Bulletin of the Mineralogical Society of Southern California

Volume 81 Number 9 **September 2010**

The 868th Meeting of The Mineralogical Society of Southern California

Introduction to the Basics of Identification of Petrified Wood

By

Helga and Werner Wagner

Friday, September 10, 2010 at 7:30 p.m.

Geology Department, E-Building, Room 220

Pasadena City College

1570 E. Colorado Blvd., Pasadena

In this issue:

.

.

September Program

The September program is by Helga and Werner Wagner speaking on the topic of petrified wood: Introduction to the Basics of Identification of Petrified Wood. They will set up stereoscopes and show excellent examples of their extensive collection.

They will use microscopes to explain the difference of wood structure in conifers and dicots, show how petrification occurs, the age of different formations, particularly in the western US and show some oddities in fossilized wood.

Helga and Werner joined the South Bay Lapidary and Mineral Society in Torrance in summer 1989. They have been collecting and identifying petrified wood ever since. They now have over 80 species of identified trees and over 1,300 pieces catalogued as to species, locality and age. This will be an interactive hands-on presentation with a wide variety of outstanding specimens for observation.

.

Close-up of a cross section of petrified wood. Photo by Shou-Lin Lee of Walt Wright's collection on displayed at Torrance club show 2009.

Visiting the Fallbrook Gem & Mineral Museum

by Shou-Lin Lee

This was the fourth year that MSSC was invited to the Fallbrook Gem and Mineral Society's annual potluck and mineral sale. Iwas glad to see that despite the hot

weather, seven MSSC members made the more than one hour drive to attend the event. Although the overall attendance was lighter than last year, the food was better, with more homemade dishes than store bought. Several delicious homemade dishes had very long names. Dishes such as Three Cheese Enchilada Squash Casserole were very descriptive of their ingredients.

The sale started at one o'clock prompt. The number of sellers was less than last year too. A guy was selling bi-colors, lavender and light green kunzite from Oceanview Mine. Very tempting but kunzite is troublesome to cut. Most of the people broke into several groups and chatted.

The museum curator Garth Bricker opened the museum door for us and told us stories of some museum items. The museum has a large number of miners' lights that were used in the early twentieth century. Mr. Bricker explained that the bottom part of the light was divided into two parts: the top part stored water and bottom part stored carbide. As the water dripped onto the carbide, a chemical reaction created acetylene gas that fueled the light. And I thought those were oil lamps. There were several items that Mr. Bricker found inside of the Red Cloud Mine: a brightly printed bandana (kind of wrinkled but no moth holes or worn mark), a well preserved stuffed doll made out of crochet yarn, and an empty package of cigarette paper with printing still legible. The presence of the bandana and the empty package of cigarette paper are kind of expected but the presence of the stuffed doll is interesting. Had some one taken his kid to the mine and the kid found something more interesting and forgot the doll? Kind of makes you wonder.

It is always fun to visit Fallbrook Gem and Mineral Museum.

The First Forests

by Kevin Dermody

(1st Place – 2008 AFMS Original Adult Articles Advanced)

New research on the mystery fossil, like this sample found in Saudi Arabia (above), backs up earlier theories that Prototaxites was a massive fungus that stood up to 24 feet (8 meters) tall. Reprintal from http://news.nationalgeographic.com/news/bigphotos

The world's forests, ranging from boreal to temperate to tropical, have the greatest range across the Earth than any landscape except for the oceans. They are among, if not the greatest producers of oxygen on the planet. But even they had to start somewhere. And at one time a forest wasn't made of trees, but of mushrooms.

In 1859 strange tree-like trunks were found in Canada. Named Prototaxites, the trunks were up to 24 feet long and three feet wide. Many hypotheses were given about what sort of plant the fossils came from. All that was certain was that Prototaxites lived 420-370 million years ago, and was eventually found worldwide. Now Frances Hueber and other researchers at the Smithsonian and Carnegie Institutions have solved the mystery of these giant trunks. Many fossils still contain isotopes of the carbon atoms they accumulated while they were alive. Photosynthetic plants have a balanced ratio of these various isotopes, while fungi and animals have wide ratios. The isotopes of Prototaxites were like that of fungi. The trunks were those of giant mushrooms!

From 410 to 270 million years ago, soon after photosynthetic plants established footholds on land, plants had managed to carpet vast areas of low wetlands where water collected often so that their spores could travel, fertilize, and germinate. The soil was full of microbes in mats called crust, and the feeding bodies of fungi, the hyphae, absorbed nutrients from the rotting vegetation and living cells. Slowly, the hyphae grew their reproductive bodies which would let off their own spores when "ripe." In Prototaxites' case, the mushrooms reached 24 feet, towering over the photosynthetic plants which usually didn't grow taller than 6.5 feet. It was as alien a world as it could be, with a very slow ecological turnover of species, and one that wouldn't last.

