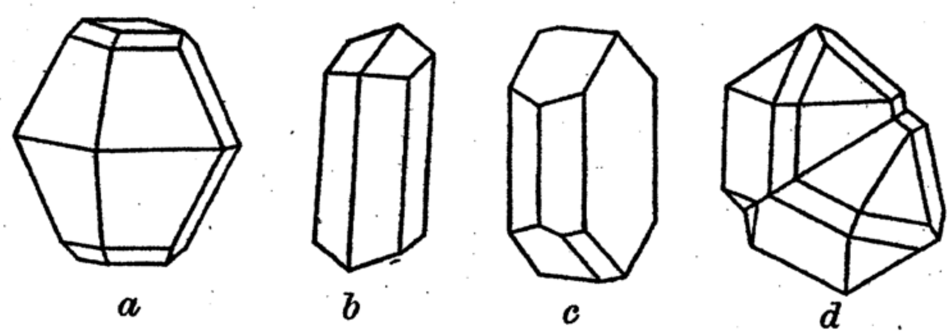

Figure 26 – Orthorhombic System

The forms of this system differ from those of the tetragonal system in that while the axes cross at right angles no two of the three are of the same length.

a **represents an Orthorhombic crystal of sulphur.** ***b*** **represents a Monoclinic crystal, and** ***c*** **a Triclinic crystal.** ***d*** **is a crystal of the Tetragonal system, which has the appearance of having been cut across and one-half revolved through an angle of 180˚ on the other half. Such crystals are known as twins, and are of not uncommon occurrence, e.g., twin octahedrons.**

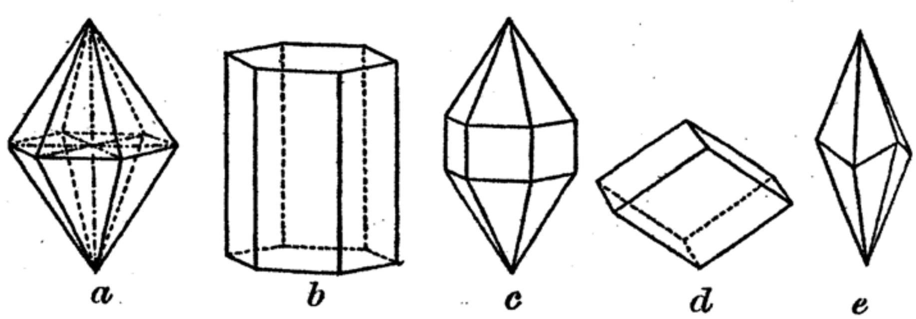

Figure 27 – Hexagonal System

a, **Hexagonal Pyramid showing axes;** ***b,*** **Prism;** ***c,*** **combination of Pyramid and Prism, without basal planes;** ***d,*** **Rhombohedran ;** ***e,*** **Scalenohedron.**

THE EDITOR'S CORNER

This edition would not have been possible without the active participation of Sue Kehoe, Kevin Kidd, and Stanley Nowicki. Sue's interview with Mr. Cournoyer was outstanding and gave us a glimpse into the life of a young boy in the early 1900's and some idea of the difficulties of mining then.

My thanks again, to Kevin Kidd for an excellent article on sharks' teeth complete with excellent photos, and thanks to Stanley Nowicki for providing the information on crystals.

If you know of anyone that might have a story to tell of early mining in Canada and who would be willing to share his/her memories, please let me know. All too soon, there won't be anyone left, so I thank Sue for taking the initiative to interview Mr. Cournoyer.

If you, as members, have a topic you would like covered in an article in the "*Voice*", please let me know. If you find articles, books, etc. that you believe might be of interest to members, you can contact me at:

Phone: 705-742-6440 Email: kfox71@cogeco.ca

A renewal form is included with this Newsletter. Please renew soon, either by mail or in person. Anyone who is not paid up before January 1, 2012 will not receive a Newsletter. To vote at the AGM you must be a paid-up member.

May you all have a very Merry Christmas and a Happy New Year. Please drive safely, we'd like to see you next year.

Thank you.
Bev Fox

COMING EVENTS

Dec. 13, 2011	**KRFC Christmas Party. Bring goodies to share and have fun. Bring your best finds of the year to show. Orientation Centre at Zoo - 7:00 pm**
Jan. 10, 2012	**KRFC Annual General Meeting to be followed by regular meeting. Orientation Centre at Zoo - 7:00 pm**

KAWARTHA ROCK & FOSSIL CLUB INC.

2012 MEMBERSHIP Application [ ] or Renewal [ ]

Please complete ALL sections and PRINT CLEARLY

NAME(S): ____

____

(if a family, list each person's name – parent/legal guardian followed by child/ren & please include the child(ren)'s ages)

ADDRESS: ____

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(City) **(Province)** **(Postal Code)**

Please sign here ______________________________

Phone # ______ ________________ **Fax #** _____ ______________

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Single [ ] $20.00/year **Family [ ] $25.00/year**

*Please send **Newsletters** by: E-mail [ ] Fax [ ] Snail Mail [ ]*

PLEASE MAKE CHEQUES OR MONEY ORDERS PAYABLE TO THE

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If paying by mail, send to: The KRFC Treasurer –1211 Kenneth Avenue– PETERBOROUGH, Ontario K9J 5P8

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Date: ____________________ **Membership Card Issued [ ] Mailed [ ]**

Club Memberships are due in DECEMBER at the Annual General Meeting, or as soon after as possible. Members who do not renew before the end of December are dropped from the Membership List, will not be able to participate in KRFC or CCFMS field trips, other Club activities and will not receive the KRFC Club Newsletter.

If you do not want your information released, please do not complete the following section.

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

Signed: ____________________________ Date: ______________________