

Take a Kid Outdoors

River Products Co, Inc. Klein Quarry
3445 Deer Creek Rd SE, Iowa City

hosted by:



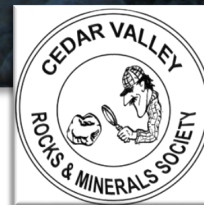
River Products Company, Inc.
<https://www.riverproducts.com/>

and



TAKO Iowa City
Take A Kid Outdoors
<http://takeakidoutdoors.org/>

partnering
with:



CVRMS
Cedar Valley Rocks & Minerals Society
<http://www.cedarvalleyrockclub.org/>

sponsored by:

Klein Quarry



www.impact7g.com



<http://southgateco.com/>

Rockin' Rocks and Fossils

Klein Quarry

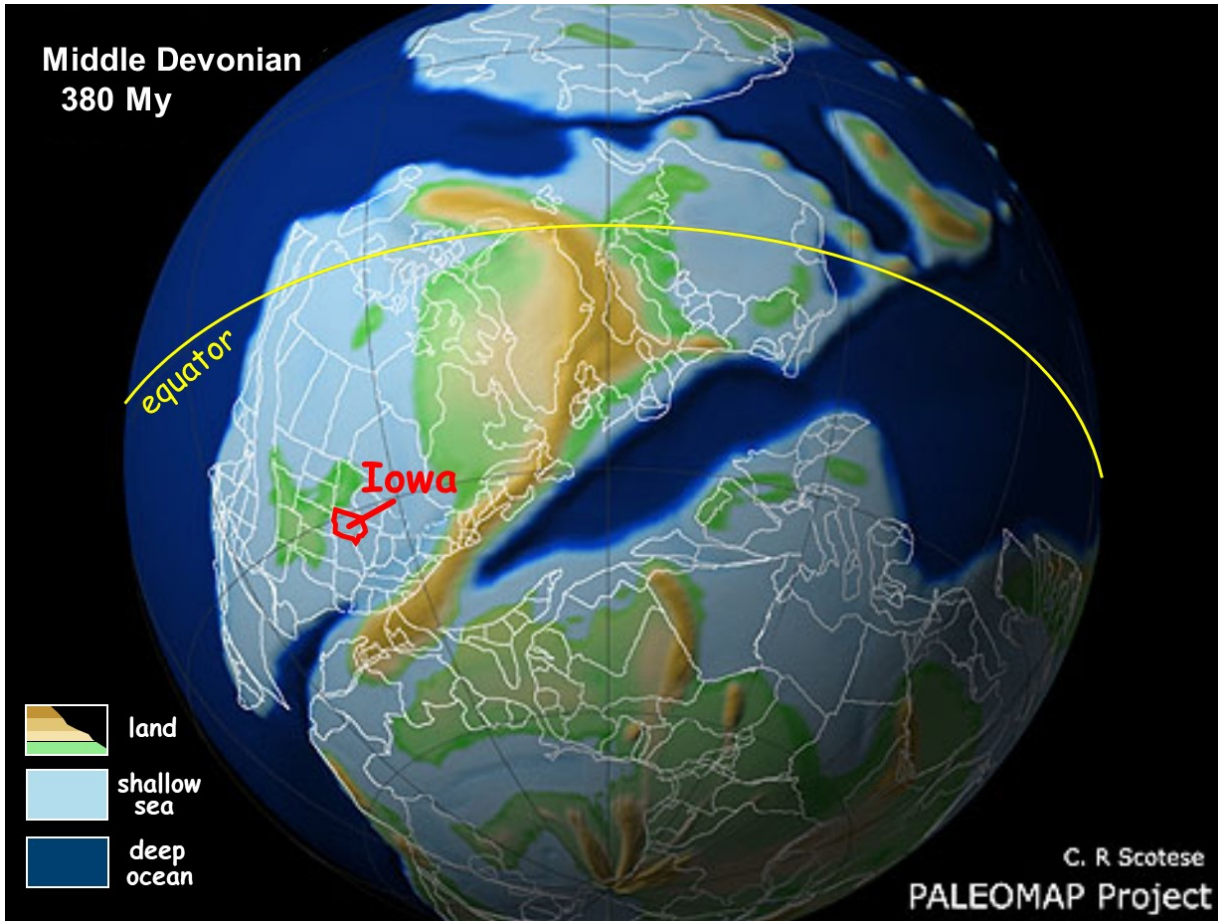
aerial photo 2017



0 500 1000 feet

The Geology at Klein Quarry

The rocks at Klein Quarry were formed about 380 million years ago in the shallow tropical seas that covered much of the land (see map below). For millions of years the lime shells from the trillions of small animals living in these seas accumulated on the sea floor. These sediments changed character as sea conditions changed with the fluctuating sea level. Ultimately the sediments solidified, forming the limestone layers that we see today. Many fossils were preserved in these rocks, and later, groundwater carrying a variety of dissolved minerals moved through the rocks altering some of the fossils and growing mineral crystals in cracks and voids.



The Earth as it appeared in the Devonian about 380 million years ago. Iowa lay south of the equator, covered by a warm, shallow sea teeming with life.

1.

The layers of limestone that were formed were given **member** names; related members were combined as **formations**; the formations were combined into **groups**. The groups of limestones were dated and found to have been formed during the **Devonian** (see chart below). About 60 million years later, during the **Pennsylvanian**, a river cut through these limestones, depositing mud and sand that became the shales and sandstones of the **Caseyville Formation** that can be seen today in the Klein Quarry.

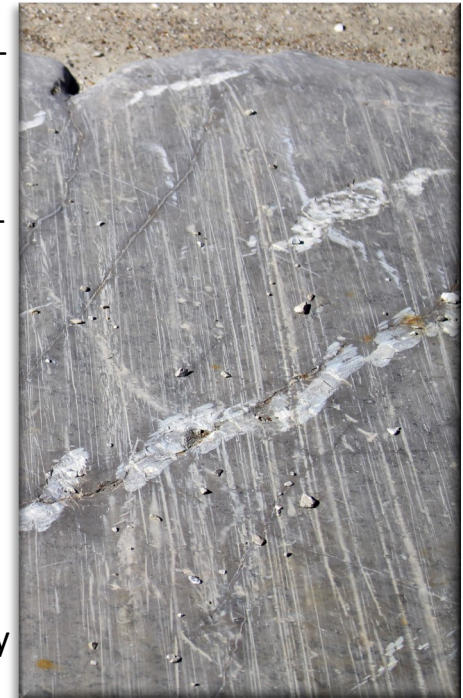
