



RICE

MUSEUM OF

ROCKS & MINERALS

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PRESS RELEASE

FOR IMMEDIATE RELEASE

HILLSBORO, OREGON (March 11, 2019) – The Rice NW Museum of Rocks and Minerals announced today the transport of a 34-million-year-old fossil mammal skull to the Oregon Museum of Science and Industry (OMSI) for detailed preparation in their Paleontology Lab.

The skull, nicknamed “Lumpy,” is from the brontotherium family, formerly known as titanotheres. These giant herbivores roamed the plains of North America during the end of the Eocene in great herds. They stood about eight feet high at the shoulder, and reached 14 feet in length. This particular skull came from the Chadron Formation in South Dakota, famed for its fossil-rich zones.

The skull was donated to the Rice Northwest Museum of Rocks and Minerals several years ago but arrived in poor condition. It was stabilized thanks to help from experts with the North America Research Group (NARG), a local organization of amateur paleontologists. It wasn’t ready for public viewing at that time, but this round should complete the process.

Local fossil preparation expert Greg Carr is spearheading the project. Carr is an active member of NARG, a frequent contributor and member of the Rice Northwest Museum of Rocks and Minerals and has volunteered for years at OMSI. He determined there are three layers of restoration to update, including a coat of white paint over drywall mud and lime mortar, plus several applications of glue.

“I plan on cleaning off the drywall mud and smoothing it out,” he said.

He will remove some of the lime mortar to expose as much bone as possible, but not endanger the mechanical strength.

"Then we'll repaint the filled-in parts to complement the bone," said Carr. "We'll build a mount to hold the skull about one foot above a strong plywood base, then add lights and mirrors to highlight the wonderful teeth."

Working about one day a week, Carr estimates it could take a year to get the specimen ready for a public display.

Sue Wu, OMSI earth sciences coordinator, is enthusiastic about OMSI, NARG, and the Rice Museum teaming up.

"I'm excited that we can partner with the Rice Museum on this project," she said. "There are so many great science education organizations in this area. When OMSI can collaborate with places like the Rice Museum, we provide a richer experience for our visitors. Most visitors have never heard of this fossil mammal, so this is a rare opportunity for them to see a skull being worked on. I'm grateful to the Rice Museum for providing us with this opportunity."

She noted that Carr is a good choice to lead the project.

"He is the perfect person to be preparing the skull," said Wu. "Not only is he a highly experienced fossil preparator, he's also a fabulous educator who loves showing and sharing with visitors what he's doing with the fossil."

Rice Museum curator Julian Gray is also excited about this collaborative effort.

"This project will lead to the restoration and stabilization of a great fossil specimen," he said. "North America has a rich and diverse wealth of fossil fauna, but that part of our geologic story is under-represented at the Rice Museum - both in collections in storage and in public exhibits."

Eying the future, Gray hopes "this will be the beginning of many such projects between the Rice Museum, NARG and OMSI to expand our fossil exhibits and provide a broader coverage of Oregon's paleontology."



Figure 1. Fossil skull before moving to OMSI for detailed preparation.



Figure 2. Local fossil preparation expert Greg Carr expects the restoration project could take up to a year.

About Titanotheres

Brontotheres were browsing herbivores with large "W" shaped molars, useful for grinding and chewing. They had a large bony "Y" shaped horn, which protruded just above the nose. The horn was much larger on males and probably used for head butting. The head was large, but the eyes were small and located on the front of the head. Ears were situated at the back. The body resembled a rhino, but the legs and feet were more like an elephant.

As brontotheres [evolved](#), the core of their horns grew larger and longer. They had fewer incisors, which might have been related to development of a prehensile (able to grasp) lip. Their nasal canals shortened.

Dr. Hiram Prout, a St. Louis physician, [described](#) what was dubbed a titanothere jaw in 1846. It was the first scientifically described fossil specimen from the American West and discovered in what is now Badlands National Park. The jaw is now in the collection of the Smithsonian Institution National Museum of Nature.

The famous fossil hunters O.C. Marsh and Edward Drinker Cope gave the varied fossil titanothere-related specimens many different names, based on the shape of the horns. It turned out the horns were highly variable within a single species, and if Cope and Marsh weren't so competitive about discovering and naming new fossils, in what became known as [The Bone Wars](#), they might have figured the horn variability out on their own. After later paleontologists studied large collections of skulls occurring together from the same areas, they discovered that one shape actually grades into another.

Over time, more researchers adopted the brontothere name, but the scientific literature still retains numerous references to titanotheres, so both names are used. The key source for North American brontothere fossil remains is the Chadron Formation. According to the literature at the website of [Badlands National Park](#), the Chadron is found in North Dakota, South Dakota, northwestern Nebraska, and eastern Wyoming. It is named after the town of Chadron, Nebraska and was mapped out by Carl Vondra in the 1950s. The greyish Chadron Formation was deposited between 34 and 37 million years ago by rivers across a flood plain. Each time the rivers flooded, they deposited a new layer on the plain. Alligator fossils indicate that a lush, subtropical forest covered the land. Most fossils found in this formation are from early mammals like the three-toed horse and the large titanothere.

About the Rice NW Museum of Rocks and Minerals

The Rice Northwest Museum of Rocks and Minerals, an affiliate of the Smithsonian Institution, houses a world-class collection of rocks and minerals recognized as the finest in the Pacific Northwest and one of the best in the nation. The Museum is in Hillsboro, Oregon just west of Portland (exit 61 off Highway 26). Its educational programs include organized school field trips as well as ongoing educational outreach throughout the community at large. A variety of public and private events are hosted throughout the year as well. The Museum is listed on the National Registry for Historic Places for its unique architectural style and its use of natural stone and extraordinary native Oregon woodwork throughout the building.

For more information about the Rice Northwest Museum of Rocks and Minerals, call (503) 647-2418 or visit www.ricenorthwestmuseum.org or www.facebook.com/RiceNWMuseum.

References

Rice NW Museum of Rocks and Minerals: <https://ricenorthwestmuseum.org/>

Oregon Museum of Science and Industry: <https://omsi.edu/>

North American Research Group: <http://www.narg-online.com/>