



## Arizona Rocks 46

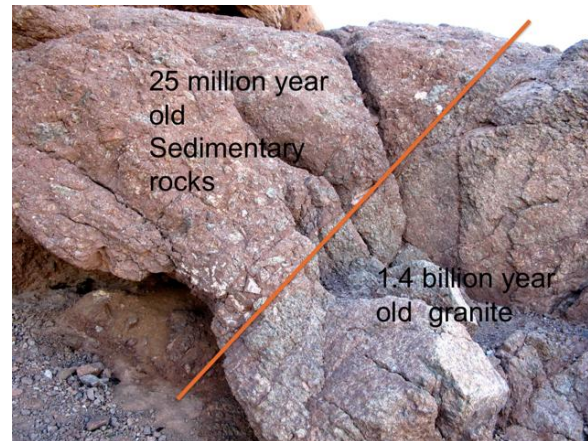
Text and photos by Ray Grant

In the Phoenix area there are very old rocks and relatively young rocks so there is a large time gap with no rocks present, the “great unconformity”. Erosion has removed any rocks that were present in the area during the time gap.

A good place to see this unconformity is at Hole-in-the-Rock in Papago Park. If you go on the trail leading up to the hole you start on granite that is around 1.4 billion years old and you cross the unconformity to sedimentary rocks that are about 25 million years old, a time gap of 1.4 billion years.

The rocks making up Hole-in-the-Rock are breccias and sandstones deposited about 25 million years ago as landslides, debris flows and by streams. The breccias contain large angular fragments that were carried down a mountainside as slides and flows. There are a few finer grained sandstone layers representing deposition from flowing water. The same rocks can be seen on Camelback Mountain, the granite is the body and the sediments are the head of the camel. After the deposition of these rocks this area was part of the Basin and Range faulting and the present day configuration of mountains and valleys in the area formed.

The Hole is a geological feature called a tafoni. It forms when one of the breccia fragments falls out leaving a small hole behind. When it rains, water collects in the hole and because it stays wet longer in the hole it weathers faster than the outside and the hole gets larger. There are tafoni at Hole-in-the-Rock, the other hills in Papago Park and the Head of Camelback. The holes keep getting larger and the Hole-in-the-Rock went all the way through the hill.



Unconformity at Hole-in-the-Rock in Papago Park



Hole-in-the-Rock a tafoni in Papago Park, the unconformity is on the other side



Inside Hole-in-the-Rock, note the large rock fragments in the floor and ceiling