



Voice of the Dinosaur

Newsletter of the
Kawartha Rock and Fossil Club

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**Last Regular Meeting**

February 11, 2014

The meeting was called to order by the President, Robert Montgomery. A regular business meeting was conducted and adjourned. This was followed by one of Tom Jenkins silent auctions and then the speaker for the evening, Pam Sangster, P. Geo., Regional Resident Geologist, Southern Ontario, Ontario Geological Survey, Mines and Minerals Division, Ministry of Northern Development and Mines.

Pam's presentation was on the Ontario Industrial Minerals Production, Exploration and Development. Through the use of visuals and some sample minerals, she gave us some idea of the mining of Ontario non-metallic minerals and their uses throughout the world.

She presented us with many gifts from her office including sample specimens for our Show auction, maps and books for our library. She, also, offered to lead our Club members on a field trip. This is not to be missed and the Club members will be advised of the details when they become available.

After the presentation, members picked up signs to be set up on the Monday (February 24) before the Show.

Next Regular Meeting

Date: March 11, 2014

Place: Orientation Centre, Peterborough Zoo

Time: 7:00 pm

Agenda: Regular Business Meeting

Please bring back signs that were posted.

TO ALL MEMBERS

Show your 2014 membership cards at the door to have free entry to the Show. If you have renewed, but do not yet have your new card, there will be a list of paid up members at the door.

Children 12 and under, accompanied by an adult, have free entry.

THE GEM, MINERAL FOSSIL SHOW - MARCH 1 & 2, 2014

Hours of access for set up of the Show are from 10:00 am to 8:00 pm, Friday, February 28. Please contact Bob Beckett if you plan to assist and have not already contacted him.

Email: rbeckett@cogeco.ca

If you plan on entering the Best Collected Fossil and/or Best Collected Mineral for 2013 Competitions, you may enter one item for each competition, but each must be accompanied by the appropriate form from the February Newsletter.

When you come to the March 11 meeting, please return the signs you have taken to advertise the Show. Thank you.

See you at the Show.



THE FOSSIL CORNER

Dinosaurs - Part 1

By Kevin Kidd

When people think of fossils, likely the first things that come to mind are dinosaurs. These creatures were what first got me interested in fossils back when I was around five or six, and they still have the same effect now. There isn't a "dino" related program on the Discovery or National Geographic channels that I won't watch, even if I've seen it before. I'm going to try to keep this topic as generalized as possible, but even so, it will take up two full articles. Also, with the vast amount of info I'm going to dump on you, things may seem a bit jumbled. Bear with me, and we'll all get through this together.

Dinosaurs were a diverse group, with paleontologists having identified over 500 different genera and over 1000 different species of non-avian dinosaurs. A 2006 study estimated that there are over 1850 genera in total, leaving around 75% still unidentified. The first true dinosaurs were descendants of creatures called *archosaurs* (modern crocodiles and alligators are archosaurs) and appeared in the Triassic with one of the first, *Eoraptor*, being around 231 million years old. Once they got rolling, they were the dominant terrestrial vertebrates for 135 million years from the beginning of the Jurassic to the end of the Cretaceous.

The name dinosaur comes from the Greek *deinos* meaning terrible and *sauros* meaning reptile or lizard and was coined by Sir Richard Owen in 1842. While this is often interpreted as a fearful reference to the teeth and claws, it was apparently meant only to evoke their size and majesty.

There were several types of dinosaurs:

