

Petrified Forest

National Park
National Park Service
U.S. Department of the Interior

Trees to Stone



What is this strange, beautiful rock? Where did it come from? How was it formed? These questions and many more arise when we talk about petrified wood.

Petrification is a mysterious process that man has been unable to copy even with today's technology. At Petrified Forest National Park these strange rocks are covered with splashes of bright red, yellow, green, blue and black, and they have puzzled mankind for centuries.

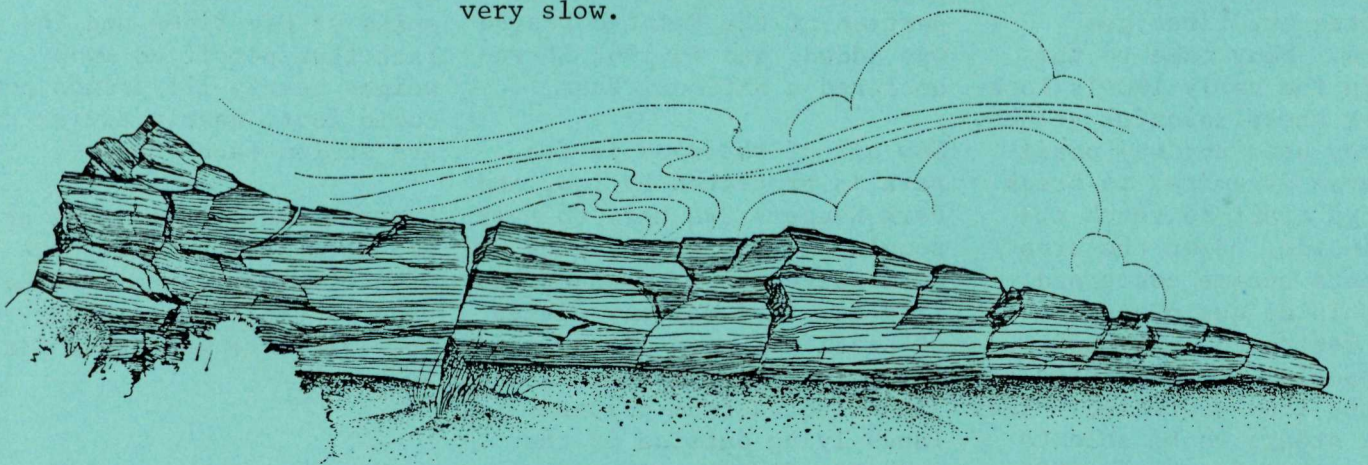
The ancient Indians of this area used and enjoyed this "wood turned to stone". They made tools and arrowheads from it, they built some of their homes with it, and they traded it for shells and other special things that were not found nearby. The early Navajo Indians believed the petrified logs were the bones of a giant monster, named Yietso, whom their ancestors killed when they first came to the area.

