This trackway from Martin County, Ind., is 7 ft long and contains impressions made by an animal’s front and back feet as it walked across a mud flat. Note the wide line etched by a dragging tail. The balls on the toes of the feet indicate that the animal was probably an amphibian and not a reptile.
a marine invertebrate that has two shells. Brachiopods are common in most Indiana rocks and especially in rocks from the Ordovician Period (443 to 485 million years ago). Brachiopods have a bilateral (side-to-side) symmetry that is perpendicular to the hinge line of the shells.
a carbonate mineral and the crystal form of calcium carbonate (CaCO$_3$). Calcite is the main mineral in limestone, which is formed primarily from the shells of marine organisms and ooids, spherical grains composed of concentric layers. Calcite crystals are found in small cavities (known as “vugs”) inside rocks and geodes.
D is for Disappearing Stream,

also known as a “sinking stream,” is a drainage that flows into a hole in the ground, disappearing from view. The best known is the Lost River in south-central Indiana. Southeast of Orleans, the Lost River goes underground into swallow holes along a 21-mile-long dry bed. The river rises again a mile south of Orangeville.
the shaking or vibration of the earth's surface in response to fault movement. Since 1819, Indiana has experienced 44 earthquakes having magnitude 3.0 and larger. In recent times, larger earthquakes have produced disrupted ground along rivers and streams.
Formation, a name given to a group of rocks. Formations are rocks of a similar type that can be mapped at the bedrock surface and are traceable in the subsurface. Formations combined together are known as “groups,” and they can be further defined and split up into “members” and “beds.” These designations allow geologists to correlate various strata across wide distances.
A geode is a cauliflower-shaped nodule that occurs in rocks that outcrop throughout south-central Indiana. A common collector’s item, they are found in outcrops and in stream beds along the western margin of the Norman Upland. Geodes are made up of quartz and calcite, and many have hollow interiors with millerite, celestite, strontianite, barite, and amethyst.
a glass or plastic lens used to magnify a rock or fossil. Geologists frequently use a hand lens. Unlike a magnifying glass, a hand lens is held close to the eye and the specimen is brought toward the eye to be in focus. Geologists can often be recognized from other science professionals by the hand lens dangling from their neck.
I is for Ice Age, a time when glaciers extended from the earth’s poles across the continents and oceans. The last ice age in Indiana is called the Wisconsin for the state of Wisconsin. Glaciers extended more than half way across Indiana toward Kentucky. Most glacial features and deposits at Indiana’s surface are from this glacial time period.
one of several standing rocks created by the erosion of surrounding material from frost, plant roots, and running water. Made up of cross-bedded sandstone of the Mansfield Formation, Jug Rock is about 60 feet high. This distinctive feature can be seen from late fall through early spring along S.R. 50, north-northwest of Shoals, Indiana.
an area underlain by carbonate rocks that have undergone dissolution, producing sinkholes, caves, and underground channels. The Mitchell Plateau in south-central Indiana is characterized by its karst topography and underground drainage. Sinkholes are the most common feature of the karst topography, which has a pocked surface like a golf ball.
imaginary lines on the earth that are used to define geographic locations. Latitude lines are parallel to the equator and drawn east to west. The north and south poles are 90° north and south of the equator (0°). Longitude lines are drawn north south with 0° longitude, known as the prime meridian, runs through an observatory in London, England. Latitude and longitude are expressed in angular measurements. Downtown Indianapolis is at 39.7685° N, 86.1580° W.
M is for Meandering River, a river that has many loops and bends. Meanders form because the river erodes silt and rock from the outer bank of the loop and deposits it on the inner bank. Through time the river moves back and forth across the river valley. You can see the many meanders along the East Fork of the White River, south of Columbus, Ind., in this LiDAR image.
This small town along the Wabash River in southwestern Indiana was a center of progressive education and scientific research during the early 1800s. Notably, Indiana’s first state geologist, David Dale Owen, lived and worked there. William Maclure, the “father of American geology” and long-term president of the Academy of Natural Sciences, lived and taught for several years in New Harmony.
a spherical sand-sized, snowball-like grain usually composed of calcite crystals. The presence of ooids can tell geologists that high-energy wave or storm conditions occurred during the time of their deposition. Ooid grains sometimes cement together to form a sedimentary rock called an “oolite.” If you visit Oolitic, Indiana, you may find some ooids in the limestone rocks there.
P is for Paleontology, the study of past life. Paleontologists are biologists that work with fossils, reconstructing past stratigraphic, environmental, and evolutionary patterns in the fossil record.
Quarries are man-made excavation pits from which stone, aggregate, or sand and gravel is extracted. The pit is made by digging, cutting, or blasting the rock. Blasting is common in aggregate (gravel) quarries, but dimension stone (large blocks of building stone) is extracted by sawing the rock from the earth.
an aggregate of one or more minerals, joined together by cement or interlocking crystals to form a hard mass. The three main types of rock are igneous, sedimentary, and metamorphic. Rocks of Indiana are sedimentary except for those that occur at extreme depths. The most common sedimentary rock in Indiana is limestone.
the study of the distribution of unconsolidated sediments at the ground surface. In Indiana, the spatial distribution of sand, gravel, and clay are related to the advance and retreat of glaciers across the landscape and wind (eolian), coastal, and river (fluvial) transport and deposition following glaciation.
T is for Topography, a term used to describe the shape of the land surface, such as hilly or flat topography. Topography is shown on a topographic map, most using sea level as the datum or reference point. These maps use lines to represent the elevation of the land surface above a reference point, and they may be shaded to enhance the visibility of the relief depicted on the map.
loose clay, silt, sand, or gravel that is not cemented together into a rock. The bedrock surface of most of Indiana is covered with some form of unconsolidated sediment as soil, alluvium along streams, windblown (eolian) and coastal sediments along the modern and ancient lakes, and glacial outwash and till.

**U is for**

**Unconsolidated sediment,**
a term used to describe sediments that have horizontal laminations. The horizontal laminations of varves rhythmically alternate in color and composition, and are interpreted to indicate seasonal deposition in a standing body of water. Varves are more common in sediments that accumulated during glacial times.
Weathering, an all-encompassing term for chemical, mechanical, and biological processes that break down rocks. Weathering is a continuous process throughout Indiana. The weathering of Pennsylvanian sandstones along the White River near Shoals produces oddly shaped and spectacularly colored outcrops.
a laboratory method of identifying a material’s chemical composition by irradiating a rock sample with x-rays. X-rays interact with the atoms of a material and the amount of energy that is released can be used to identify and quantify its elemental composition. A rock sample’s chemical analysis can be used to determine depositional sequences and rates of sedimentation.
a term used to describe a quantity of geologic material, such as water, coal, or minerals. An oil well will yield a certain number of barrels of oil a day. In 2015, the total crude oil production in Indiana was 2,219 thousand barrels.
Zircon, a heavy mineral that weathers slowly. In Indiana, zircons in glacial till can be used to determine where a glacier originated by associating it to similarly aged rocks containing zircons in Canada.