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An Educational Guide
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Turquoise: Valued for thousands of years

A stone of the ancient Egyptians, Native Americans and Chinese

By Ann Haver-Allen
Earth Odyssey Editor

Many ancient civilizations believed that the power of the Earth's energies were absorbed by rocks and minerals, which in turn endowed those rocks and minerals with vital healing powers that could then be transferred to the possessor.

If so, Arizona must be truly magical because ancient volcanic activity produced a myriad of gems and minerals throughout the state making it a rock hounder's paradise.

The stone most frequently associated with Arizona is turquoise. In fact, turquoise is the official state gemstone. Today, however, only two turquoise mines are operating in the state: Colbaugh Processing Inc. in Kingman and the Sleeping Beauty mine in Globe.

The Colbaughs have been mining turquoise in Kingman for four generations now. It all began when S.A. "Chuck" Colbaugh obtained the turquoise mining concession in 1962. The turquoise mining takes place in the tailings area of The Mineral Park Mine.

The most famous peaks in the Cerbat Mountains that contain turquoise are Ithaca Peak and Turquoise Mountain, formally called Aztec Mountain or Aztec Peak. Ithaca Peak has fallen victim to copper mining and no longer stands.

But Chuck Colbaugh was not the first to mine turquoise in the Cerbat Mountains 14 miles northwest of Kingman. Archaeological evidence, much of it discovered by Colbaugh himself, indicates that prehistoric people mined turquoise here 1,500 years ago.

Colbaugh uncovered a cache of more than 10,000 stone hammers in ancient trenches and tunnels. The Hohokam hammers date to 600 A.D., and were used for mining, polishing and finishing turquoise. The hammers are on display at the Mohave Museum of History and Arts and the Arizona State Museum in Phoenix.

Colbaugh also found occurrences of charcoal and skin water containers suggesting that the rock was first heated with fire, and then cooled suddenly with water. This would cause fracturing. Using the hammers and picks, the Indians would cut the turquoise from the rock.

"Archaeologists found turquoise in burial sites in Mexico," said Chuck's grandson, Marty Colbaugh, who now runs Colbaugh Processing Inc. "Chemical analysis proved a 100 percent match to turquoise from our mine. Those burial items were more than 1,500 years old, so turquoise was being



Photo by Ann Haver-Allen

Josh Colbaugh is the fourth generation to operate Colbaugh Processing Inc. in Kingman. Josh explains the mining, cleaning and sorting processes that are involved in producing turquoise.

traded as far south as Mexico City centuries ago. That makes this mine one of the oldest known mining sites in North America."

ABOUT TURQUOISE

The name turquoise comes from a French word that means "stone of Turkey," from where Persian material passed on its way to Europe. The world's oldest known turquoise mines are in Iran (formerly Persia) and the Sinai Peninsula.

In the United States, Arizona is the most important producer of turquoise, although California, Colorado, New Mexico and Nevada also produce smaller quantities.

People generally think of turquoise as a blue stone, but actually, soil composition determines the stone's color and specific characteristics. If the soil contains lots of copper, the turquoise is blue. If the soil contains lots of iron, the turquoise is green.

Most mines are known for a certain color of turquoise. Persian turquoise is a natural blue, but turns green when heated due to dehydration. It is mined in the Binalud Mountains in Iran.

Sinai turquoise, also called Egyptian turquoise, is green. Under magnification one sees that its surface structure is peppered with dark blue discs not seen in turquoise from other localities.

Turquoise from Arizona's Sleeping Beauty mine is a beautiful robin's-egg blue. In fact, Tiffany used Sleeping Beauty turquoise as a model for selecting the blue of his packaging. Turquoise from Bisbee's Lavendar Pit is deep blue with small black veins and turquoise from Morenci contains pyrite inclusions.

Marty's son, Josh, said turquoise actually occurs in 437 shades, ranging from baby blue to deep green and the Kingman mine produces turquoise in the full spectrum of colors. But turquoise is never white or yellow.

"White buffalo, or white turquoise, is just a marketing name because it is not turquoise," Marty said. "White turquoise is impossible. It simply cannot happen."