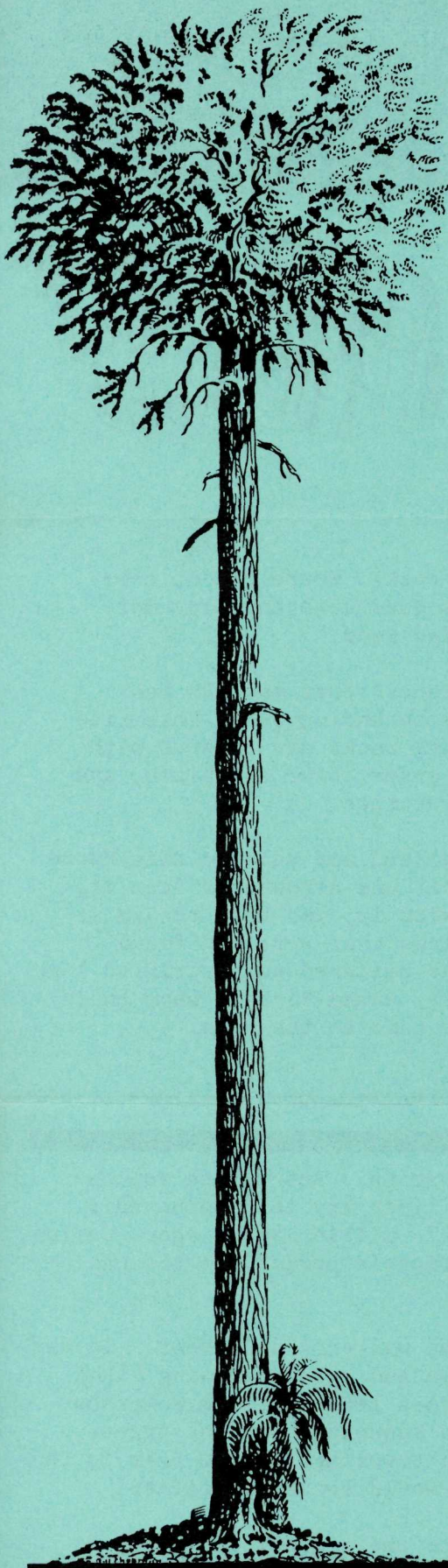
PETRIFICATION

Today we have a different explanation. But before you can understand the process you must first try to imagine this part of the world as it looked 225 million years ago. Geologists call this time the late Triassic period, or the beginning of the Age of Dinosaurs.

Northeastern Arizona at that time was very different. It was a vast floodplain with lush ferns and cycads growing along the many streams. Along the slopes leading to this marshy area were large trees similar to sequoias and pine trees. These trees were very tall, some towering 200-250 feet in the air! These were the trees that would become petrified.

Gradually the trees died, fell to the ground, and began to rot away. Later the slow moving streams washed the logs into the swamp below. Along the way the small branches, roots, and bark broke off leaving only the trunk and larger branches. Soon the trees reached the swamp and sank to the bottom where they were quickly covered by silt and clay. Pressed under this ever-growing layer of mud the trees received very little oxygen, and without oxygen, decay was very slow.





At this same time many volcanoes were erupting throughout the Southwest. Each volcano sent its ash high into the air. The ash settled all over the land and some came to rest in the marsh.

Volcanic ash contains silica. Silica is common in many rocks, and forms deep inside the earth at very high temperatures and pressures. When the silica in the volcanic ash reached the earth's atmosphere it became chemically unstable. Then it was able to combine with the air and the murky water to form a silica solution. This silica and water mixture slowly seeped through the logs buried deep in the mud. Gradually tiny microscopic quartz crystals formed inside the wood cells and the logs were slowly petrified.

Sometimes insects or decay left large cracks in the logs. Here the growth of the quartz crystals was not limited by the tiny wood cells, so larger crystals of amethyst, smoky quartz and other semi-precious gems formed. Iron, manganese and carbon often seeped in along with the silica and they created the spectacular colors in the wood.

ADDITIONAL CHANGES

Silt and mud continued washing into the area for thousands of years, leaving the newly petrified logs buried 1500 feet below the surface. Then, roughly 60 million years ago, the area began to change. The climate became drier and forces deep inside the earth pushed the land up nearly a mile. The weight of the overlying rocks and the earthquakes during this time broke and cracked many of the logs.

Rains began to melt away the many layers of soft rock that had been hiding the petrified logs for so long. The land slowly began to look like what we see today. Storms still eat away the rocks surrounding the petrified wood. More petrified wood lies hidden. Eventually it may all be exposed.

Petrified wood is found in every state and in several countries, so why is this area so special? Petrified Forest National Park has the largest known concentration of petrified wood in the world. These fossilized trees are much older than most, and the petrified wood is also more colorful than most petrified trees.

YOUR NATIONAL PARK

It was these bright colors, and the crystals found in the cracks of the logs, that attracted the first gem hunters. Many came to this area in the early 1900's looking for these colorful stones, and they used any way possible, even dynamite, to break the logs apart to reach the gems inside. Soon the area residents became concerned that this unique place was being destroyed by thoughtless people, so they tried to have the area protected. They wanted others to be able to see these wonders. In 1906

President Theodore Roosevelt established Petrified Forest National Monument. Later, a portion of the Painted Desert was added, and in 1962 it was declared a National Park.

Now all of the wood in the park is protected by law, and Park Rangers are here to help people understand why they must leave the wood where they find it. You may buy pieces of petrified wood if you visit the park, but all of this wood is collected from private lands lying outside of the park boundaries. There are

severe penalties for taking the beautiful wood chips and stones from the park. In spite of big fines and the fact that petrified wood weighs nearly 175 pounds per cubic foot, nearly twelve tons are stolen each year.

Everyone must help if we are going to protect this area so that other children and their parents can come to enjoy this special place and learn its secrets.