

Petrified Wood as Viewing Stones

Text and Photos by Tom Elias, USA



Above: The prominent left-facing side branch on this northwestern Chinese stone from Xinjiang province makes a striking and elegant viewing stone. It stands 41 cm tall including base, 14 cm wide, and is 7.5 cm deep at its widest points. The hand-carved, walnut wood base was made by Patrick Metiva. (Elias & Nakaoji Collection)

Tree and wood fragments that have turned into stone millions of years ago have been collected and admired as natural objects of beauty and for their suggestive forms for centuries in China. They are an important part of Chinese stone appreciation. Some stone enthusiasts in western countries have the mistaken belief that fossils should not be included with the other stones in Chinese and Japanese stone appreciation circles. This article presents evidence that petrified wood occupied an important place in Asian stone appreciation and should be included in North American and European concepts relating to viewing stones.

Petrified woods are stones, not mummified pieces of wood that have been preserved through desiccation, freezing, or manipulation techniques associated with human remains. Instead, they are actually stones that have replaced wood. Petrified wood is the product of a long, slow replacement process whereby the organic material comprising wood is gradually replaced by dissolved inorganic minerals and other compounds while retaining the original structure. This happens when mineral rich waters fill the cells and pore spaces in wood and slowly replaces cell walls with silica, quartz, chalcedony (a variety of quartz), calcium carbonate, and many other minerals and metals. Certain environmental conditions are required for this to occur. These include the rapid burial of wood in silica rich, fine-grained sediments and immersion in water. Relatively low temperatures to prohibit fungal degradation of the wood and a pH of 6 to 9 are ideal for this process. Readers are referred to the reference *Ancient Forest, A Closer Look at Fossil Wood*



Top left; Large petrified trees used as landscape features at the National Viewing Stone Museum in Kunming, Yunnan province in southwestern China.

Top right; Interior of fossil wood shop in stone market in Kunming, Yunnan province, China.

Bottom right; This rare fossil wood was once a large twin trunk tree. The stone is approximately three meters high. This stone was for sale at the International Stone and Mineral Show in Chenzhou, Hunan province, China.



by Daniels and Dayvault for more detailed information and numerous photographs.

Historical evidence that stones that have replaced trees, stumps, and wood fragments were appreciated for their inherent beauty is well documented. One of the earliest references is found in *Yulin Shipu* (Stone Catalog of Cloudy Forest) published by the twelfth century stone collector Du Wan. This work was published in 1133 AD according to leading Chinese scholars. One hundred and fourteen stones appreciated for their beauty were listed in this un-illustrated work. "Pines transformed to stone (Song hua shi) was number 48 in the *Yulin Shipu*. At that time, people believed that lightning striking a pine grove resulted in the petrification of the trees according to the text describing this stone. This belief persisted until the late nineteenth century when more accurate understandings of the correct processes emerged. Du Wan noted that natives used petrified wood for chairs and those smaller pieces looked well when displayed upon stands.

Petrified wood is also included in Liu Youlin's Ming dynasty *Suyuan Shipu* (Suyuan Stone Catalog), one of the earliest comprehensive illustrated books on Chinese stone appreciation published in 1613. Mowry, in his 1997 book *Worlds Within Worlds*, noted that petrified wood had long been prized as a precious substance, although he was of the opinion that this stone type had lost some of its popularity during the Ming and Qing dynasties. Kemin Hu's book, *Scholar's Rocks in Ancient China*, on Liu's *Suyuan Shipu* stated that fossil wood was one of the important stones types. Hu has incorporated nine different illustrations of petrified wood in her earlier work, *The Spirit of Gongshi*, on Chinese scholar's rocks.





A petrified wood stump on a granite pillar and a second long narrow piece of petrified wood displayed in a stone pedestal-type container was illustrated in David Ren's excellent reference on Chinese Imperial Rocks. Furthermore, Ren published two examples of petrified wood in his other important work, *Classical Chinese Rocks*.

Stones that have replaced wood are important elements in the Chinese viewing stone world in China today, just as they were during the ancient dynasties. As in past time, large stones from tree trunks are used today as garden stones, while smaller fragments are displayed indoors in hand carved wood bases or small bronze or stone containers.

Petrified woods occur in many regions of China, although areas in Mongolia, the Gobi Desert, and south-western China are rich in major deposits of large fossil trees, large tree trunks, branches, and smaller fragments. In stone markets throughout China ancient petrified woods of all sizes and types are common. Fossil logs ranging from one to several meters long are available for purchase. Smaller pieces, polished and natural, suitable for indoor use are also readily available.

Japan has a relatively poor fossil mega flora and mega fauna compared to China. This is due to the way which

Facing page, Top left; An arch stone formed by the permineralization of an older, degraded small tree trunk or large branch. This stone was found in the Yuha Desert in southern California by Al Nelson.

