



Petrified Forest

Imagine that you are in a grove of redwoods, some millions of years ago, with strange creatures scurrying around under a dense growth of trees and ferns. Smoke has been sighted coming from the towering volcano to the northeast, and a few earthquakes have rumbled through the forest in the past days, but nothing else is unusual. Suddenly, a puff of smoke arises from the side of the volcano, growing larger and larger in seconds and towering upward, shooting streamers of ash and bombs of lava outward.



A thundering noise starts, slowly at first then deeper and deeper as the cloud rises. A shock



accompanies the sound and you realize that the cloud is moving down the slope, faster than an avalanche. A wind starts also and the trees lean towards you, away from the oncoming cloud. You hear cracking of tree trunks and limbs are falling all around. You feel and smell hot sulfurous gas. Suddenly things around you start bursting into flame. The sky darkens and you are blasted by the wind and tiny shards of ash. Trees are leaning toward you, cracking at the base and crashing to the ground. In an instant, all is hot, flames surround you and the forest is laid out on the ground, trunks pointing towards the volcano. The wind slows down and a fine rain of water and ash

follows the cloud. Small and large fragments of cooling lava fall from the sky, burying the trees with a blanket of ash. *(NOTE: it is believed that the great forests that are now revealed in the Arizona Petrified Forest National Park were covered very quickly with volcanic mud, which meant that the logs were virtually unaffected by rot prior to the start of the petrification process. This explains the high levels of detail visible in fossils from this area).*

Then all is still, the violence of the explosion gone, and more ash is falling, smaller now, from a high cloud from the rumbling distant volcano. For days and weeks, the eruption continues, with more layers of ash burying the prone forest. Streams erode the surface, depositing gravel in their channels. Glassy lava flows erupt from domes of sticky lava. For perhaps a million years, more eruptions lay down ash, lava flows and ash with glass so hot that it is welded into hard layers.

Time passes and you remain buried with the logs of the forest. The ground is now saturated with water containing dissolved silicon and oxygen, or silica, from the overlying ash. This silica is present in molecular form, as any submicroscopic particles which are carried down by water through the ash toward the buried forest. **One by one the molecules of silica replace the molecules of the wood, turning wood to solid silica, solid quartz, solid stone - amazing to contemplate!**



Very slowly, over several million years, the mountains are pushed upwards, the Coast Range is built, by pressures along the San Andreas Fault to the west. The flank of the volcano starts to erode and rivers and countless streams wash broken rock into adjacent valleys and to the sea. Steams cut deeper and deeper until the forms of the volcanos are gone, mere stumps of their former selves. You watch the landscape change to rugged hills and a high mountain forms to the east on the hard remains of welded ash flows. Native Americans roam the woods and start to pick up the stone remains of trees to use as tools. Over the generations that follow, the sections of fossilized logs and make a ready supply of building material for the local people.



Petrified Forest in Arizona was set aside as a national monument in 1906 to preserve and protect the petrified wood for its scientific value. It is recognized today for having so much more, including a broad representation of the Late Triassic paleo-ecosystem, significant human history, clear night skies, fragile grasslands ecosystem, and unspoiled scenic vistas.



Scientific studies are on-going at the park. Paleontologists find new fossils, including new species of plants and animals, each year. Biologists study living plants and animals, including vegetation surveys and reptile, amphibian, and mammal projects. Archeological site monitoring is on-going. Air quality, weather, and seismic monitoring stations constantly generate new data.

The park is a huge attraction for tourists and although fossils are protected by law, sadly several tons of petrified wood is stolen from the park each year. This is despite the fact that specimens of equal quality are available for sale legally from private landholders outside the park boundaries, at very reasonable prices.

These petrified wood fossils are estimated to be approximately 120 million years old.