HUI PŌHAKU 'O HAWAI'I
Rock & Mineral Society of Hawai'i, Inc.

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FOSSILS

BY DEAN SAKABE

September's topic is Fossils. We will have a nice talk on fossils by our own cave bear, otherwise known as Keith Kruger. ROAR!

The word fossil comes from the Latin word "fossilis", which means "dug up." Most fossils are excavated from sedimentary rock layers, or rocks that have formed from sediment, including sand, mud, or even small pieces of rocks. Over long periods of time, the small debris is compressed as they are buried under more and more layers of sediment that piles up on top of it. Eventually, they are compressed into sedimentary rock.

Fossils have the same shape that the original item had, however their color, density, and texture vary widely. A fossil's color depends on what minerals formed around it. Fossils are usually heavier than the original item since rocks are heavier than organic materials.

There are six ways that organisms can turn into fossils (1):

1. Unaltered preservation – Organic matter like insects or plant parts are trapped in amber, a hardened form of tree sap.
2. Petrification - Rock-like minerals seep in slowly and replace the original organic tissues with silica, calcite or pyrite, forming a rock-like fossil. This manner can preserve hard and soft parts(2), and so most bone and wood fossils are permineralized.
3. Replacement - An organism's hard parts dissolve and are replaced by other minerals, like calcite, silica, pyrite, or iron.
4. Carbonization (coalification) - Only the carbon remains in the specimen, and other elements, like hydrogen, oxygen, and nitrogen are removed.
5. Recrystalization - Hard parts either revert to more stable minerals or small crystals turn into larger crystals.
6. Authigenic preservation - Molds and casts of organisms that have been destroyed or dissolved.

(1) Russian Trilobite, Wolchow River Basin, Russia

(2) Coprolite, (fossilized turtle doo doo),

MEETING
Wednesday
September 22
6:15-8:00 pm
Makiki District Park
Administration Building

NEXT MONTH
Wednesday
October 20
LAPIDARY

Every Thursday
6:30-8:30pm
Second-floor Arts and Crafts Bldg
Makiki District Park

MEMBERSHIP COSTS 2008

Single: $10.00
Family: $15.00

2010 Rock Show

October 16 & 17 10am-7pm at Outrigger Waikiki Hotel

Contact Keith Krueger at dcavebear@gmail.com for booth information

(3) Mosasaur Jaw Section, Atlas Mountains, Morocco

Here is the process by which bones and teeth (3) turn into fossils:

Sometimes the animals were quickly buried after their death, either by sinking in mud, or by being buried in a sand storm, or dying in a flash flood (or swift river) and are deposited in deep water.

More and more sediment covers the remains, until all of the oxygen has been removed from the animal, which stops all decaying from taking place. The parts of the animals that didn't rot, usually the harder parts likes bones and teeth, are encased in the newly-formed sediment. With these fortunate circumstances, such as no scavengers, a quick burial, not much weathering, these harder parts of the animal over time turn into fossils.

After a long time, water infused with minerals seeps into the bone and replaces the chemicals in the bone with rock -like minerals. The process of fossilization involves the dissolving and replacing of the original minerals in the object with other minerals, and the filling up of spaces in fossils with minerals.

This process results in a heavy, rock-like copy of the original object - a fossil. The fossil has the same shape as the original object, but is chemically more like a rock.

Here is a little bit of knowledge for you folks. Most of the dinosaur skeletons that are shown in Museums are not actually fossils. They are lightweight fiberglass or resin replicas of the original fossils. But I'm still impressed!

Most fossils you see are usually brown or red (or rock colored), why? Well it is simple: most fossils are just plain rocks. The colors come because a fossil is composed of different materials as during the fossilization process; the original atoms are replaced by new minerals, so fossils do not have the same color that the original object had. Fossils come in many colors and are made of many different types of minerals, depending on what the surrounding rock matrix was composed of. When you are in Australia look for the dinosaur bones made of gem-grade opal. Also, some fossils of skin (and other soft body parts), leaves, and algae have been found. Again, the color is not retained during the fossilization process, all that remains today is a rocky model of the original. The only instance in which the original color is retained is instances where the insect in encased in amber.

It is not to say that all of the fossils are sacred to us. In the lapidary world we highly prize fossils. Some of the most brilliant opals have come from cutting opalized clam shells(4) into jewelry.

(4) Opalised Clam Shell, Cooper Pedy, Australia

(5) Petrified Palm Wood, Texas

Similarly, petrified wood is found throughout the country, and actually throughout the world (5). Most of the petrified wood one finds are brown, black, tan, or some shade thereof (6). The petrified wood from Arizona is highly prized, as it is some of the most colorful wood in the world (7). The reds come from iron rich jasper. The yellow from uranium salts. The black is from manganese oxides. Additionally, there are Amethyst vugs within the petrified logs.