Each of the limestone members was deposited in a slightly different environment (deeper water, muddier water, higher salinity, etc.) so each unit displays specific characteristics and is quarried for specific uses (see **Quarry Products** on page 4). Many animals lived in specific environments, so their fossils are found in specific rock units. To find these fossils it is helpful to ask an experienced collector which beds in what portion of the quarry are the best rocks to examine.

millions of years	SYSTEM	GROUP	FORMATION	MEMBER
315	PENN.		Caseyville	
375	DEVONIAN	CEDAR VALLEY	Coralville	Iowa City
				Cou Falls
			Little Cedar	Rapid
				Solon
380		WAPSI-PINICON	Pinicon Ridge	Davenport
				Spring Grove

Stratigraphic Units at the Klein Quarry

During the last 2½ million years giant ice sheets moved south from Canada and across Iowa many times. As they moved these glaciers scoured the landscape. Rocks frozen into the base of these glaciers scraped and gouged the limestone, leaving scratches called glacial striations.

Some spectacular examples of these glacial striations have been found at the Klein Quarry (see photo).



glacial striations

2.

The Rocks at Klein Quarry

lithographic

bedded

fossiliferous

limestone

rocks composed of calcium carbonate grains, crystals, and fossils



- very fine grained
- few fossils



- thick to thin beds



- fine to coarse grained
- many fossils

chert

very fine-grained quartz crystals in nodules that replaced limestone

chert in limestone



sandstone

rock composed of sand grains cemented by calcite, clay, etc.

sandstone with tree fossil



- visible sand grains

shale parting between limestone beds

shale

rocks composed of compressed silt and clay particles



- very fine grained
- splits in thin layers

3.

River Products Co. Quarry Products



At River Products Co. we produce, market, & supply aggregates from five (5) quarries, two (2) sand & gravel operations, & three (3) stone yards.

We will transport materials & provide haulage service from all our sites.