Recently, tree trunks 30 feet long were found in southeast New York State, similar to two more found in New York a century ago. They belong to a fern-like group of plants called cladoxylopsids that arose 400 million years ago. By 385 million years ago, these trees, called Eospermatopteris, were growing world-wide, vying for and surpassing Prototaxites in height. Fungi would soon give up on energy-wasting "trees"

and keep their reproductive structures relatively small and usually close to the ground.

Eospermatopteris, meanwhile, was still a strange tree. It had no extensive root system, and no spreading branches and leaves. Instead, its branches grew straight from its crown, subdividing into smaller branches that carried on photosynthesis, looking like a bottlebrush. These trees would soon be replaced by those with branches that grew on the sides with true leaves for better collection of sunlight, and a better root system to collect water and nutrients from the soil and to hold onto the soil. The earliest known of these was Archaeopteris, which lived 400 to 385 million years ago. Brigitte Meyer-Berthaud, paleobotanist with the National Center for Scientific Research in Montpellier, France, has studied these early trees for years and has no idea on how they worked in their environment. No spreading branches on Eospermatopteris allowed much sunlight to reach the forest floor, thus creating lush growth. Archaeopteris' branches still let a lot of sunlight reach the ground. These early forests took in a lot of carbon dioxide, cooling the climate, and gave off a lot of oxygen. The branches released spores, and might have dropped off seasonally as those of modern palms. The shrubs and litter became food for insects and other arthropods, which were able to exist on land with the increase of oxygen, as did carnivorous arthropods, and later, tetrapods.

By 300 million years ago, giant relatives of club mosses and horsetails 30 feet tall, with ferns and tree-ferns even taller, and seed ferns and progymnosperms, which produced the first seeds instead of spores, grew in vast true forests. The great abundance of oxygen in the atmosphere allowed arthropods to grow enormous, like 6-foot eurypterids. Examples of all these were recently found just above the Riola and Vermilion Grove mines south and west of Georgetown, Illinois. During the Carboniferous Period, an earthquake covered part of a forest in mud. The organic-rich mud and soil became coal seams 200 feet beneath the surface, and directly beneath the fossils. The remains of the forest, covering four square miles, are in the ceiling of the seven-foot-high hallways dug out of the coal as it was extracted.

The site is being examined by the Illinois State Geological Survey, the Smithsonian Institution, and the University of Bristol. However, the unstable halls make the site unsuitable for preservation or making the area into a museum. The scientists have to be satisfied with taking specimens and pictures, and making notes and drawings, as they develop a more complete picture of the ecology of a coal forest. For instance, the tree canopy didn't completely block out the sun, as it is usually portrayed. The spreading branches and leaves were still few enough to allow sunlight to reach the ground, allowing a lush undergrowth.

True gymnosperms had developed by this time and would soon dominate the landscape, especially in the drier areas. Then in Late Jurassic and Early Cretaceous came the angiosperms, with seeds enclosed in protective covering, a variety of methods to disperse their seeds besides using the wind, a reproductive system that had symbiotic relationships with insects, and an ecological turnover rate that was measured in decades instead of centuries or longer. The modern forest is a complex system that evolved from a far simpler one, and will last as long as trees can exist.

Bibliography:

Comcast News

NationalGeographic.com.news:Towering Mystery Fossil Was a 'Shroom with a View; Newfound Fossils Reveal Secrets of World's Oldest Forests; Giant Fossil Rain Forest Discovered in Illinois

---

Mark your calendar

The Gemological Institute of America (GIA) announced that in celebration of its 80th anniversary, it will bring its International Gemological Symposium home. The GIA Symposium 2011 which will focus on advances in gemological research and advancing the gem industry, will be held at GIA headquarter at Carlsbad, California on May 29-30, 2011. Information on the symposium is available on Symposium2011.gia.edu

---

Petrified Wood from Franklin, NJ

by Dave Woolley, CPG;

woolley.dave@gmail.com ,

(Honorable Mention – AFMS 2008 Original Adult Articles Advanced)

It is not often that amateur mineral collectors can hope to make an addition to the elegant scientific studies completed at the zinc mines of Franklin, New Jersey. This example is more of an oddity rather than a formality. During the 2006 Trotter Dig, Frank and Jean Midkiff and I had an opportunity to collect at the microcline pegmatite that overlooks the Buckwheat Open Cut from the south end of the Trotter Dump. This site is southeast of the parallel but long gone Double Rock Pegmatite that existed within the West Limb. (Figure #1, Page 16, Geology of the Double Rock Pegmatite from the Buckwheat Open Cut, Volkert, Zartman, & Moore, The Picking Table Vol. 46 – Spring/Fall 2005) The site is above the southwest end of the now mined out Franklin ore body syncline.

Specimen #1: End view of a shard of decayed wood encapsulated in travertine.