(6) Petrified Sycamore Wood

(7) Arizona Petrified Wood

The best place to go to see these logs, and I do mean petrified logs, and not petrified wood, is Petrified Forest National Park, located in eastern Arizona (8). This place is loaded with petrified logs and the remnants of logs where earlier folks blasted apart the logs to get to the Amethyst Crystals which were within the logs.

(8) Petrified Wood "Old Faithful", Petrified Forest, Arizona 9.5' in diameter!

Petrified Pine Cones (9), especially ones from the Patagonia area of Argentina are renowned for their incredible details and colors

(9) Fossilized Pine Cone, Patagonia, Argentina

GEM GLOBE

MAHALO RUSSEL K FOR DONATING THIS BEAUTIFUL GEMSTONE GLOBE AUCTIONED LAST MONTH!

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California Petrified Forest, page 4

Calistoga, California, a town known more for the bottled water, is also home to a couple of California's natural wonders, the first being California's Petrified Forest. In the hillsides west of Calistoga, conditions were just right so that when the giant Redwoods collapsed, they were covered in ash, preventing them from decaying. Instead, the logs slowly mineralized and later agatized. There is a short trail of a mile in length which will take one through the excavated areas where the giant petrified logs have been excavated. Most of the logs are coastal Redwoods (1), with one lone petrified pine tree (2). The "Robert Louis Stevenson" tree fossilized to such degree that one can actually count the rings on the tree.

(1) petrified coastal redwood tree

(2) petrified pine tree 42' long 2' diameter

Five miles from The Petrified Forest, you will find the "Old Faithful of the West" (3). This is a natural geyser which erupts every 40 minutes or so. Each eruption last about 10 minutes, so there is not a very long wait for the next o

(3)

California's Old Faithful

So if one were to start out to Napa early in the morning, make a bee line to Calistoga, check out these two places. When you are finished it should be just about lunch time, which would make your trip back to wine country that much more enjoyable.

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News and Notes, page 5

DOOR PRIZES

Please note that we have instituted door prize drawings at our monthly meetings. Because of Hawaii's gambling laws, these drawings cannot be conducted in the common "raffle" format where tickets are sold. Rather, each *paid* member attending the meeting will receive a drawing ticket upon request. A voluntary donation of $1.00 is requested and encouraged. Drawings will be conducted at the end of the meeting with available prizes awarded in random order. You must be present to win. Please remember: if you win a prize, please bring one to the next meeting. This helps to keep our drawings going. Thank you.

WE HAVE A WEBSITE!

http://pohakugalore.net/Hui_pohaku/Hiu_pohaku_1.html

MAHALO TO MARKUS FOR HELPING US GET OUT OF THE ELECTRONIC *STONE AGE*!

THE METAPHYSICAL PROPERTIES OF INCLUSIONS INQUARTZ
BY JADE EMORY

Quartz amplifies the healing powers of any other mineral which is included within its hexagonal structure.

If tourmaline is included, tourmaline works on balance disorders, epilepsy and inner ear problems, and its power to work on these ailments is increased when tourmaline lives inside a quartz crystal. There is a beautiful yin/yang balance when these 2 stones grow together, tourmaline being yin and quartz being yang..

Gold is a purifyer, especially of the bloodstream. When gold grows with quartz, its energy is also strengthened, plus it looks gorgeous too.

Sometimes quartz does not have another mineral within it, but rather another quartz crystal is within the outer crystal, which is called a phantom quartz. What a powerful medicine stone! The hexagonal crystal structure to begin with is very yang, very strong, and with a phantom termination, it is doubled or tripled.

PARKIGN AT MAKIKI PARK

Parking along Keeamoku St. starts at 5:30
After that, good luck because it drops off really fast!

Rock & Mineral Society of Hawai`i, Inc.

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The Rock & Mineral Society meets on the 4th Wednesday of each month (except for adjusted dates in November and December) at the Makiki District Park, 7:00 - 9:00 pm. Enter from Keeaumoku Street. Parking is free but limited.

The Newsletter is published monthly, some days prior to the meetings and is distributed in electronic format by email (Adobe Acrobat PDF file attachment). Printed copies are "snail" mailed to those who do not have email. The electronic format usually contains full-color images; the print version may be limited to B&W due to reproduction costs.

Any newsletter comments are appreciated, and can be sent to elise.thomasson@gmail.com

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