

## COMMUNITY SERVICE: ROCK AND FOSSIL PRESENTATION

By Nancy Akins

On June 6, I presented a fun and educational Rock & Fossil show for the children, grandchildren, and residents at the Cotner Center. About seven children and more than 20 adults attended. The children enjoyed hands-on looks at fossils including megalodon and shark teeth, trilobites, coprolite (dino poop), and petrified wood. Scratch and sniff rocks (sulfur) were passed around and they all guessed what it was. There were some pretty funny answers, but fireworks or gun powder was the usual answer. Nature's only magnet (lodestone) was compared to man-made magnets. In addition, it took a joint effort to erupt the ever popular baking soda and vinegar volcano (igneous rocks). As much fun as the rocks and fossils might have been, watching the children was more fun.



The volcano. (Photo by Pat Akins, Sr.)

## ANCIENT BIRD WITH BEAK AND TEETH

Excerpted from May 2, 2018 Reuters news article by Will Dunham. Submitted by Allan Gossman.

A primitive seabird that prospered about 85 million years ago along the warm, shallow inland sea that once split North America boasted what scientists are calling a surprising blend of traits from its dinosaur ancestors and modern avian characteristics.

Four new fossils of Ichthyornis, which had both a beak and teeth and lived a lifestyle like modern gulls, offer striking evidence of this Cretaceous Period bird's important position in avian evolutionary history.

Ichthyornis fossils were first unearthed in the 1870s, but the new finds from Kansas and Alabama chalk deposits reveal far more than was previously known. Ichthyornis was the size of a tern, with a two-foot (60-cm) wingspan, and probably ate fish and shellfish.

Birds evolved from small feathered dinosaurs. It appears Ichthyornis was a strong flier, its body streamlined, simplified and adapted for flight like modern birds. Despite its birdlike body and wings, it had almost a full set of dinosaurian teeth and strong jaw muscles. Its sharp teeth probably would have assisted in holding onto slippery marine prey, while the incipient beak at the tips of its jaws probably would have allowed it to manipulate objects with fine dexterity and preen its feathers.



Artist's impression of Ichthyornis. Drawing signed by Michael Hanson.

## GOLDEN EARTHQUAKES?

Excerpted from article in Geologyin.com. Submitted by Martin Dougherty

Pressure changes cause precious metal to deposit each time the crust moves. It is common knowledge that veins of gold are formed by mineral deposition from hot fluids flowing through cracks deep in Earth's crust. But a study published in Nature Geoscience<sup>1</sup> has found that the process can occur almost instantaneously during an earthquake.

The process takes place along 'fault jogs', sideways zigzag cracks that connect the main fault lines in rock. When an earthquake hits, the sides of the main fault lines slip along the direction of the fault, rubbing against each other, but the fault jogs simply open up.

When mineral-laden water at around 390°C is subjected to a radical pressure drop, the liquid rapidly vaporizes and the minerals in the now-supersaturated water crystallize almost instantly, a process that engineers call flash vaporization or flash deposition. The effect is sufficiently large that quartz and any of its associated minerals and metals will fall out of solution. Eventually, more fluid percolates out of the surrounding rocks into the gap, restoring the initial pressure. Because of the time lag, a single earthquake can produce an instant (albeit tiny) gold vein.

Perhaps prospectors will be able to use remote sensing techniques to find new gold deposits in deeply buried rocks in which fault jogs are common.

A seismologist at UC Berkeley believes that this finding could assist in a study to predict future earthquakes and aftershocks.