Note the slight upwards curve of the growth rings

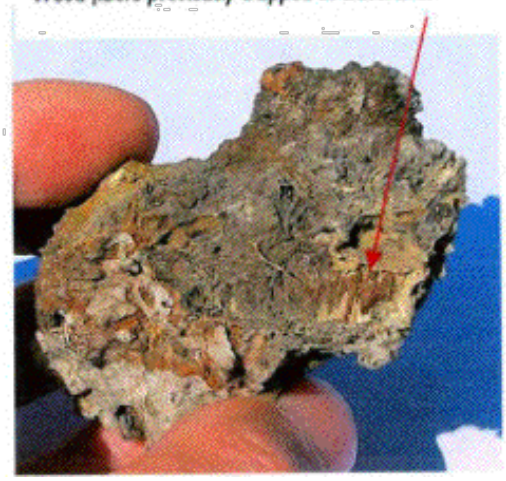
In places travertine has covered individual strands of wood fiber as tiny tubes.

I noticed a white to light gray microcrystalline carbonate flowstone that followed and filled joints within the northwest side of the pegmatite. These previously open joints were randomly oriented but followed steep dip angles into the pegmatite; some flowstone is now underneath an overhang where pegmatite has fallen away. Water in these joints, rich in mobilized calcium carbonate, flowed from surrounding and overlying Franklin Marble proving the flowstone was in place no later than the removal of the confining Franklin Marble. The flowstone might be related to just before the marble quarrying around the pegmatite intrusion, or simply be detritus trapped from an earlier time.

Specimen #2: Side view of a shard of decayed wood encapsulated in travertine.

Individual strands of wood fiber have been exposed where travertine has broken free.

Wood fibers previously trapped in travertine.



The samples recovered also contain loose, very fine-grained sand that includes abundant willemite that overpowers the light bluish or purplish gray fluorescence of the flowstone. The flowstone phosphoresces a slightly creamy gray for a few seconds. A few weak red fluorescing calcite fragments and franklinite fragments are also recognized in the sand under microscopic examination. This sand washes free of the flowstone. The sand clearly is a secondary accumulation and dates more recently than the deposition of the flowstone. A few particles of "limonite" are encapsulated in one specimen. In other samples flowstone casts or encapsulates wood fragments. The wood's growth rings are the most prominent feature of the casts. Unique to one of these specimens are several shards of decayed wood fiber. The surviving wood fibers may have been protected from total decay by the encapsulation of the flowstone until I broke the specimen free of the pegmatite.

By American definition a trace of life found in rock has to be older than about 10,000 years to be considered a "fossil." These casts therefore may not qualify as "fossils" but they clearly are petrified. The few wood fibers that can be seen in the best specimen suggest that carbon14 dating is possible.

A similar occurrence of petrified roots has been reported from Sterling Hill preserved in secondary copper minerals above the Passaic and Nobel Pits. (Personal communication, Earl Verbeek, April 2006)

NEW EDITOR NEEDED

After more than three years of been the bulletin editor, I decided it is time to pass the torch. The December issue will be my last issue. It has been fun. I enjoyed the challenge, but I need a break. The MSSC bulletin editor is appointed by the Board. Anyone interested in assuming the editor's post should contact MSSC president Geoffry Caplette. I will be available to answer any technical questions.

Thank you for all your support in submitting articles, pictures, emailing me information and telling me that you enjoy reading the bulletin. I probably should name names but there would be too many, so here is a very big…..

...Thank you!

It is true that the November West Coast Gem, Mineral & Fossil Show has been cancelled.

2010 Calendar of Events

September 3-6 2010, Fort Bragg, CA Mendocino Coast Gem & Mineral Society Town Hall Corner of Main & Laurel Hours: Fri-Sun 10-6 -- Mon 10-4

September 11-12 2010, Downey, CA Delvers Gem & Mineral Society Woman's Club of Downey 9813 Paramount Blvd. Hours: Sat 10-6; Sun 10-4

September 18-19 2010, Redwood City, CA Sequoia Gem & Mineral Society Community Activities Building 1400 Roosevelt Ave.

September 18-19 2010, Paso Robles, CA Santa Lucia Rockhounds Pioneer Park 2010 Riverside Drive Hours: 10-5 Daily

September 18-19 2010, Stockton, CA Stockton Lapidary & Mineral Club Scottish Rite Masonic Center 33 W. Alpine Ave. Hours: 10-5 Daily

September 24, 25, 26 2010, San Bernardino, CA Orange Belt Mineralogical Society Little League Baseball Park 6707 Little League Dr. Hours: 9:00 a.m. to Dusk

September 25-26 2010, Monterey, CA Carmel Valley Gem & Mineral Society Monterey Fairgrounds 2004 Fairgrounds Road Hours: Sat 10-6; Sun 10-5

October 2-3 2010, Oroville, CA Feather River Lapidary & Mineral Society Oroville Municipal Auditorium 1200 Meyers Street Hours: 10 - 5 Daily

October 3 2010, Fallbrook, CA Fallbrook Gem & Mineral Society Fallbrook Gem & Mineral Facility 123 West Alvarado Street Hours: 10 - 4 Daily