

The new Paleozoic Gallery at the Sam Noble Oklahoma Museum of Natural History transports visitors back in time to a land still under the sea.

OKLAHOMA BEFORE THE DINOSAURS

**BY LINDA COLDWELL
PHOTOS BY ROBERT TAYLOR**



A new gallery at the Sam Noble Oklahoma Museum of Natural History brings to life an exotic world full of bizarre animals and plants—from alien-looking deep-sea predators to dragonflies the size of hawks. It is a world far removed from Oklahoma, not in space, but in time. It is Oklahoma more than 250 million years ago, during the Paleozoic Era.

The Paleozoic Gallery comprises 4,600 square feet in the museum's Hall of Ancient Life, covering nearly 4 billion years of Earth's history, from the formation of the planet itself through the great extinction that wiped out nearly all life on Earth at the end of the Permian Period.

This breathtaking new gallery expands SNOMNH's original ancient life exhibits, which include record-setting skeletons of Oklahoma dinosaurs from the Jurassic and Cretaceous periods, as well as Ice-Age mammals such as *Smilodon*, the sabre-toothed cat, and the mighty Columbian mammoth. Unlike the earlier exhibits, however, which showcase fossil and cast skeletons, the new gallery includes fleshed-out models of some ancient

Large porthole-like wall cases give siblings Avery and Luke Morris of Edmond a glimpse at some of the earliest life to develop on the ancient sea floor. This diorama showcases the strange plant-shaped animals that lived in the Earth's shallow oceans during the Ediacaran period, some 600 million years ago.



animals, giving visitors an idea of what these strange animals may have looked like in life.

Among the oversized models are some of the truly alien-looking creatures from the Burgess Shale, a limestone formation found in Canada. This fine-grained sedimentary rock preserved impressions of the soft bodies of many animals that appeared during the Cambrian period, more than 500 million years ago. The most fearsome of these, *Anomalocaris*, sported two enormous spined pincers and sharp teeth that sliced prey in a circular mouth. It was the top predator of its time, for all its relatively small size by today's standards. In life, it would have been no more than three feet long. But the 12-foot model of *Anomalocaris* that hovers over the exhibit gives visitors a more accurate sense of this ancient predator's position in the food chain. Walking under this and other oversized models, including trilobites and jellyfish, gives the visitor the sensation of traveling along an ancient sea floor, looking up at an assemblage of strange creatures passing overhead.

Though the Burgess Shale is not found in the state, the new gallery focuses, as much as possible, on Oklahoma specimens and Oklahoma's story. Since the land that became Oklahoma spent hundreds of millions of years under water, there are some beautiful dioramas that depict life in the Paleozoic seas. A clever special effect casts rippling waves of light on the exhibit walls, creating a sense of being underwater.

The dioramas are presented as if in giant aquariums, with models so delicate and detailed, visitors half expect them to move. A small forest of colorful crinoids—ancient animals resembling long-stemmed flowers that lived anchored to the ocean floor—are bent as though in an unseen current, and beautifully detailed models of tiny trilobites, brachiopods and other marine creatures can be found in the sand at their feet.

Each model is hand made, based on fossil specimens from the museum's collections. Actual fossils and touchable casts are also on view, allowing visitors to compare the fossil remains and the lifelike models side by side.

The main highlight of the gallery is a walk-through diorama

A large diorama features a community of invertebrate animals living in the ocean that covered Oklahoma during the Ordovician Period, more than 443 million years ago. Video periscopes allow visitors to see how life on land was progressing during the same time period.



A fleshed-out model of *Deinonychus*, an Oklahoma predator from the Cretaceous Period, turns its head to watch visitors as they enter the Hall of Ancient Life.

ma depicting a coal swamp forest, such as those that covered parts of Oklahoma 300 million years ago. This section is densely filled with plants, animals and insects. A visitor with sharp eye for detail will be rewarded with a number of interesting surprises. Tiny scorpions and well-camouflaged cockroaches longer than a human hand can be found in the leaf litter on the forest floor. Strange insects and globe-bodied spiders cling to leaves. A family of red-gilled newt-like tetrapods inhabits a shallow pool.

