Exhibits in the Corridor of History at the North Dakota Heritage Center State Museum

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In the last newsletter the exhibits of the adaptation gallery: Geologic Time, were discussed in detail (Hoganson et al., 2014). This article will discuss the other North Dakota Geological Survey exhibits outside of the main gallery.

Nearly every part of the North Dakota Heritage Center and State Museum tells a story or helps to interpret the history of our state. From the fly ash used in the concrete beneath your feet to the *Tyrannosaurus rex* skeleton in the Adaptation Gallery: Geologic Time, it all uses local resources or tells a story about our state.

Petrified Stumps and Log

The two large petrified stumps in front of the east entrance to the North Dakota Heritage Center and State Museum were collected near Amidon, ND and placed on the capitol grounds near 4th Street in 1988 as a North Dakota Centennial Project. This project was sponsored by the Central Dakota Gem and Mineral Society. Two years later the remains of a large Paleocene (approximately 60 million years ago) tree were recovered on a beach of Lake Sakakawea. The North Dakota Geological Survey worked in concert with the North Dakota National Guard and the Central Dakota Gem and Mineral Society, to remove the sections of tree, which were on land managed by the U.S. Army Corps of Engineers (figs. 1, 2). Fifteen, four- to eight-foot-long sections (almost 80 feet!) were brought back to Bismarck. These sections were placed along the Arboretum Trail near the two large petrified stumps, and arranged to look like the tree had just fallen. It was on display at this location for 24 years before being moved, along with the stumps, to its new position in front of the Heritage Center and State Museum last September (fig. 3).

Figure 1. Members of the North Dakota National Guard work to remove pieces of the large petrified log found on a Lake Sakakawea beach.

Figure 2. Large sections of petrified wood found on a Lake Sakakawea beach.

Figure 3. Front entrance of the North Dakota Heritage Center and State Museum. Note the large petrified tree stumps and log in the foreground. The large orange rocks in the middle of the photo are the Cannonball concretions.

Cannonball Concretions and Glacial Erratics

Seventeen large concretions also reside outside the east entrance to the Heritage Center (fig. 3). They were donated

by the Morton County Water Resource District, located at the Harmon Lake Recreation Area, in Morton County, just north of Mandan. These particular concretions are from the 60-million-year-old Cannonball Formation. They were formed underground through the precipitation of ground water. Because they were not constrained by anything underground as they grew, they grew to their large size in a roughly spherical shape (Biek, 1994). Some of these concretions can reach 4 feet (1.2 m) in diameter! Spherical concretions are not rare across the nation, but spherical concretions of this size are, making them unique to North Dakota. All of these concretions have some sort of central "core" around which the concretion grows. Since the core can be nearly anything we were not too surprised to see the core of one cannonball concretion was our State Fossil – *Teredo* Bored Petrified Wood. One of the cannonballs displayed is broken in such a way that its central core is visible (fig. 4).

Figure 4. A large, broken Cannonball concretion. Inset: A close-up of the core.

Also collected at the Harmon Lake Recreation Area were several large glacial erratics. These large boulders were brought to North Dakota by the glaciers that occupied this area many thousands of years ago. As glaciers advance they scrape across the ground picking up anything in their path and are not picky about what size rocks they move. Glacial erratics can range in size from sand grains to boulders that are larger than some cars.

The Highgate Mastodon

The Highgate Mastodon has an interesting and convoluted history (Hoganson, 1991; Russell et al., 2010). After being discovered in 1886 near Highgate, Ontario and traveling the region with its own band, the skeleton eventually wound up in the hands of the North Dakota Historical Society in 1948 (Hoganson, 1991; Russell et al., 2010). It was decided to place the mastodon on exhibit in the Heritage Center's First People exhibit. The skeleton was erected in 1991 and was the first skeleton of a large fossil animal to be on permanent exhibit anywhere in the state (Hoganson, 1991) (fig. 5). This skeleton is approximately 80% complete, with only a few bones having to be reconstructed. It stands 8 feet tall at the shoulder and is nearly 20 feet long from the tail to tusk. It is estimated to have weighed nearly 8,000 pounds and the animal lived approximately 13,000 years ago. The skeleton is mounted in such a way that if you listen very closely and use your imagination, you can almost hear the animal trumpeting across the plains.

