

FOSSILS



OF IOWA

FRONT COVER

Often called "sea lilies," **crinoids** are actually animals related to starfish. This 350 million-year-old (Mississippian) specimen from Marshall County shows the arms, which in life would filter sea water for food particles.

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Many people have their beginning interest in geology stimulated by finding fossils. Holding the shell of a sea-dwelling creature found in an Iowa rock, far from the nearest ocean, makes us think about the vast changes that have occurred over the Earth's surface, and the great length of geologic time that has passed. Studying fossils helps us appreciate the history of life on Earth. They provide a link between geology and biology that is valuable to the study of global changes and how life adapts. Fossil remains also are an important tool in dating different rock layers, and in comparing the sequence of strata from place to place across broad areas.

Iowa has many well known fossil-bearing rock formations, and fossils from around the state have found their way into museums around the world. This brochure will help identify a few of Iowa's many fossils that may be found by careful observation of road cuts, quarries, stream banks and other exposures of earth materials.



Brachiopods: These fossils are among the most common found in Iowa. They lived inside the protective cover of two hinged shells, attached to the floor of warm shallow seas that once covered the state. These eastern Iowa specimens are about 375 million years old (Devonian).

Fish jaw: This jaw belonged to a 2 to 3 ft-long placoderm, a primitive fish partly covered by bony plates that gave it an armored appearance. Mineralization of the fossil bone caused the black color seen in this 375 million-year-old (Devonian) specimen from Black Hawk County.



Gastropod: Shells of marine animals are often preserved as fossils. This coiled shell from Winnebiek County was inhabited by a snail. The sluggish, bottom-dwelling mollusk

scavenged the ancient sea floor about 440 million years ago (Ordovician). The snail moved on a flat muscular foot and could withdraw inside its shell for protection.



Mastodon (left) and mammoth (right) teeth: Tooth shapes of these 15,000 year-old molars indicate mastodons browsed on tree branches, while mammoths grazed on grasses. Fossils of these extinct Ice Age (Pleistocene) mammals resembling elephants have been widely found across Iowa.



This coiled cephalopod is a 365 million-year-old (Devonian) specimen from Butler County, and a distant relative of the chambered nautilus seen in today's oceans.



Cephalopods: Squid-like animals lived in these chambered shells and could propel themselves by ejecting sea water from a tube near their head. The shell's partitions were filled with gas, enabling the animal to regulate its buoyancy. These straight-shelled cephalopods from Marion County are 300 million years old (Pennsylvanian).

Crinoids: These animals lived anchored to the sea floor by flexible, rooted stems. Segments of the rounded stems are commonly found as fossils. Famous localities in Iowa include the LeGrand and Burlington areas.



Solitary coral: Some corals lived alone in curved, cone-shaped skeletons unattached to other individuals. This fossil "horn coral" housed the animal's soft tissues, including tentacles that filtered food particles from sea water.



Colonial corals: Bottom-dwelling corals lived in reef-like communities in warm, clear, tropical seas covering Iowa. Many species were colonial, living together in a mass of individual skeletons of lime, resembling a honeycomb. Distinctive colonial forms from eastern Iowa include the "chain coral" (upper left), Pachyphyllum (upper right), and Lithostrotonella (lower right). They were especially abundant in Devonian and Silurian seas, 375 to 425 million years ago.



Stromatoporoid: "Stroms" are extinct organisms related to sponges. They built skeletons of lime and lived in various shaped colonies that resembled layered mats, branches, and rounded masses. This Floyd County specimen, with its prominent nodes, lived 370 million years ago (Devonian).

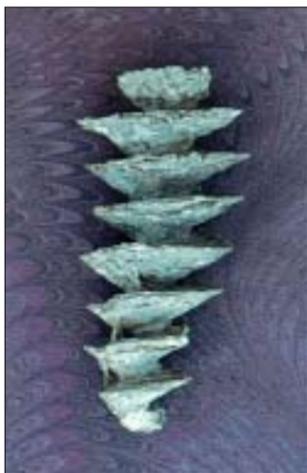
Amphibian pelvis: This pelvic bone belonged to a 3 to 4 ft-long protoantracosaur, a rare primitive amphibian that lived 330 million years ago (Mississippian) in Keokuk County.



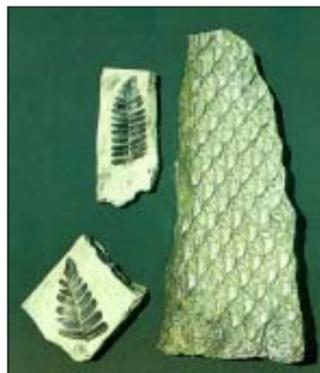
Bryozoan: "Moss animals" were colonial, filter-feeding organisms that inhabited the sea floor. A well known bryozoan (Archimedes) consisted of concentric rows of lace-like fronds attached to a corkscrew-shaped axis. The preserved core is seen in this Lee County specimen (340 million years old, Mississippian).



Trilobites: Prized by collectors, whole trilobites usually display a three-lobed, oval-shaped, segmented skeleton, often with distinct eyes. They belong to an extinct group of bottom-dwelling, hard-shelled arthropods that scavenged the sea floor. These Scott County specimens are 375 million years old (Devonian).



Seed-fern leaves and scale-tree trunk: The fossil foliage of seed ferns (small fossils) was found in Dallas County, and the scale-tree (Lepidodendron, large fossil) in Muscatine County. About 310 million years ago, these plants were common in coastal swamps that produced Iowa's coal deposits (Pennsylvanian).



Seeds: These black fossil seeds are from Scott County. They grew at the end of a frond on a fern-like tree about 300 million years ago (Pennsylvanian).

Clam shell: Like gastropods and cephalopods, clams are also mollusks that live in a protective shell. This Plymouth County specimen lived on a sea floor 90 million years ago (Cretaceous). Clams were abundant in these waters, the last great inland sea to cover Iowa.

