

Hidden Treasures

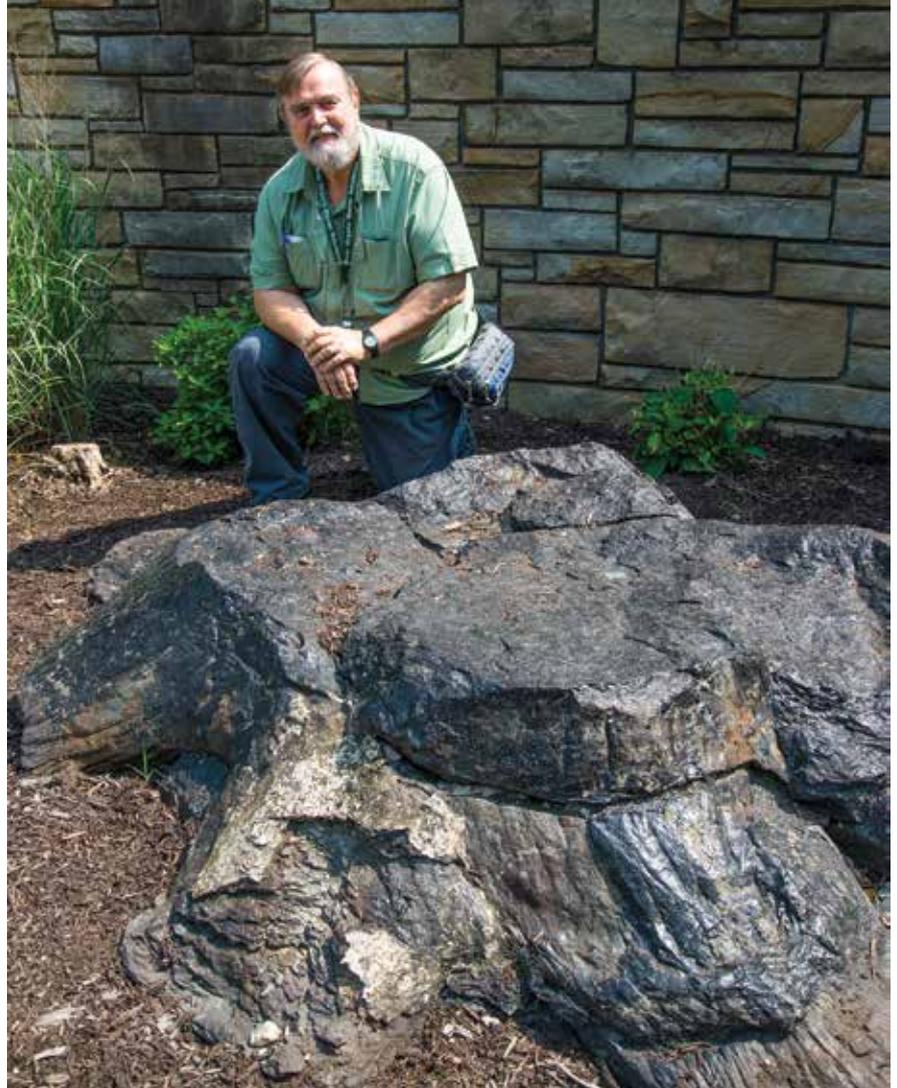
at the West Virginia Geological & Economic Survey Museum

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Woolly mammoths, cave lions, giant cheetahs, vampire bats and giant armadillos once ruled the mountains. Dragonflies with three-foot wingspans thundered through the air beneath towering tree-sized plants, which would someday become vast coal deposits. Beastly reptiles used their large fins to warm their bodies in the midday sun and muster energy to kill. Sound like make-believe stories? Nope. Just part of the rich natural history of the Appalachian Mountains. Journey to the past at the West Virginia Geological & Economic Survey Museum. And don't worry—the dinosaurs are extinct.

Showcasing the rich and varied story of West Virginia's geology became a mission of the museum. The Museum was further established for the collection, preparation, preservation, and exhibition of rock, mineral, and fossil specimens from all ages of West Virginia's geologic history. In addition to being a repository for all types of geologic specimens, the museum's ongoing collections also include historic books, maps, manuscripts, and artifacts.

The museum's goal is to provide visitors an opportunity to examine geologic specimens and explore the geologic processes responsible for West Virginia's outstanding scenery and great mineral wealth. The museum aims to give visitors an understanding of how geology makes the Mountain State unique, and hopefully inspire visits to



Outside the WV Geological & Economic Survey Museum, Ray Garton kneels beside a 300 million year old *Lepidodendron* fossilized tree stump from the Pennsylvania Period of Geologic time. The *Lepidodendron* grew to be almost 200 feet tall and was anchored in shallow soil with “Y” branching roots call stigmara.



Above: Museum curator, Ray Garton, holds a toe bone of *Megalonyx jeffersoni*, a three-toed sloth named in honor of Thomas Jefferson.

Below: Ray Garton helped excavate this skeleton of an *Edmontosaurus* (hadrosaur duck-bill) found in North Dakota in 2003. It was one of the largest herbivorous dinosaurs of the Cretaceous period of Geologic time, about 65 million years ago. *Edmontosaurus* was probably a herding animal and also probably a favorite meal of *Tyrannosaurus rex*. This specimen is one of the most complete known skulls.



West Virginia's scenic treasures time and time again.

