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

Meeting Times

MEETING
Wednesday
November 14
6:15-8:00 pm
Makiki District Park
Admin Building

NEXT MONTH
December 7
Christmas Potluck!
Arts and Crafts bldg.
Makiki Park
6pm-8
Bring a grab bag gift!

LAPIDARY
Every Thursday
6:30-8:30pm
Makiki District Park
2nd floor Arts and Crafts ldg

MEMBERSHIP
DUE COSTS 2011
Single: $10.00
Family: $15.00

P.O. Box 23020
Honolulu, HI

Fossils
By Dean Sakabe

The last topic of 2012 will be Fossils, so I guess we should be nice to our resident fossil, otherwise known as Keith Kruger. Ha!

Back to being serious. The word fossil comes from the Latin word "fossilis", which means "dug up." Most fossils are excavated from sedimentary rock layers, i.e. rocks that have formed from sediment, such as sand, mud, and small pieces of rocks. Over long periods of time, the small debris are compressed as they are buried under more and more layers of sediment that piles up on top of it. Eventually this is all compressed into sedimentary rock, and there are often fossils to be found.

Fossils tend to have the same shape that the original item had, however the color, density, and texture vary widely. A fossil's color depends on what minerals were present in the sedimentary rock layer which formed it. Interestingly enough, fossils are usually heavier than the original item since rocks are heavier than organic materials, and fossils are effectively rocks.

Above: Trilobite

Below: Fossilised Mammoth Tusk

Christmas Party December 7!

Fossils

There are six ways that organisms can turn into fossils:

- Unaltered preservation - like insects or plant parts trapped in amber, a hardened form of tree sap.
- Petrification - in which rock-like minerals seep in slowly and replace the original organic tissues with silica, calcite or pyrite, forming a rock-like fossil. This process can preserve hard and soft parts. Most bone and wood fossils are permineralized.
- Replacement - An organism's hard parts dissolve and are replaced by other minerals, like calcite, silica, pyrite, or iron.
- Carbonization (coalification) - in which only the carbon remains in the specimen - other elements, like hydrogen, oxygen, and nitrogen are removed.
- Recrystalization - hard parts either revert to more stable minerals or small crystals turn into larger crystals.
- Authigenic Preservation - molds and casts of organisms that have been destroyed or dissolved.

Just to give an example, fossils of hard organic parts (bones and teeth) are formed is this fashion:

In rare situations the animals were quickly buried after their death, either by sinking in mud, or being buried in a sand storm, or dying in a flash flood, or swift river, or being deposited in deep water. Sediment quickly covers the remains and continues to cover the remains, essentially removes all of the oxygen from the animal. This is important as it stops all decay from taking place. The parts of the animals that did not rot out, i.e. the harder parts, such as bones and teeth are encased in the newly-formed sediment.

After a very, very long time, water infused with minerals seeps into the sediment where it contacts the remains and slowly replaces the bone with rock-like minerals. This process of fossilization involves the dissolving and replacement of the original minerals in the object with other minerals, the filling up of spaces in fossils with minerals.

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

Dunkleosteus Terrelli Fossil Skull

Most fossils you see are usually brown or red (or rock colored), why? Well it is simple most fossils are rocks. Hence they look like rocks with shapes. A fossilized object is just a rocky model of an an-

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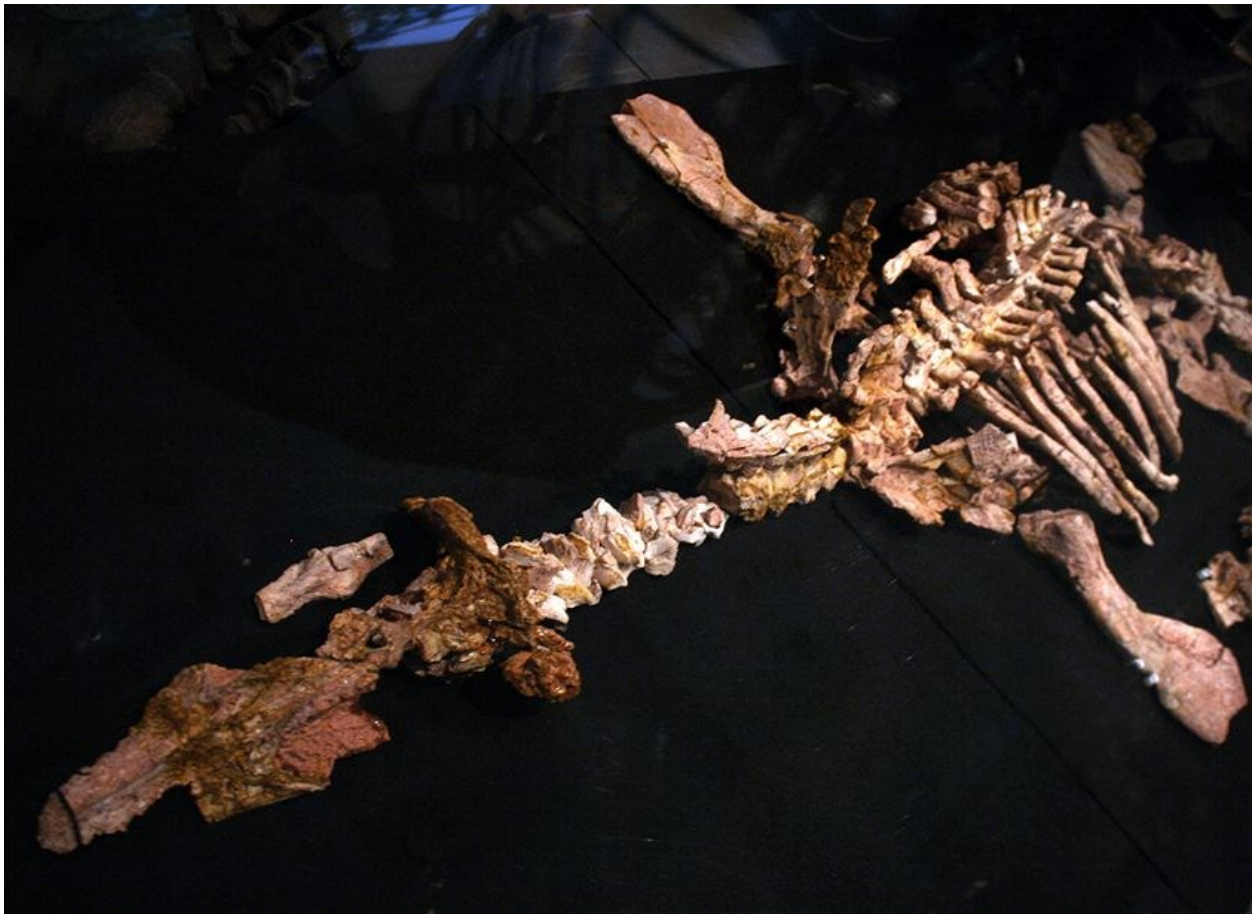
Fossils!

