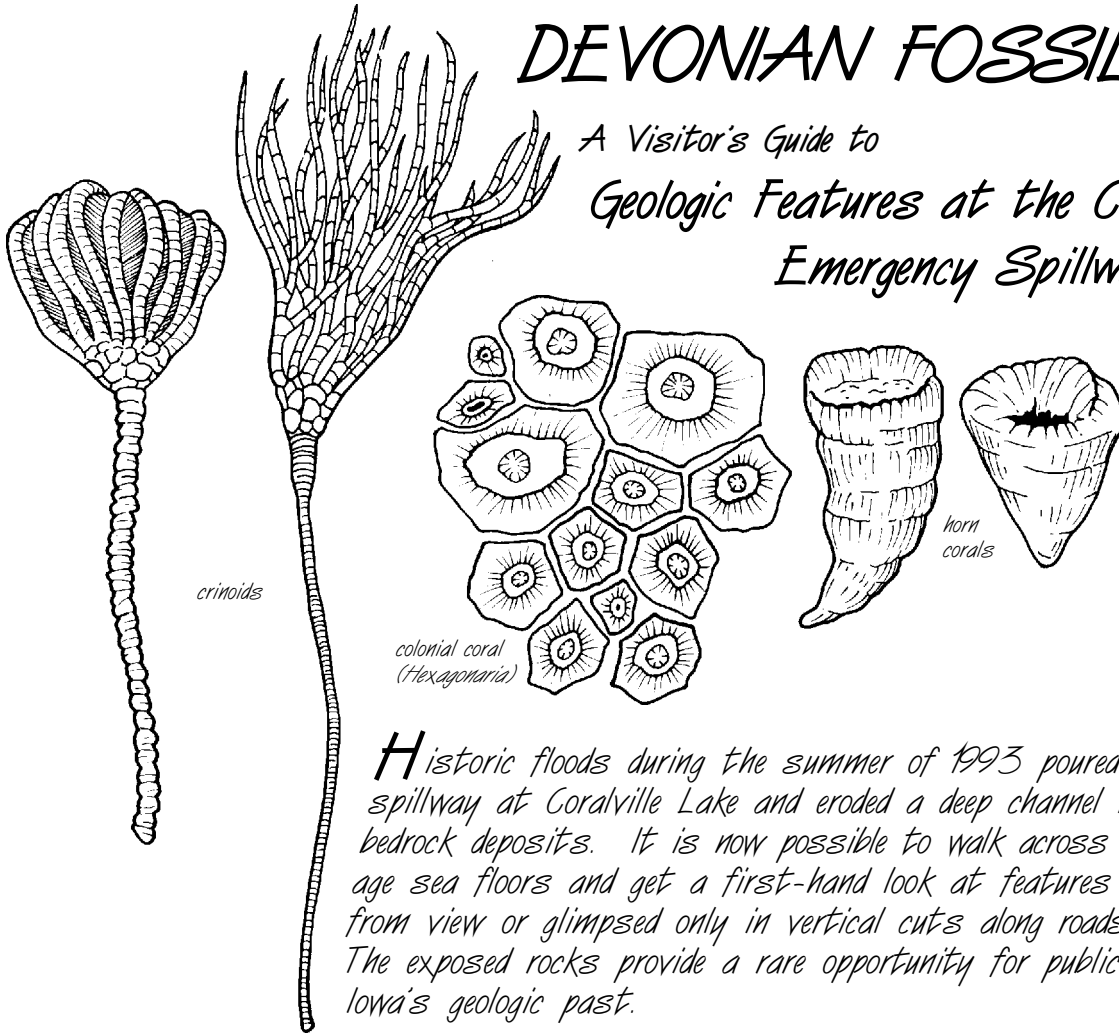


# DEVONIAN FOSSIL GORGE

*A Visitor's Guide to*

*Geologic Features at the Coralville Lake  
Emergency Spillway*

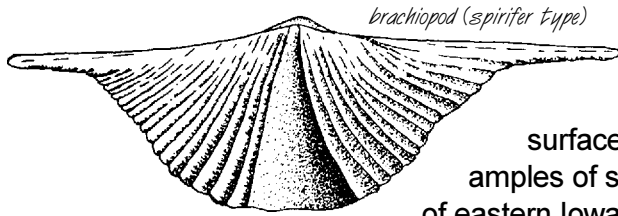


*Historic floods during the summer of 1993 poured over the emergency spillway at Coralville Lake and eroded a deep channel into the underlying bedrock deposits. It is now possible to walk across acres of Devonian-age sea floors and get a first-hand look at features normally hidden from view or glimpsed only in vertical cuts along roadsides or in quarries. The exposed rocks provide a rare opportunity for public observation of Iowa's geologic past.*

## *The Rocks*

*Composition:* The shelves of bedrock and scattered rock slabs are composed of limestone. This sedimentary rock originated as lime-rich deposits accumulating on sea floors during the Devonian period of geologic time, some 375 million years ago. Some of the limestone is fine grained, composed of limy mud that settled out of calm, quiet water. In other places, the grains are more coarse, often composed of broken shells concentrated by sea-floor currents. Crystals of calcite (calcium carbonate), the most common mineral in limestone, are occasionally seen reflecting in the sunlight as they fill openings in the rock.

*Fractures:* Notice occasional breaks along the limestone surface that follow nearly straight lines and are generally parallel to each other. These fracture traces extend across many miles horizontally and hundreds of feet vertically. They were caused by warping of the earth's crust and by stress on the brittle sedimentary strata in the geologic past. These fractures serve as pathways for water to move underground. The groundwater contained in these fracture systems at depth is an important aquifer tapped by wells throughout the region.



**Shapes:** Limestone slowly dissolves during contact with subterranean groundwater flow. The rock surfaces exposed by the 1993 floodwaters display good examples of small-scale "karst" features that characterize the insides of eastern Iowa limestone formations. Notice especially the smooth-sided channels formed by the scour of flowing water. Occasionally these channels are enlarged into rounded potholes, ground smooth by the swirling action of cobbles. Look under rock ledges for the openings to small cave systems.

