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the NEWSOSAUR

THE OFFICIAL NEWSLETTER of the PHILIP J. CURRIE DINOSAUR MUSEUM

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PHILIP J. CURRIE DINOSAUR MUSEUM

- proudly in print -
SINCE 2011

Museum in-the-making

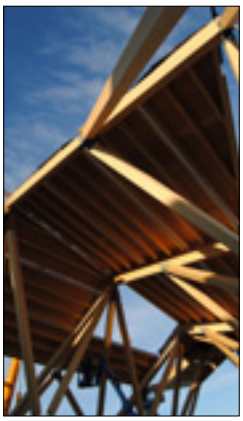
By Karla Horcica,
PCL Construction

With the concrete foundation work complete, erection of the wood and steel structure is underway. The exposed wood structure is over the main public gallery area of the building and other areas of the building such as the paleontology lab, classrooms, theatre, cafeteria and offices have a structural steel structure.

The wood structure is erected by first setting the plywood nodes in place. The position of the node is surveyed in based on data from a 3-D model that was created during the engineering phase by the glulam subcontractor. It is held temporarily in place by a metal pole and guy wires. Once the node is place, the struts and beams are connected from the concrete foundation walls up to the nodes. Metal rods at each end of the struts and beams allow for adjustments to make sure it fits just perfectly. Once the struts and beams are all in place and everything is leveled and tightened, the temporary support pole and guy wires can be removed.

The final phase of the wood structure is the installation of the wood ceiling panels. The panels were pre-manufactured in the shop, sized based on the 3-D model, and shipped to site. The panels average in size at 6 m long by 2 m wide and are lifted up by the crane and put in place on top of the glulam beams. The underside of these panels will be visible from the gallery and the outside will be covered with insulation and the exterior metal panels.

photos by Erika Sherk



Executive Director's Note

Greeting from all of us at the Pipestone Creek Dinosaur Initiative. I am pleased to report that the project is again on budget and on schedule. The roof is being installed and due to the unique design passersby have been calling us concerned that the wind may have caused the beams to become disheveled. We quickly assured them that this is the intended look. The support for the project is growing and today I can announce that both Alliance Pipeline and Tourmaline Oil Corporation have both signed up as major sponsors ($50,000) of the Amber Ball on August 9th. This is incredible news.

We can also announce that the dinosaur uncovered at the Tourmaline site at Spirit River will be on display at our museum when it opens on December 1st. Table sales for the Amber Ball are moving quickly. We can confirm that 600+ tickets have been picked up by sponsors. Rumors are that Dan Aykroyd may be providing a surprise guest to join him on the stage. Don't miss this opportunity. Please remember that we still need five more items for the auction with a minimum value of $500. The development of the storyline and associated displays is progressing well. Thank you Seven Generations Energy Ltd for your support with the Oil and Gas displays.. We are anxiously awaiting the completion. Stay tuned, and have a great dino day.

Brian Brake

An unassembled Tylosaurus pembinensis waits to be put together and displayed in the museum.

How long does it take to put a skeleton on display?

Different kinds of rocks formed in different environments and localities tend to preserve different kinds of fossils. Once a fossil is found, it can take a long time with many people working on it before it is ready to be put on display. Small fossils can be excavated from the ground in a few days or even a few hours. Larger fossils or skeletons that require more care may require a months-long season, or even multiple years going back to the same quarry to extract. Once the fossil is removed from the ground, it is transported back to a laboratory where it may take as little as a few hours, or as much as several years to clean up and glue back together. This depends largely on the hardness of the rock around the fossil, and how fragile or durable the fossil itself is. If the fossil is a complete skeleton, it may be relatively easier for the palaeontologists to study it and determine what it is. If it is fragmentary and incomplete, much research must be conducted to figure out what the palaeontologist is looking at. Once the story is known about the fossil, then it can begin the process of being mounted for display. Sometimes the original fossil is mounted, and sometime the specimen is moulded and a cast is created for display if for example the original fossil is too delicate or too heavy to put on display itself. Interpretive material is developed to pass on the knowledge gained by the palaeontologists to the public who wish to learn, and finally they can come see this ancient wonder on display! In short, it can take as little as a few weeks from finding something in the ground to putting in in certain kinds of displays, or it can take decades or more before a fossil is ready to be shown to the world. Some environments preserve huge whole dinosaur skeletons, some collect together bones from many broken up skeletons (a bonebed), while others preserve isolated teeth and tiny bones from things like turtles, lizards, and fish (a microsite).