(Continued from page 2)

cient object. 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!



Opalized Plesiosaur, From Cooper Pedy, Australia. Named "Eric" currently with the National Opal Collection

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, since all that remains today is a rocky model of the original. The only instance in which the original color is retained are instances where an insect in encased in amber.

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Fossils

It is not to say that all of the fossils are sacred to us. In the lapidary world we highly prize fossils. Petrified Wood from Arizona, Dinosaur Bone, and Petrified Palm wood are routinely used. In fact, some of the most brilliant opals have come from cutting opalized clam shells.

Petrified Wood can be found throughout the country, and actually throughout the world. Most of the petrified wood one finds are brown, black, tan, or some shade there of. The petrified wood from Arizona is highly prized as it is some of the most colorful wood in the world. The reds come from iron rich jasper. The yellow from uranium salts. The black is from manganese oxides. Additionally, there can be Amethyst bugs within the petrified logs.

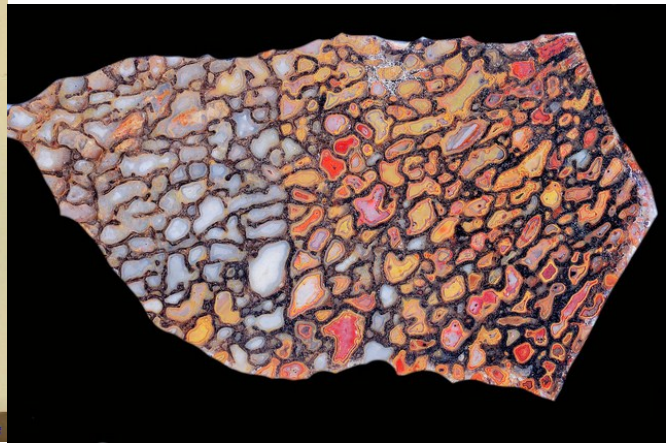
The best place to go to see these logs--and I do mean petrified logs—not just scraps of wood is Petrified Forest National Park, located in eastern Arizona. This place is loaded with petrified logs and the remnants of logs where earlier folks blasted apart the logs to get to the Amethyst Crystals which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

Ammonite fossils are found all over the world, but the difference in the Ammonite fossils found in the Bearpaw Shale Formation in Alberta is that the actual shell (ie mother-of-pearl or nacre) has been preserved as part of the fossil. In the rest of the world, the sediment filled in the shell, the fossil formed, and the shell has disintegrated. Somehow, in Alberta, the shell has been preserved as part of the fossil. It is this part of the preserved shell that is being sold as "Ammolite."

High quality agatized dinosaur bone, or "gembone", is an outstanding gemstone. Gem-quality petrified dinosaur bone specimens are among the rarest fossils in the world. Agatized fossilized dinosaur bones are petrified with silica or quartz crystals which gives them their colorful, glassy appearance. This process preserves the actual cell structure of the once living dinosaur. Most of the "gembone" is found in the four corners region of the Colorado Plateau (where Arizona, New Mexico, Utah, and Colorado touch). The wide variety of colors in agatized dino bone are caused by minerals such as chlorite, chromium, iron-oxide and manganese that enter the cells during formation.

Left: Ammolite, Alberta, Canada

Right: Gem-quality Dinosaur Bone



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WE HAVE A FACEBOOK PAGE! LET'S GO LIKE IT!

HTTP://WWW.FACEBOOK.COM/PAGES/ROCK-AND-MINERAL-SOCIETY-OF-HAWAII/103902329673700?V=WALL&REF=SGM
MAHALO TO MARKUS FOR ESTABLISHING OUR *ROCK FACE*!

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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, 6:15-8 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.

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.

Parking at Makiki Park
Parking along Keeamoku St. starts at 5:30

After that, good luck because it drops off really fast!

Christmas Party
December 6
Makiki Park Arts and Crafts Building

Bring a "Grab Bag" Gift and a dish to share!

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