He said the same is true for "yellow turquoise," a mineral that has a chemical composition similar to turquoise, but is not actually turquoise.

"Everyone is trying to play games and it makes it difficult for the industry," Marty said. "It hurts our industry a lot. Probably the biggest thing that we have to fight is people lying about what the stone really is. When people don't know how to tell the difference, and once they have been burned, they become afraid to buy anything."

He said the best advice he can offer is to know your jeweler...know who you are buying from.

Today, turquoise is mined in the United States, Mexico, China, Chile, Australia, Afghanistan and a few other locales.

TURQUOISE HISTORY

Turquoise has been valued for thousands of years as a gemstone, and not just by people in the Southwest. Turquoise was valued by many ancient cultures. Archeologists found a bracelet in an Egyptian tomb dating back to 5500 B.C. The bracelet, made of gold, had three turquoise stones set in it. That bracelet is the first known jewelry made using a gemstone.

A perfect example of ancient turquoise artistry is the iconic gold burial mask of Tutankhamen, which is inlaid with turquoise, lapis lazuli, carnelian and colored glass (see photo at right).

The Chinese have used turquoise for 3,000 years or more, at least since the Shang Dynasty. Pre-Columbian Mesoamericans, Persians and Native Americans also used turquoise as an ornamental stone, often used in combination with gold, quartz, malachite, jet, jade coral and shells.

Turquoise, however, is generally a "soft" stone, and therefore, most turquoise needs to be stabilized. Marty said only about 3 percent of the turquoise he mines is hard enough to use without stabilization.

Stabilization means something has been added to the stone to help it hold together (see page 18 for turquoise facts). Stabilizing turquoise is not new.

Historical evidence indicates that ancient Egyptians learned how to stabilize turquoise. An analysis of the stones in the ancient Egyptian bracelet mentioned above indicated that the turquoise had been stabilized using beeswax.

Turquoise was placed in a container of beeswax that was boiled to just before its flashpoint. The beeswax developed a very low viscosity and became very thin. Because turquoise is a porous stone, its natural capillary action drew the beeswax throughout the stone.

The stones were then removed and cooled. As cooling occurred, the beeswax crystallized.

"They were stabilizing turquoise 7,500 years ago," Marty said. "So we are not doing anything that has never been done."

Native Americans would boil turquoise in animal fat.

"Everybody has always tried to impregnate turquoise to strengthen it and bring out its color," Marty said. "Every culture in the world has done something."

But the secrets of stabilizing turquoise—like the formula for making concrete—was lost for centuries. Until 1948 when Marty's grandfather "reinvented" the process.

Marty said his grandfather was watching a friend make memorabilia using scorpions suspended in acrylic. He started thinking about applying the technique to turquoise.

"My grandfather developed the stabilization technique back in 1948," Marty said. "It was the time when plastics were really starting to come out. Grandfather's stabilization development changed the entire gemstone world of turquoise."

Stabilization is a big component of Colbaugh Processing Inc.'s business. They process all the turquoise from the Sleeping Beauty mine, as well as from smaller mines in Nevada and around the world.

"When we stabilize turquoise, we completely dehydrate the stone and replace the water content with an optically clear acrylic plastic," Marty said. "That hardens and brings out the natural color of the stone so that it can be cut and polished."

Josh said it takes two to three months to complete the stabilization process.

"It takes two to three months from the day you dry the stone to the day it's cured," he said. "It's a really involved, lengthy process."

He noted that the processes used by Colbaugh Processing Inc. are all natural.

"We are pretty eco friendly," he said. "We have things tested to make sure we are not polluting the ground. We all work here and we live here, so we want to take care of the environment. We've been 'green' for years... long before everybody else turned green."

MYTHS AND LEGENDS

Turquoise is traditionally considered a stone of spiritual attunement, cleansing, protection and prosperity, and a symbol of the Earth and sky, good fortune and success.

Turquoise is credited with having the ability to detect poisons, danger, infidelity or sickness, all of which are indicated by a change in the color from dark to light. It wards off negativity and protects against the evil eye, reptile bites and diseases of the eye.