Small skeletons are not very common in any environment, either of small species, or of young individuals of big species.

Ask a Paleo! by Robin Sissons.
Have a question for Robin?
Visit curriemuseum.ca

The Oceans of the Prairies

By Dr. Matt Vavrek

Although Alberta (and our next door neighbor, Saskatchewan) are today the only Canadian provinces without an ocean coastline, the situation was very different during the Cretaceous.

For over 40 million years, a vast sea stretched over what is now much of the North American plains.

For most of this time, the sea was continuous from the Arctic Ocean to the Gulf of Mexico, cleaving North America into two separate land masses.

But why was there water on the prairies? Where did it all come from?

The flooding of North America occurred because of a number of different causes all coming together at once.

During the Late Cretaceous, sea levels were up to 250 metres (over 800 feet) higher than they are today. Global temperatures during the end of the Age of Dinosaurs were so warm that there were no ice caps on either pole, creating a rise in sea level of about 80 metres. Another reason sea level was so high was because of the temperatures heating up the waters.

As water becomes hotter, it becomes less dense, and warmer waters take up more space. The effect is not huge, but because the oceans are so large and deep, an increase in water temperatures of only a few degrees could lead to an increase in sea level.

Finally, the oceans are a closed system, so if the oceans themselves cannot hold as much water, some of that water gets pushed up on land.

Think the oceans have always been where they are now? The dinosaurs knew differently.

Think of when you take a bath; as soon as you step in the tub, the water level rises. A similar thing was happening during the Cretaceous, as the mid-oceanic ridges (similar to a long line of undersea volcanoes) became more active.

As these undersea ridges became larger, they took up more space in the oceans, and causing the waters to rise and flood the coasts.

As well as having a higher sea level, the interior of North America was actually relatively lower than it is today. During the Late Cretaceous, the Rocky Mountains were beginning to form, as two tectonic plates smashed into one another. As these plates smashed together, this created a reaction across the interior of North America, called the Foreland Basin.

As the mountains were building at the edge of the continent, the interior became pushed and twisted downwards. This led to a lowering of the land in the interior of the continent.

But what did this have to do with dinosaurs? A lot, actually.

As the seaway separated North America into two landmasses, land dwelling animals became unable to pass from east to west or vice versa.

This geographic separation led to dinosaurs evolving in isolation from one another, so that slightly different groups of dinosaurs emerged on either side of the seaway.

As well, the sea created much more stable, warm, humid climates, which may have meant more lush ecosystems able to support a larger number of dinosaurs. And there were likely plenty of other knock-on effects that we probably don't know about yet.

So the next time someone offers to sell you oceanfront property in Saskatchewan, they may not be lying, they might just be a few million years late.

DINOSAUR OF THE MONTH

Acrotholus

graphic by Melnik Vitaliy

By Robin Sissons

Acrotholus is a pachycephalosaur, or dome-headed dinosaur from the Cretaceous. (Don't confuse it with a pachyrhinosaur!) It was described in 2013 from fossils found in southern Alberta near the border with Montana in the Milk River formation.

The fossils consisted of two isolated partial domes (the solid bony chunk on the top of the head), but these were distinctive enough to assign them to a brand new species, the oldest North American pachycephalosaurid dinosaur known, and amongst the oldest in the world as well.

Pachycephalosaurs were mid-sized dinosaurs, with *Acrotholus* probably growing to about 6 feet long. Their large bony heads have been proposed by several palaeontologists to be used in intra-specific combat, similar to the way that bighorn sheep use their horns to compete during the breeding season.

Acrotholus is an important find because it helps us to understand that there are still new small dinosaurs being discovered, and that the diversity of small plant-eating dinosaurs is probably much higher than what we currently know.

If a current ecosystem is examined, there are many more small animals present than larger animals (just think of all the mice, voles, moles and shrews alone in Alberta, compared to the relatively fewer large animals like wolf, moose, and deer).

Dinosaur ecosystems were probably similar, with a hidden diversity waiting to be found!