Theropods - bipedal carnivores and birds (Figure 1, below),

Ankylosaurians - armored herbivorous quadrupeds (Figure 2, below),

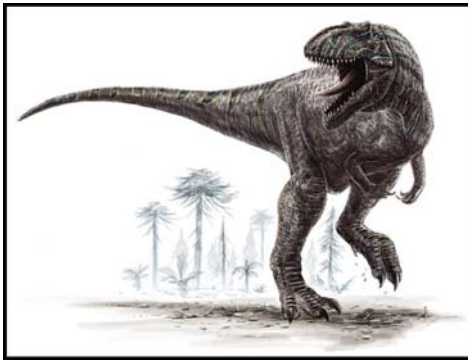


Figure 1.
Giganotosaurus

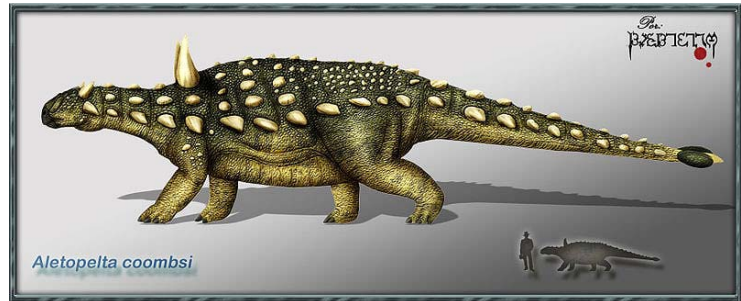


Figure 2.
Aletopelta

Stegosaurians - plated herbivorous quadrupeds (Figure 3, below),

Ceratopsians - herbivorous quadrupeds with frills and horns (Figure 4, below),

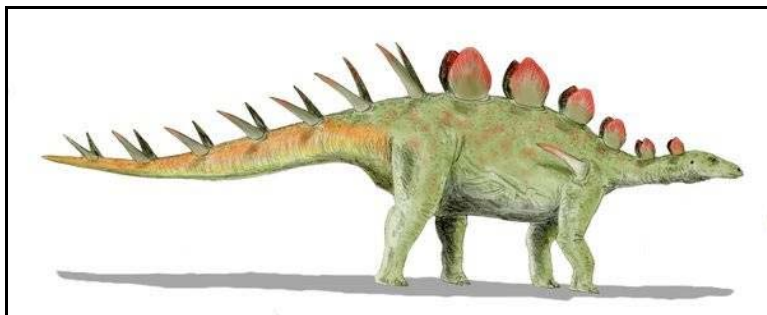


Figure 3.
Chialingosaurus



Figure 4.
Medusaceratops

Ornithopods - bipedal or quadruped herbivores including the "duck-bills" (Figure 5, below) and

Sauropodomorphs - large quadrupeds with long necks and tails (Figure 6, below).



Figure 5.
Parasaurolophus

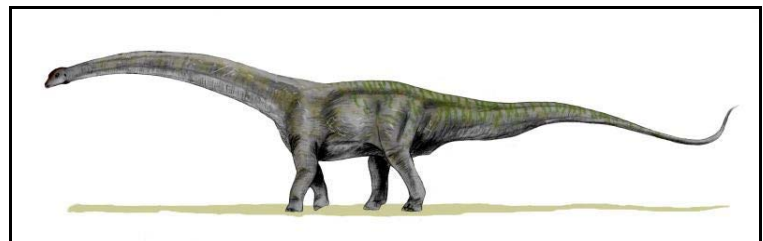


Figure 6.
Futalognkosaurus

In addition to several other skeletal details, hip and leg structure is part of what makes a dinosaur a dinosaur. True “dinos” had legs that were erect beneath the body, not splayed out to the side as in modern lizards and crocs. Another feature common to all dinosaurs is that they were all egg layers. You’ll notice earlier I mentioned that birds were listed as theropods. This theory was first introduced in 1868, then fell out of favor, then was revived in the 1970’s. With the increase of supporting discoveries, including some fantastically preserved fossils from China, there is now nearly universal consensus among paleontologists that birds descended from theropod dinosaurs. They share over 100 distinct anatomical features, including a “wishbone”. The first fossil revealing a potential connection was *Archaeopteryx* and it showed features common to both dinosaurs and birds, including feathers. Birds are classified as belonging to the subgroup *maniraptora*, which are *coelurosaurs*, which are theropods, which are saurischians which are dinosaurs.

Now let’s clear up some dinosaur misconceptions. If you think back to picture books of dinosaurs, there was likely a picture of a creature called *Dimetrodon* which looked like a lizard with a huge sail on its back (Figure 7). These were not dinosaurs, but were what’s known as *synapsids* and are more closely related to mammals than reptiles and were around millions of years prior to the first “dinos”.

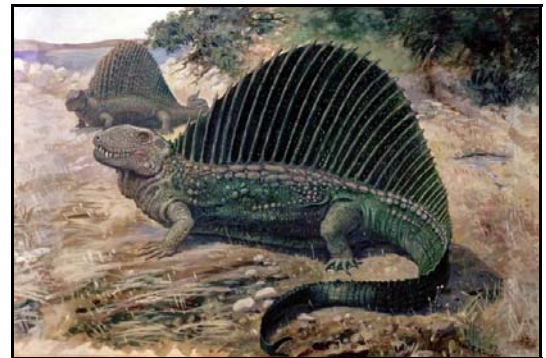


Figure 7.
Dimetrodon

Also included in the list of creatures that aren’t true dinosaurs are:

Mosasaur (Figure 8, below), Ichthyosaurs (Figure 9, below) and Plesiosaurs (Figure 10, below) all marine reptiles; “Nessie” is considered to be a plesiosaur, and also