Turquoise is a token of protection for physical and astral travel and vision quests. Its grounding force strengthens the user against fear of the unknown by enhancing feelings of trust, kindness, wisdom and understanding. Turquoise attunes the physical to the higher realms, balances the mind and soul and connects with all life. Some cultures consider it a bridge between heaven and Earth.

In ancient Egypt, Hathor was the goddess of sky, love and beauty. She was of the House of Horace and was depicted as a woman with the ears of a cow. She was also the goddess of the desert and the Sinai turquoise mines. Hathor is equated with the Greek goddess Aphrodite and the Roman goddess Venus.

The ancient Egyptians mined turquoise in Persia, modern day Iran. Because of its long tradition with turquoise, the region has numerous myths and legends associated with the beautiful blue stone. A few are:

Hebrew tradition states that Isaac opened the first turquoise mines in Persia.

If a person sees the reflection of a new moon in turquoise, they will soon encounter good luck.

Arabian superstition says turquoise is a lucky stone and has good powers of benevolence.

Turquoise is also associated with the accumulation of wealth and prosperity in the Middle East.

People in Afghanistan, Iran, India and Arabia used to believe that a turquoise stone that changed color was an omen of illnesses or death.

Muslim beliefs say that a change in the color of turquoise indicates a woman had been unfaithful.

Arab writings from the 12th century warned that a pale turquoise stone meant polluted air or a change in the weather.

In this region, it was believed that bladder ailments could be cured by dipping turquoise

See *Turquoise* on page 18

VERSATILE TURQUOISE



Photo by Ann Haver-Allen

Josh Colbaugh shows some turquoise that has been cleaned and sorted.



Photo by Ann Haver-Allen

About half of Colbaugh's turquoise is pulverized, molded and stabilized to make countertops, tiles, mosaics and other products that are sold through a business called Architec Jewel Tile.



Photo by Bjorn Christian Torrissen

Tutankhamen's famous burial mask is on display in the Egyptian Museum in Cairo. The gold mask is inlaid with turquoise, lapis lazuli, carnelian and colored glass.



Photo by Ann Haver-Allen

Architec Jewel Tile offers unique products, like the basin pictured here, formed from turquoise. Gary Marquart, the general manager of Architec Jewel Tile, can be reached at 928-753-3147.

TURQUOISE FACTS

Natural

Natural turquoise is that which comes directly from the mine. It is hard enough to be cut, shaped, polished and set into jewelry.

Stabilized

Turquoise that has been submerged into a stabilizing compound. Turquoise is a porous stone and the natural capillary action draws the stabilizing compound throughout the stone. It is then dried. When thoroughly dried, it can be processed for use in jewelry. The turquoise is not altered during this process. The pores of the stone have been filled with a clear resin that makes the stone usable. This process not only makes the stone stronger, it also stabilizes the color, which will not change over time.

Reconstituted

Reconstituted turquoise is man-made from pulverized pieces of turquoise that are stabilized and compressed with plastic resins to which dye is added. It should be sold as “simulated” or “imitation” turquoise.

Compressed turquoise

Small nuggets are placed in a form and put into a hydraulic press and compressed. It is then stabilized under pressure. Compressed turquoise is still legally turquoise by GIA standards. Colbaugh Processing Inc. calls this turquoise the “boulder look.”



Photo by Ann Haver-Allen

Colbaugh Processing Inc. in Kingman is open for retail sales to the public. The hours of operation at 9 a.m. to 4 p.m. Monday through Friday, or by appointment. For more information, call Marty Colbaugh at 928-565-4650.

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in water and then drinking it. Looking at turquoise could cure eye ailments.

Pre-Columbian America is rich with turquoise legends. It is one of the most important holy stones for protection of the body and soul. Archaeologists have recovered turquoise from burial sites in Argentina, Bolivia, Chile, Peru, Mexico and Central America.

In Navajo mythology, Estsanatlehi was the turquoise sky goddess, wife of the sun. She is also known as Changing Woman or Turquoise Woman.

The Navajo believed that a piece of turquoise was actually a piece of the sky that had fallen to Earth and that it had the ability to connect the Earth and Sky—symbols of the spirit and the body. Turquoise was used in Navajo rain ceremonies, which required the tossing of the stone into a river.