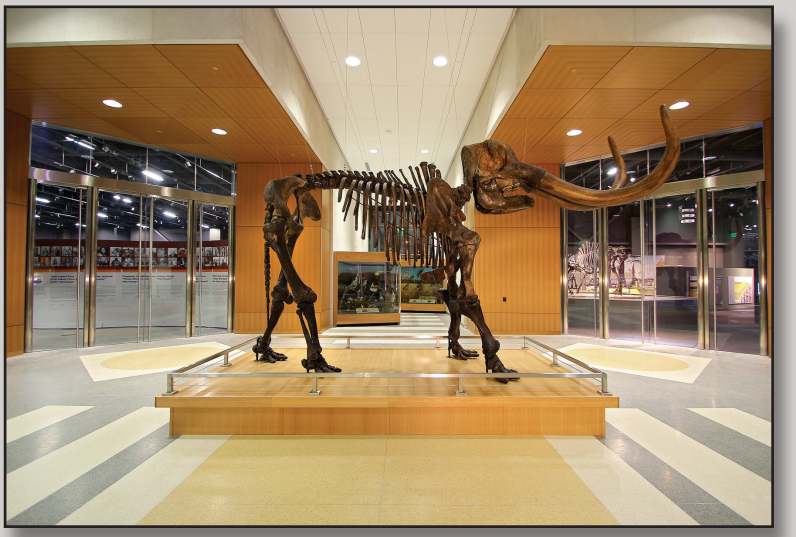

Figure 5. The Highgate Mastodon in its new position within the hallway of the newly expanded Heritage Center and State Museum.

Gem and Mineral Exhibit

The gem and mineral exhibit features 317 beautiful examples of precious gems, minerals, stones and lapidary specimens from all over the globe (fig. 6). The display is organized by mineral

Figure 6. The beautiful new gems and minerals exhibit outside of the adaptation gallery: Geologic Time.

family with 10 families represented (Sulfides, Sulfates, Silicates, Carbonates, Natives, Molybdates, Apatites, Oxides, Phosphates, and Halides). This exhibit was made possible by donations from many individual collectors. The largest collection was donated by Blossomae Campbell which consisted of nearly all the rocks, minerals, and gemstones currently on exhibit (Hoganson, 1993). The large, cabochon collection was donated by Melvin Anderson (Hoganson, 1993), the lapidary spheres were donated by Jacob and Catherine Schlosser, the large piece of copper was donated by a former employee of the White Pine Copper Company of White Pine Michigan, and the small pieces of silver were donated by Tom Gould. Some of the more interesting pieces include a very large, bright yellow, piece of sulfur which crackles like rice crispies when you touch it, a crystal of pyrite (also known as "fools gold") from Spain that is a near-perfect one inch cube (fig. 7), and a large octahedral crystal of fluorite

Figure 7. A large, uncut crystal of pyrite (fool's gold).

Figure 8. A large, uncut crystal of fluorite.

(fig. 8). Interestingly enough, neither of these two crystals were cut in any way. The cube and octahedron (think two pyramids glued together at the base) are the natural crystal states of these two minerals. The variety of size and colors in this exhibit makes it a very popular stopping point for visitors.

Dakota

Dakota is the mummified dinosaur on exhibit in the hallway of the North Dakota Heritage Center. First discovered in 1999 by Tyler Lyson, Dakota did not arrive at the Heritage Center until February of 2008. Upon arrival it was estimated that all the blocks containing the skeletons (body block, tail block, arm, and foot block) together weighed more than 10,000 pounds (Hoganson, 2008). For more than 10,000 hours over the course of six years, well-trained North Dakota Geological Survey preparators and paleontologists painstakingly cleaned away the rock from the surface of the skin, millimeter by millimeter, removing an estimated 1,000 pounds of rock and reducing the specimen's weight down to a measly 4.5 tons. This specimen is rare because nearly half of the body is covered in skin. While other examples of dinosaurs with preserved skin have been found, most often that skin is simply a skin impression. The skin on Dakota, however, is three-dimensional and in some places, is less than 1 millimeter thick. The scales range in size from those as large as dimes to tiny plates smaller than a pinhead (figs. 9, 10).

Figure 9. Dakota the Dinomummy, with an overlay showing how the dinosaurs body is positioned within the block.

Figure 10. Close-up view of Dakota's skin.

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