<https://www.riverproducts.com/>

QUARRY & STONE YARD PRODUCTS

Roadstones
 Revetment Stone
 Backfill & Base Materials
 Manufactured Stone – Sand
 Sub-Base Materials
 Asphaltic Cement Concrete Aggregates
 Porous Backfill Material
 Septic System Filtering Stone
 Pipe Bedding Material
 Radon Filter Material
 Cover Aggregate
 Portland Cement Concrete Aggregates
 Clean Ballast Stone
 Agricultural Limestone
 Gabion/Erosion Stone
 Macadam Stone Base Material



SPECIALITY PRODUCTS

Crushed Granite
 Various Oversize Materials
 Crushed Quartzite
 2" x 4" Clean Stone
 Pea Gravel
 4" x 6" Clean Stone
 Granite Boulders
 4" x 8" Clean Stone

SAND & GRAVEL PRODUCTS



Portland Cement Concrete Sand
 Asphaltic Cement Concrete Sand
 Commercial Concrete Sand
 PGA Golf Course Trap Sand
 Fill Sand

River Products Company, Inc.
 3273 Dubuque Street N.E. P.O.
 Box 2120
 Iowa City, Iowa
 52244-2120

4.



The Fossils at Klein Quarry

corals

solitary

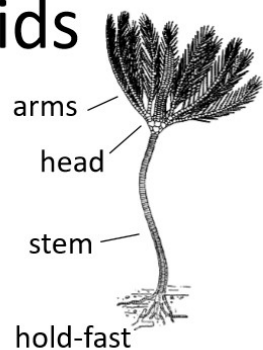


colonial



colonial coral
photo from Iowa Hall diorama

crinoids

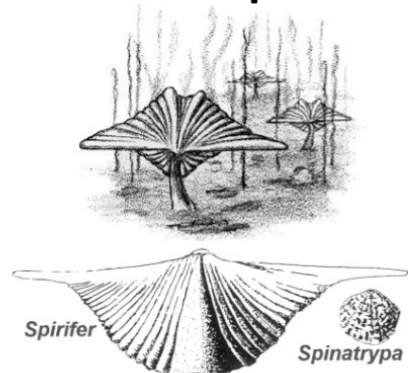


fossil crinoid
stem segments

crinoids
photo from
Iowa Hall
diorama



brachiopods



fossil brachiopods



brachiopods
photo from Iowa Hall
diorama

5.

trilobites



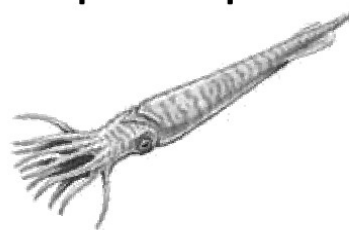
trilobite
photo from Iowa Hall diorama



fossil
trilobites



cephalopods



fossil cephalopod



cephalopod
photo from Iowa Hall diorama

fish



fossil fish tooth



fossil fish plate



fish - photo from Iowa Hall diorama

bryozoans



fossil
bryozoans



bryozoan - photo from
Iowa Hall diorama

6.

The Minerals at Klein Quarry

calcite (CaCO_3)

- limestone is made of small calcite crystals
- calcite can be scratched with a knife



cleaved (broken)
calcite crystals



calcite crystals

dogtooth
calcite crystals



pyrite (FeS_2)

- pyrite is gold to brown in color
- has cube-shaped crystals
- smells of sulfur if scratched
- pyrite is also called “fools gold”



pyrite crystal



pyrite on limestone

millerite (NiS)

- millerite has silver-gold needle-like crystals
- it is very rare but found at Klein



millerite
crystals on
limestone

sphalerite ($(\text{Zn}, \text{Fe})\text{S}$)

- sphalerite has shiny black crystals
- light yellow grains when scratched



sphalerite



sphalerite on limestone

7.

Cleaning Rocks, Fossils, and Minerals

It is a great feeling when you find some cool new specimens of rocks and fossils to add to your collection. Now that you've got them home, you want to make them look their best, and you can have more fun rediscovering them by cleaning and preparing them. There are many methods for cleaning and preparation, by hand and by using a variety of tools that are available. Depending on your fossil and locality where it was found there are many different techniques used in cleaning and preserving them. Before cleaning your important fossils do a visual inspection of them, check for stress marks, cracks and areas of poor preservation. Avoid putting extra pressure on those areas (cracks) while you start cleaning.