The Apache believed that turquoise combined the powers of the sky and the sea to help hunters and warriors aim accurately.

The Zuni believe that blue turquoise is male and of the sky and green turquoise is female and of the Earth and that turquoise can give protection from demons.

Pueblo Indians thought that its color was stolen from the sky. In Hopi legend, the lizard who travels between the above and the below excretes turquoise. The stone can hold back floods.

For the Aztec, Xiuhtli was the fire deity whose name translates as turquoise Serpent. Xiuhtli was the embodiment of the dry season and the burning weapon of the sun.

He guided the Sun god across the sky and was used as a weapon against the Sun's underworld enemies, the stars and the moon.

Xiuhtli was associated with three elements: turquoise, grass and the solar year, which were all closely identified with fire and solar heat in central Mexico in the Post classic period. A turquoise-rimmed mirror has been found at the Maya city of Chichen Itza, with four fire serpents circling the rim.

European superstitions have long associated turquoise with horses. They believed that turquoise could protect horses from danger and illnesses and protect the rider from any fall that might occur while riding. Europeans of the Middle Ages said that turquoise would lose its color when the wearer contracted an illness and was a gauge of the general health of a person.

Most Eastern cultures regard turquoise as a powerful protector, and in general, a very lucky stone. The religion of the Hindus said that it could accumulate wealth and Tibetans believe that while turquoise can ensure good fortune, it can also guard one's health, and protect against the evil eye.

Healing Stone

Many ancient civilizations believed that the power of the Earth's energies were absorbed by rocks and minerals, which in turn endowed those rocks and minerals with vital healing powers that could be used to heal many types of ailments.

Turquoise has been considered a stone of life and good fortune for thousands of years.

It was believed to have healing properties, was regarded as a holy stone and a good-luck-charm or a talisman.

Persian philosopher Al Kazwini wrote: “The hand wearing a turquoise and using it as a sealing stone, will never be poor.” Turquoise stones were loved as ornaments decorating turbans, often set in a border of pearls, to protect the wearer from the “evil eye.”

Many cultures carried a turquoise stone with them at all times and some Native cultures held the belief that by wearing turquoise the human mind became one with the universe. Turquoise helps us communicate clearly what we want, and to then be able to communicate our desires to others in a way they can understand.

Turquoise is sacred to many Native Americans and has been used for more than a thousand years for protection and healing.

In ancient healing traditions, turquoise has been credited with helping muscle tissue regeneration, alleviating stress and headaches and enhancing immune systems. It was believed to strengthen and tone the body and help improve functions of circulation, lungs and the respiratory system.

A turquoise elixir was used to heal sprained or pulled muscles, damaged or cut tissue and to help strengthen the body to fight off viruses and infections.

The elixir was made by adding a few turquoise crystals to a container of water and placing it outdoors overnight and the following day, allowing it to bask in moonlight and sunlight.

The elixir was then added to bath water

for a beneficial soaking. Soaking a cloth in the elixir and placing it on the forehead was believed to relieve headaches.

Turquoise ground into a powder was mixed in water and drank to cure stomach and gout problems. *Editors note: Do not try this. Turquoise contains copper, aluminum, iron and other metals that can be extremely harmful if ingested in even small amounts.*

Marty cautions about ingesting even small amounts of turquoise.

Old miners, he said, used to stick turquoise to their tongue to determine whether it was natural or chalk. If it sticks to the tongue, then it's chalk; if it doesn't stick, then it's natural.

“Years ago, a lot of miners were having stomach problems,” Marty said. “All the old miners used to pick up small stones and put them in their pockets. One night, a guy dropped a few pieces into his fish tank. Next morning, all the fish were dead. He had the turquoise analyzed and it contained a lot of arsenic. So, he told all the miners to stop licking their turquoise because it was making them sick.”

At Colbaugh Processing Inc., just about everything is done by hand.

“A lot of people wonder why turquoise is expensive,” Josh said. “But we do everything by hand—mining, cleaning, sorting, grading and stabilizing. It probably moves through 20 hands from the beginning to the end of the process.”

All that just to produce a product with which a jeweler can work.