There are larger animals, as well, including some perhaps related to mammals, reptiles and amphibians. These lifelike models are painted with such skill that they seem ready to blink or move. One of the most astonishing creatures in the exhibit is *Arthropleura*, a six-foot-long relative of the modern millipede. Its armor-plated body is touchable, but don't be startled when it raises its head as you approach.





The new Paleozoic Gallery includes a striking new entrance to the Hall of Ancient Life. Above, Karen VanDeSteege of Luther shows daughter Ruby specimens of plants and animals both ancient and modern, which highlight the great diversity of life as it has evolved on the planet.



The Pennsylvanian coal swamp forest diorama is one of the centerpieces of the new gallery. Dense with detail, the walk-through diorama features detailed models of more than 30 different species of plants and animals from Oklahoma's Carboniferous Period, more than 50 million years before the evolution of dinosaurs.

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The forest diorama segues into a set of Permian exhibits featuring sites from different parts of Oklahoma. A cave diorama shows some of the smaller animals—similar to, but not exactly like, modern reptiles and amphibians—that paleontologists often find at a site near Fort Sill. This location, once riddled with prehistoric caves, is now the richest site in the world for this type of Permian fossil. Each time scientists explore there, they usually discover something completely new to science.

Another diorama showcases some old favorites from the Permian Period: skeletons of *Dimetrodon* and *Edaphosaurus*, two sail-backed animals common to the area of Oklahoma near Frederick. Here, too, visitors will find models of the enormous dragonflies that lived in Oklahoma during the Permian period—amazing oversized versions of the modern insect, with wingspans of two feet or more.

These animals, along with approximately 70 percent of the other species of land animals and as many as 95 percent of marine species, became extinct around 250 million years ago. It was the largest mass extinction event in the history of the planet, and scientists are still unsure as to its cause. This catastrophic event, however, opened the way for new species to evolve, including early mammals and dinosaurs.

Some of these are showcased in the other exhibits that make up the museum's Hall of Ancient Life. Oklahoma's own *Sauropogonax maximus*—a fearsome Jurassic predator with some of the largest claws of any meat-eating dinosaur—as well as the world's largest *Apatosaurus*—both found in the Oklahoma Panhandle, form the gallery's centerpiece. Also featured is a remarkably well-preserved and nearly complete fossil skeleton of an enormous *Pentaceratops*, a Cretaceous plant-eater that was similar to the more well-known *Triceratops*. This particular specimen has a huge bony frill on the back of its skull, which measures 10½ feet from top to bottom. It holds the Guinness World Record for the largest dinosaur skull in the world, and in fact, is the largest skull of any land animal ever found.

Though the dinosaurs and other ancient animals are breathtaking, they are only a small part of what the museum has to offer. The spacious second-floor galleries showcase Oklahoma's



Cotylorhynchus was a Permian animal common to central Oklahoma more than 250 million years ago. Its tiny skull seems far out of proportion to its barrel-shaped body and large feet. This specimen was collected in Cleveland County. A touchable cast of the animal's skull lets visitors see and touch the rows of teeth *Cotylorhynchus* had in its upper palate.

fascinating archaeological history and rich Native American heritage in the Hall of the People of Oklahoma, and the state's impressive biological diversity in the Hall of Natural Wonders.

The Hall of the People of Oklahoma guides visitors through as much as 30,000 years of human history. The exhibits begin with the earliest archaeological evidence of humans in the state and include the ancient mammoth and bison hunters, the sophisticated Mississippian culture that built the state's famous Spiro Mounds, and 20th century Native American cultural objects.

Detailed, lifelike dioramas in the Hall of Natural Wonders provide visitors a glimpse at some of the amazing biodiversity of Oklahoma. Because of its central location, where eastern and western environments meet, Oklahoma has the highest biodiversity of any landlocked state in the United States. This gallery features some of the unique "eco-regions" that make Oklahoma a haven for such a wide variety of plants and animals. Dioramas include the mixed-grass prairie, Ozark highlands, oak-hickory forest and a walk-through limestone cave.

Opened in May of 2000, with continuing additions to permanent exhibits and a regular schedule of blockbuster special exhibitions, the Sam Noble Oklahoma Museum of Natural History is a source of pride for the University community and for the state at large. This state-of-the-art facility showcases the remarkable history and culture that make Oklahoma unlike any other place on Earth.

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