

OHIOPYLE STATE PARK

GEOLOGIC FEATURES OF INTEREST

Ohiopyle State Park is located along the Youghiogheny River where it crosses Laurel Hill in a deep gorge in southeastern Fayette County. The rock exposures and landscape of the park reveal a geologic history of sedimentation, deformation and erosion that is typical of this part of the Appalachians. The following geologic features are readily observed within the park area and when placed into their proper time sequence, they portray the geologic history of this region.

The Rock Layers

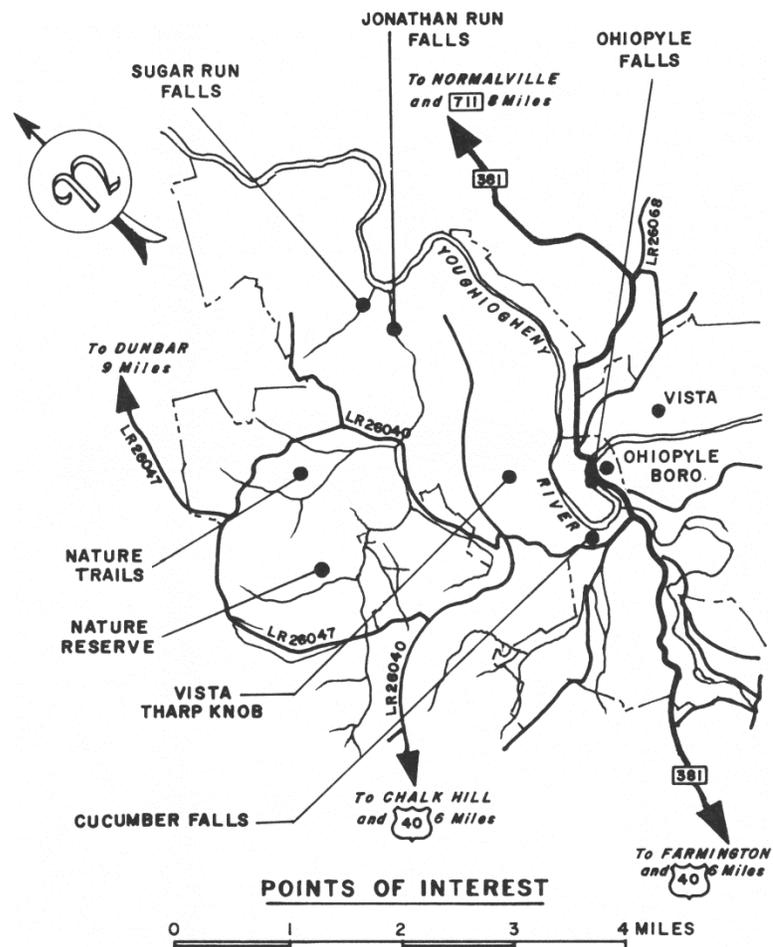
The oldest rocks, Devonian age, are present in the deepest part of the gorge, between Victoria and Bidwell, where they consist of brown, gray and reddish-colored sandstones and shales.

Younger, Mississippian rocks are present throughout much of the park area and are more varied in nature, ranging in type from light-gray conglomerates, made up of small, white quartz pebbles, to red and green shales, to gray, very sandy limestones. The conglomerates are present along the road to some gas wells on the south side of the river. Red shales are present along the paved road east of Sugarloaf Knob. The limestones are found in the saddle between Sugarloaf Knob and the smaller knob to the east.

The youngest rocks in the area, Pennsylvanian in age, are economically important because of their interbedded coals. The oldest of this age is called the Pottsville

Group and consists of tan to gray sandstone and conglomerate. These rocks make the scenery, since they form the falls and rapids in the river and the prominent cliffs along the sides and top of Laurel Hill. The younger Pennsylvanian rocks are mostly tan to dark-gray shales with some sandstones and coal beds.

The rock layers exposed in the park were deposited as sediment during the Paleozoic Era of geologic time. Older rocks are present but are deeply buried and known only from well drillings. At that time a shallow sea existed in the area, extending from the mid-



continent area eastward into Pennsylvania. Over several millions of years, these sediments hardened into the present rock layers.