Facing page, Top right; A small stone with the appearance of a cathedral or altar resulting from the loss of much of the original wood before the mineralization process that replaced the wood with stone. The narrow central ridge divides the stone into a distinct left face and a right face. It measures 10.5 cm high with base, 11 cm wide, and 10.5 cm deep. It has an inexpensive painted base made from soft wood. (Elias & Nakaoji Collection)

Top left; Many vendors in China will polish fragments of petrified wood such as this piece in the belief that it makes the stone more attractive. This stone with its rich reddish brown colors likely appeal more to mineral and gem collectors than to viewing stone enthusiasts. The stone and base is approximately 30 cm high. (Rich Wong Collection)

Bottom right; American petrified wood can be displayed in a typical Japanese style with sand in a suiban, if the stone has the appearance of a landscape scene. This rugged fragment of Arizona petrified wood measures 10 cm high, 20 cm wide and 15 cm deep. The suiban, made by Jim Barrett, is 4 cm high, 47 cm wide and 35.5 cm deep. (Elias & Nakaoji Collection)





Bottom left; This light colored trunk or large branch has two, possibly three, side branches that once extended from a node near the base. Layer upon layer of wood rings have weathered away to reveal multiple concentric inner layers. These layers of stone correspond to the tree rings or annual growth rings. This stone was found at Lake Johnson in California. (Al Nelson Collection).

Bottom right; The deep, rich chocolate brown enrich this small piece of stone purchased in a shop in Alashan in the Inner Mongolian Autonomous Region of China. The base, a modified natural root, is finished in a similar color and pattern to the stones making it appear as a natural extension from a tree trunk to roots. This stone measures 13.5 cm high including base, 12 cm wide, and 11 cm deep. (Elias & Nakaoji Collection)



Japan was formed geologically and to environmental conditions that were not as favorable for petrification. Petrified wood is not part of the Japanese *suiseki* tradition, although other types of fossils may occasionally be displayed as *suiseki*. Since stone enthusiasts in Europe and North, Central and South America have been strongly influenced by Japanese *suiseki* concepts, it is not surprising that many western stone collectors were hesitant to include and display petrified wood.

Just as China likely has the richest deposits of mega flora and mega fauna in the world, North America also has very rich deposits of fossilized plants and animals. Major petrified wood deposits, especially in the western United States are well known. The Petrified Forest National Park in Arizona and the John Day Fossil Beds National Monument in Oregon are two prime examples of significant sites that have been formally recognized and protected. This is a clear indication of the importance of petrified trees and wood fragments in American values and aesthetics. This national park and national monument can be compared to the equally amazing Stone Forest (Shilin) South of Kunming in Yunnan Province. This massive forest of sharply rising limestone formations had its origins 270 million years ago when it was

underwater. The Stone Forest has been revered by the Chinese since the Ming dynasty and is now recognized as a UNESCO World Heritage site.

Petrified wood is valued more by gem and mineral collectors in the United States and many European countries than by western viewing stone and *suiseki* enthusiasts. These stones, particularly stumps and highly polished rounds cut from stumps, have been collected and displayed by rock and mineral collectors for many years. However, this is beginning to change among the viewing stone and *suiseki* enthusiasts as they recognize these as stones and become familiar with the long history of petrified wood that has been appreciated solely as beautiful, natural objects of nature.

Today, stones that have replaced wood fragments are selected for their shape, color, texture, and for resemblance in detail to the original wood pieces. Natural pieces are preferred to the highly polished, glossy, glass-like quartz examples seen in many stone markets. Fragments bearing traces of side branches, nodes, or other interesting folds or patterns are of greater value and in greater demand. But this was not always the case. In the earlier examples, during the Song dynasty and even into Qing dynasty, surviving example of petrified wood as viewing stones

were straight sections of tree trunks often displayed out of doors in stone bowls or on stone pedestals. This may have some relationship to the inaccurate belief that they were formed when lightning struck trees. Regardless, petrified wood makes attractive viewing stones, either as large pieces used as outdoor garden stones or smaller pieces used indoors in wooden bases.

Only recently have viewing stone enthusiasts in North America begun to realize that North American petrified wood makes attractive and suitable viewing stones. There are no logical reasons for excluding petrified wood specimens from stone appreciation circles. Actually, all evidence documents their long standing utilization in Chinese stone appreciation. Thus, stones formed from different woods should become an integral part of the array of stones collected, displayed, and appreciated in North America and Europe. 🌲



Facing Page:

Top left; This stone formed from a strongly weathered degraded stump is displayed in an upright position to resemble some of the strongly vertical formations in the Yellow Mountains in Anhui province in eastern China. The stone measuring 30 cm high, 17 cm wide, and 8 cm deep was collected in San Bernardino County in southern California. The base was made from the wood of the Madrone tree (*Arbutus menziesii*) by Patrick Metiva. (Elias & Nakaoji Collection)

Top right; This large, curving irregular stone was formed from a sizeable tree trunk. Although a stone, the curving lines suggest movement and shows how the original wood layers were formed. Stone replacing bark can be seen in the lower right portion of this specimen. Collected in San Bernardino County, California, this stone measures 63 cm high, 30 cm wide, and 15 cm deep. (Elias & Nakaoji Collection)



This Page:

Top right; This is a striking vertically oriented stone with a natural partially shiny but unpolished finish and a strong right-sided branch remnant. The hardwood base is finished in a typical northern style. The stone including the base is 48 cm tall, 14 cm wide and 16 cm deep. (Elias & Nakaoji Collection)

Bottom left; Displaying this arch-shaped fossil wood fragment in an upright position creates the impression of a large wave about to crash into a beach. As a result, the owner named this stone "Tsunami." This stone was found by Patrick Metiva along the Cedar River in the state of Washington in the U.S. Metiva also carved the base for this stone. It measures 20.3 cm high, 11 cm wide and 8.6 cm deep. (Patrick Metiva Collection).