A main attraction of the museum is replicas of some of Thomas Jefferson's collection of old bones. In 1796 the bones of a large

animal found in a Monroe County, WV cave during saltpeter mining operations were sent to Jefferson who thought they were the bones of a giant lion based on the huge claw bones sent to him. Jefferson named the animal *Megalonyx*, meaning giant claw. He later realized that after seeing a publication on giant ground sloths that the bones were actually from a giant sloth. Casper Wistar, a prominent scientist of the day, then named the animal *Megalonyx jeffersoni* in honor of Jefferson. In 2008,

museum curator Ray wrote legislation designating *Megalonyx jeffersoni* as the official State Fossil of West Virginia. The display of replica bones from Jefferson's sloth includes the right front foot bones with claws and the ulna and radius of the arm. The original bones are in the Philadelphia Academy of Science Museum. Carbon 14 dating of additional sloth bones found in the same cave is 38,000 years old. This time period was during one of the warm interglacial periods of the

Pleistocene Ice Age, when the area had a more Florida like climate.

Another feature of the museum includes a 16 foot long 10 foot tall dinosaur skeleton found in North Dakota in 2003. Museum curator Ray helped excavate the skeleton and then had it prepared, mounted and displayed. The skeleton is of an *Edmontosaurus* (hadrosaur duck-bill). It was one of the largest herbivorous dinosaurs of the late Cretaceous age of about 65 million years ago. *Edmontosaurus* was probably a herding animal and also probably a favorite meal of *Tyrannosaurus rex*.

Other Museum Features

Fossil Displays

West Virginia has abundant fossils, especially Paleozoic plants and brachiopods. Other less abundant forms include crinoids, gastropods, bivalves and trilobites. The oldest fossils in West Virginia are algal masses called *Cryptozoon* found in the Cambrian Age, Conococheague Limestone. The Conococheague is found in 2 narrow bands crossing Berkeley and Jefferson Counties. The youngest fossils found in the state are Pleistocene bones and plants as young as 10,000 years.

Rock Displays

The majority of bedrock exposed at the surface in West Virginia is sedimentary in origin, deposited during the Paleozoic Era (545 to 230 million years ago); very few igneous or metamorphic rocks are exposed at the surface due to deep burial beneath the thick Paleozoic cover. The oldest exposed rock in the State, found in the tip of the eastern panhandle, is the Precambrian Catoclin

Below: The Triceratops dinosaur (65 million years old) displays three bony horns with neck frill; added protection from predators. Its most likely predator was the *Tyrannosaurus rex*.



Above: Dunkleosteus (armored fish) is from the Upper Devonian period of Geologic time.



Bob Pyle, consulting archeologist for *Mountain Discoveries* magazine, stands by a boulder of Oriskany Sand Stone with 400 million years old Geologic time Crinoid fossils. This boulder at the WV Geological & Economic Survey Museum is covered with the fossils (Echinoderm – a sea animal related to the star fish and sea horse).

Greenstone, a metamorphosed lava that erupted 800 million years ago. There are numerous igneous intrusions of Jurassic and Eocene age rocks in east central West Virginia, especially Pendleton County. The youngest rocks are Pleistocene age travertine found in caves and some large surface marl deposits.

Mineral Displays

Although West Virginia is not known for exotic mineral specimens, one notable exception is a 34.46-carat diamond found in 1910 near Peterstown, WV. Our official state gemstone is a form of chalcedony or agate that replaces the marine fossil coral *Lithostrotionella*. This microcrystalline form of quartz has beautiful shades of red, yellow, blue and black. When cut the stone takes a high polish and can be used in making beautiful jewelry. Although more rare, banded agates are also found. There are a few localities in the state where quartz crystals occur which are sometimes

double terminated and clear. Pyrite is abundant in both our limestone and coal beds, and calcite, often occurring in a variety of colors including white, pink and tan is found in our limestone. Both Barite and Fluorite occur, but are not found as often. In addition, micro zeolites occur in our igneous rocks.

Dinosaur Displays

No dinosaur fossils have been found in the State because the sedimentary rocks in West Virginia are too old (Paleozoic in age). Dinosaurs existed during the Mesozoic Era and there are no sedimentary rocks of Mesozoic age in the State. Any Mesozoic rocks that might have covered the State have been eroded away. None the less we do have fossils of large prehistoric amphibians and reptiles that preceded the dinosaurs such as *Dimetrodon*, *Edaphosaurus*, and *Eryops*. You will also find replica skulls of *Tyrannosaurus rex*, *Triceratops* and *Allosaurus* on display at the museum.



Dinosaur Displays

Next to dinosaurs, trilobites are probably the most popular and best known fossils. They were a dominant marine life form during the Paleozoic from 543-248 million years ago. There are over 40,000 known species. All trilobites became extinct during the Permian mass extinction event that took place about 248 million years ago. While not abundant, dozens of different species are found in the state. The largest trilobite found in the state is a species of *Homalonotus* found in Hampshire County. It is 9 inches long with perhaps 2 inches of the tail missing.

For more information contact the West Virginia Geological & Economic Survey Museum: call 304-594-2331 or email info@geosrv.wvnet.edu or visit the website <http://www.wvgs.wvnet.edu/www/index.html>.

The Museum is located at Cheat Lake – Exit 10 off I-68; address 1 Mont Chateau Road, Morgantown, WV 26508. Approximately 45 miles (50-55 minutes) from Oakland and Deep Creek Lake and approximately 70 miles from Cumberland, MD or Pittsburgh, PA.



Top photo: *Allosaurus fragilis* skull and jaw; this dinosaur was up to 38 feet long and 16.5 feet tall with a three foot skull.

Inset: The Museum has a unique collection of artifacts and displays.