**Flood Evidence:** The power of floodwater is still seen in the position of large slabs of limestone that were plucked from their bedrock foundation and moved downstream. Some slabs came to rest in an overlapping fashion, as they were shoved together and slanted in the direction of the flood's flow.

**Structure:** Looking north toward the spillway from some distance down the gorge, you can see inclines in the limestone strata that form a dome-like structure across the area. This feature may be the result of irregular settling of the sedimentary layers when they were still soft, or the result of much later, broad-scale warping of rock units across the Midwest. Small geologic faults are also exposed here, with vertically displaced strata and tiny gouges along the rock faces indicating movement in the geologic past.

**Fossils:** Excellent fossil remains of marine life that inhabited the clear, warm, shallow Devonian seas can be observed. Look for solitary horn corals and for larger colonial coral forms, especially *Hexagonaria* and *Favosites*. Some of the coral masses are upside-down, overturned by an ancient storm surge. Crinoids (sea lilies) are also abundant and well preserved, especially segments of the slender, flexible stems that rooted these animals to the sea floor. Other common fossils include shells of brachiopods, especially "spirifer" types with wide hinge lines. More rare are fossil trails of worm burrows through the sea mud and occasional trilobite fragments.

**Glacial-Age Deposits:** In the middle of the exposed rock channel is a stream-lined mound of dark brown deposits that are much softer than the bedrock beneath. These deposits are all that remain of earth materials that formed the land surface across the gorge prior to flooding. The materials are layered and weathered, which indicate deposition by water, probably during a glacial-age chapter of the Iowa River's history.

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Illustrations:  
Brachiopods from "Geology of Iowa" by W.I. Anderson (1983)  
Others by the Geological Survey Bureau