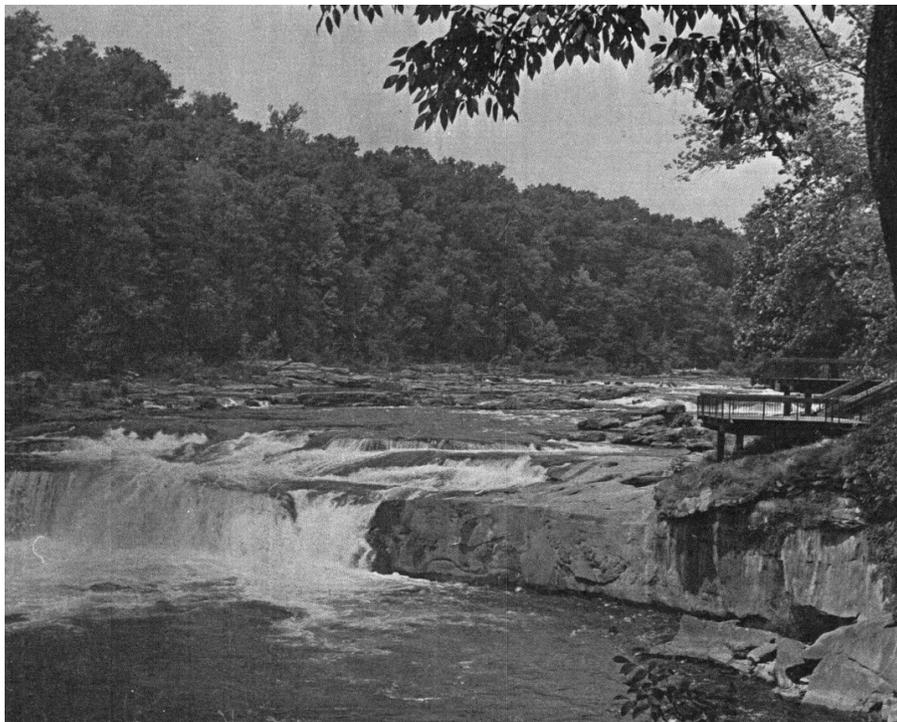
Laurel Hill Anticline

Laurel Hill is a high ridge held up by resistant rock layers that were arched up to form a long fold (anticline) which extends from West Virginia northward into Cambria County, just north of Johnstown. The sides of the Youghiogheny Gorge reveal a cross section of this anticline, with the rock layers along the railroad west of Victoria tilted to the west and those rocks east of Bidwell, tilted to the east.

The total amplitude of the fold can be observed by following the road from Ohiopyle to Confluence. At the falls, elevation 1180 feet, the river flows across Pottsville sandstone. As the road rises eastward toward Sugarloaf Knob, it follows at or near the top of that same Pottsville sandstone. At the crest of the fold, near the Lookout Tower, the same Pottsville sandstone is at an elevation of 2920 feet. The sandstone and the road then drop back to the river level at Confluence. At the Confluence dam site, the Pottsville sandstone is about 500 feet below the ground surface. Total relief on the anticline in this area is more than 1700 feet.

The Youghiogheny Gorge

The gorge that the Youghiogheny flows through is a distinctive and characteristic element in the Appalachian scenery. As downcutting of the major rivers continued, they gained new energy and began to erode new steep-sided courses. The Youghiogheny River cut down through the underlying rocks the way an overhead saw cuts through a stack of boards. Where resistant layers were met, falls and rapids were formed.



The Falls

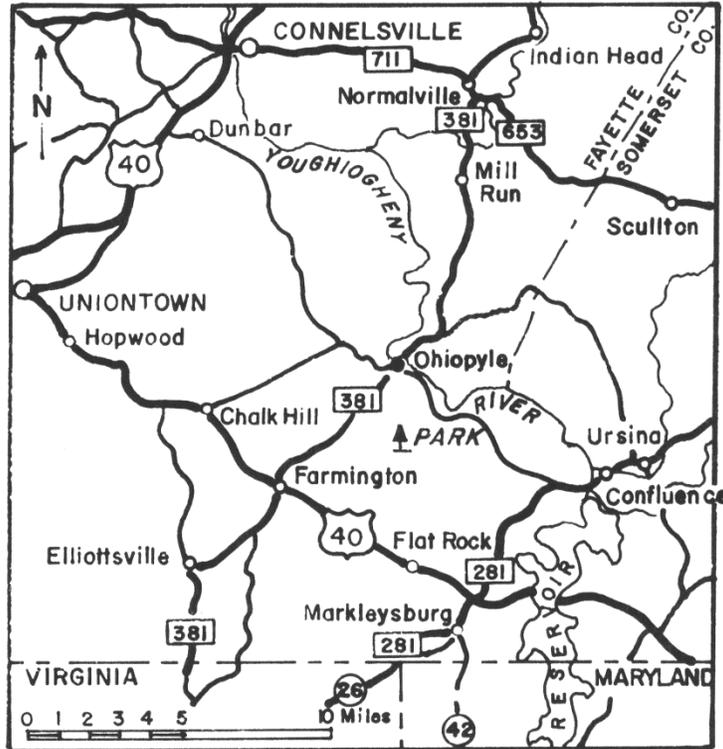
The falls at Ohiopyle represent a brief interruption in the downcutting of the river. The Pottsville sandstone is more resistant than the surrounding shales, and where it lies athwart the course of the river, the river must expend more work at that point than elsewhere. The effect is the same as a knot in a sawn board; the saw works longer at that spot. Eventually the river will cut completely through the sandstone layers forming the falls and rapids and the river's path will become a smooth one throughout its length.

Ferncliff Natural Area

Ferncliff Natural Area (area immediately west of Ohiopyle Falls, inside the loop formed by the river) is located on a knob of Pottsville sandstone that was left as the Youghiogheny River eroded downward. Potholes, scoured in the rocks by turbulent water, and old channels can be observed around the sides of Ferncliff, 10 to 50 feet above the present river level.

—Kent Bushnell, Geologist
Slippery Rock State College

1971



LOCATION MAP

Ohiopyle State Park
124 Main Street
Ohiopyle, PA 15470
Phone: 724-329-8591

*Modified to page-size format in 2012.
Series, address information, and location map updated in 2016.*

PREPARED BY
Department of Conservation and Natural Resources
Bureau of Topographic and Geologic Survey