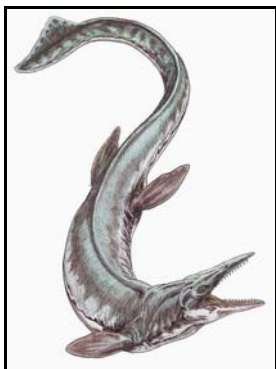


Figure 8.
Tylosaurus

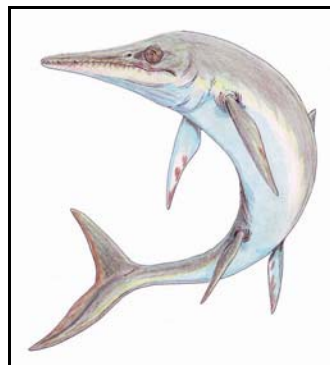


Figure 9.
Temnodontosaurus



Figure 10.
Styxosaurus

Petrosaur (Figure 11) (flying reptiles).

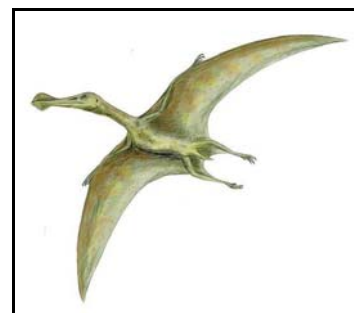


Figure 11.
Ornithocheirus

Another spoiler here, research has shown that one of the most famous dinosaur names from my youth, and going all the way back to “The Flintstones”, is no longer valid. *Apatosaurus* was discovered and named before *Brontosaurus*, but they were later recognized to be the same creature, therefore the name “Apatosaurus” is correct and “Brontosaurus” is no longer used. Another one here to change your thinking; a 2008 study seems to show that most Mesozoic dinosaurs likely weren’t capable of any vocalization - dinosaurs roaring, out the window. Basically the study showed that vocal chords in the larynx likely evolved multiple times amongst reptiles, including crocodiles which can produce guttural roars. Birds do not have a larynx, so no vocal chords. Instead, they have an organ called a *syrinx* and associated air sacs. The air sacs leave distinctive marks on the bones, and these marks have not been found on dinosaur fossils. “Dinos,” being closely related to birds, may not have had a larynx either. Some dinosaurs, like *Parasaurolophus* (Figure 5 again), could possibly make trumpeting sounds through the crests on their heads, but that would be through movement of air, and not a true “voice”. Dinosaur communication was likely visual, through distinctive looking and possibly brightly colored horns, frills, crests, sails and feathers - again similar to several species of modern birds.

Last spoilers before I go have to deal with Jurassic Park. Obviously there’s a certain amount of artistic liberty with the movie, but the scene where the children are told to be still because *Tyrannosaurus rex* hunts by sight and can only detect them if they move is wrong. I’m not saying their eyesight was good or bad, although it was likely very good, but even if it was true and the *T. rex* couldn’t see them, it would certainly smell them. CT scans of Tyrannosaurus skulls have shown very large indentations left by the olfactory bulbs of the brain (the parts associated with smell), with *T. rex* having the largest of all theropods. They would likely have used their sense of smell to track prey down before ever making visual contact. The other major discrepancies in the movie are with the Velociraptors. First off, they should have feathers. This wasn’t well known before the movie was released, but has since been proven by fossils. The second issue is that the creatures depicted in the movie aren’t Velociraptors, but are modeled on a related species called *Deinonychus*. I guess the name just sounded better. Velociraptors aren’t any larger than a modern turkey. Finally, there is no fossil evidence to support that they were pack hunters, as depicted in the film. All that being said, it’s still a great movie.

I’m going to pause here, with more to come in the next issue. Hopefully after that, back to hunting tales as cabin fever is really setting in. If this is published before the Club’s annual show, I’ll see you there. If not, I hope you all went and enjoyed it.

Until next month - Happy Hunting!

Photo credits- All photos are from www.About.com



THE EDITOR’S CORNER

My thanks to Kevin Kidd for his excellent article on Dinosaurs. I’m sure the members enjoyed it as much as I did. Next month we will learn more about these creatures.

Thanks must also be extended to Gabe Kucic who invited Club members to his open house last Saturday, February 22, for a look at his extensive collection of fossils and minerals. Many of the items were collected from areas now closed to collecting and it was a rare treat to see them. As Robert Montgomery noted, "It was nice to get together in such a welcoming environment, wish more members could do things like this..." So there's an idea folks, if anyone else would like to show members his/her fossil and/or mineral collection, there are interested members.

COMING EVENTS
Courtesy CCFMS Website

Nothing scheduled for April.