1. Start by removing the large foreign matter, such as dirt, dust, or vegetation; this can be done with toothbrushes and dental picks, or even nails.
2. After major cleaning is done, soaking the rock or fossil in water and detergent soap for about 1 hour, then go back with a toothbrush to help remove additional foreign material.
3. Dry your fossil in a cool dry place. Never dry a fossil in direct sunlight. Drying a fossil too fast or in direct sunlight can stress the fossil, causing it to crack, and “sun burn” (discolor). Remember, that fossil has not seen direct sunlight in millions of years.

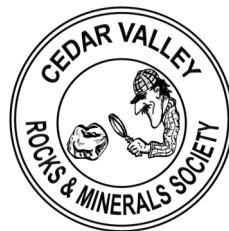


A dental tool is used to remove matrix from a fossil

For advanced collectors a variety of power tools are available to expedite the process of fossil cleaning. Dremel-like grinding tools can be used to carve matrix material away from the specimen. Air-abrade tools blast a stream of abrasive particles that can also carve away unwanted materials and enhance the appearance of your prized fossil or rock.

8.

The Cedar Valley Rocks and Minerals Society



<http://www.cedarvalleyrockclub.org/index.html>

Cedar Valley Rocks and Minerals Society was organized for the purpose of studying the sciences of mineralogy, geology, and paleontology and the arts of lapidary and gemology.

The **Cedar Valley Rocks & Minerals Society** holds an annual **Gem, Mineral and Fossil** show the **4th weekend of March**. The show features rock, fossil and mineral dealers, exhibits, presentations, silent auction, raffles, and children's activities.

Cedar Valley Rocks & Minerals Society meets monthly

- From September through May (except December), meetings are held at 7:15 on the third Tuesday of the month at the Hiawatha Community Center 101 Emmons St, Hiawatha, Iowa.
- Meetings include a program on a rock-related topic, refreshments and social time, and a short business meeting. Families take turns bringing refreshments. The December meeting is a holiday party, usually a potluck, held at the Hiawatha Community Center on the 2nd Tuesday of December.
- June, July and August meetings are potlucks at various area parks.
Check June Newsletter on CVRMS website for summer picnic locations.

The 2019 Show will be held March 23rd-24th at Hawkeye Downs in Cedar Rapids, in conjunction with the **2019 American Federation of Mineral Societies National Show** and the **2019 Midwest Federation of Mineralogical & Geological Societies Annual Show**.



June 2017 CVRMS picnic and pot luck.

9.

TAKE A KID OUTDOORS

be FREE - be WILD - be FEARLESS

<http://takeakidoutdoors.org/>

MONTHLY EVENTS

Come and Learn to Ice Fish with TAKO - Iowa River Landing Wetland Park, Iowa City
January 24
Freeze Fest with TAKO! - Terry Trueblood Recreation Center, Iowa City
February 10
Tracks and Trails - Rotary Camp Park, Coralville
March 24
Shed Hunt - Earth Day Celebration - Creekside Commons Park, North Liberty
April 20
Seize the Carp! - Terry Trueblood Recreation Center, Iowa City
May 5
Free Fishing - Liberty Centre Pond, North Liberty
June 2
Rocking Rocks and Fossils - Klein Quarry, Iowa City
July 14
Moon Walk and Star Party - Penn Meadow Park, North Liberty
September 22
Pumpkin Party! - Johnson County Poor Farm & Asylum, Iowa City
October 20
The Gobble Wobble Autumn Hike - Rotary Camp Park, Coralville
November 17
Winter Wetland Walk with Elves - Iowa River Landing Wetland Park, Coralville
December 1
Jingle Bell Trot 5K Fundraiser - Lower City Park, Iowa City
December 8

Schedule is tentative so please check our Facebook page and website for schedule updates and cancellations.



JOIN TAKO FOR ENDLESS OUTDOOR FAMILY-FOCUSED EVENTS!
FOR MORE INFORMATION GO TO TAKEAKIDOUTDOORS.ORG
FACEBOOK TAKE A KID OUTDOORS IOWA
INSTAGRAM TAKOIOWA

10.