The Sierra Pelonagram

June 2020

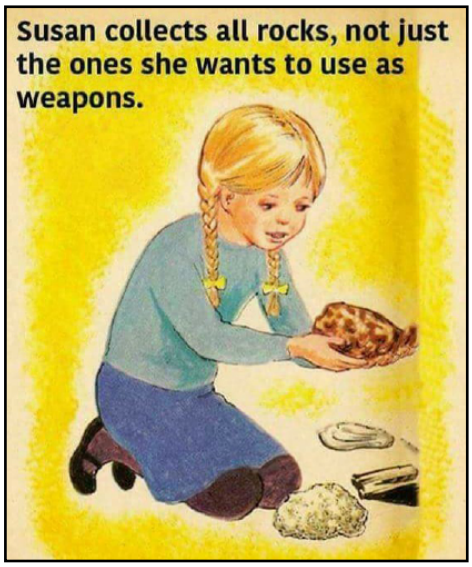
... Member of the California Federation of Mineralogical Society Inc. ...

The Sierra Pelona Rock Club is a non-profit organization founded in 1959 with the objective to sponsor activities and promote interest and education in: mineralogy, lapidary, geology, paleontology and related subjects.

June
Connie Flores-Reisbeck
Tim Gunter
Ruth Hidalgo
Akiko Strathmann
Heidi Webber
Janelle Williams
Dianne Wohlleben

July
Trina Aeen
DJ Gervais
Ember Guzman
Silvia Hamilton
Ron Rackliffe
Betsy Swallow

August
Don Cogan
Goldie Crockett
Ron Lawrence
Cody Patrich
Bill Wertz
Joyce Wertz



There were no board or membership meetings in May or June due to the Covid-19 restrictions. We are off for the summer, July and August.

Officers:
President – Bill Webber
Vice-President – Julie Tinoco
Secretary: Heidi Webber
Treasurer –Shana Brunes-Ruiz
Federation Director (CFMS/AFMS) --Evelyn Velie

Chairpersons:
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Donation Rock Table--Akiko Strathmann
Equipment--Bill Webber
Field Trips – Julie Tinoco
Historian -Open
Hospitality – Ron Rackliffe
Membership – Heidi Webber
Website-- Larry Holt
Pelonagram Publisher, Editor – Heidi Webber
Programs –Tina White
Publicity –Bruce Velie
Sunshine--Brigitte Mazourek

The Sierra Pelona Rock Club, is a member of the California and American Federation of Mineralogical Societies, Inc. (CFMS/AFMS). The general club meetings (Open to the public) are at 7:30 PM, on the 3rd Tuesday of each month at:

The Clubhouse of the Greenbrier
Mobile Estates EAST
21301 Soledad Canyon Rd
Canyon Country, CA 91351

Contact the Club or the Sierra Pelonagram Editor at:
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Visit the SPRC website www.sierrapelona.com

President's Message

Hi All

I hope you are all safe and happy. As you know, restrictions are easing, but it is not over and many of us are still mostly practicing isolation. This also means we won't be having any events planned for June.

June is also the beginning of our summer break for July and August. We will play it by ear regarding any club dinners that normally occur around August, or any summer outings. Hopefully we can be back to normal by September. If anything goes on during our break, members will be emailed.

I hope you have the best summer you can, take care, and I hope we can be seeing each other soon.

Bill Webber
President, SPRC

Nevada is Famous for its Colorful Black Opal

(You can dig your own unique opals in three areas open for rock hounds)

Nevada is famous for its beautiful, colorful black Opal. The state contains some very rich precious opal beds and has produced some spectacular and extremely valuable specimens. The Virgin Valley opal beds in northwest Humboldt County are perhaps the most famous gemstone locality in Nevada. High-quality precious opal emitting a multihued rainbow of color is found replacing wood or other plant material in this remote location.

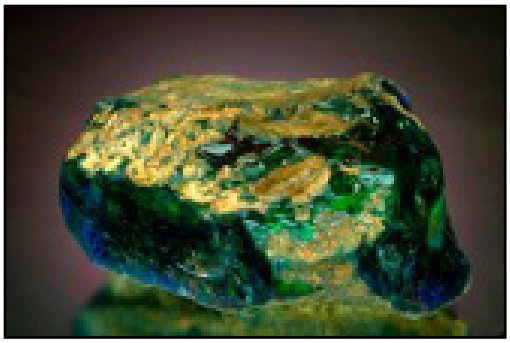
The Virgin Valley Opal field is in an isolated desert area south of Highway 140 about 25 miles southwest of Denio. Precious opal was first discovered here in 1905 and a number of claims were located at that time. Exploration of these deposits has been continued intermittently by various parties since that time. The opal field lies within an area approximately 5 miles wide and 10 miles long in certain beds outcropping along the walls and slopes of Virgin Creek Valley.

A Collection of Opals from
Bonanza Opal Mine in Denio, Nevada.
Photo: Bonanza Opal Mines

Geology of the Area

The formations here consist of volcanic ash tough and mud originally deposited in shallow lakes. The sediments are in part overlain by lava flows. The sedimentary beds have been divided into upper middle and lower divisions the upper beds contain fossil remains in the form of bones and teeth of mastodon camels and other fauna while the middle beds contain silicified wood and plant remains is principally in these middle beds that the opal occurs in the form of wood casts. These productive beds are buried by overburden sometimes as much as 100 feet thick. Many of the plant remains in the opal beds are only partly replaced by silica and still contain considerable carbonaceous material. Precious opal is sparsely and irregularly distributed throughout the deposit, but comprises only a very small part of it.

Many opal experts consider the Virgin Valley material to be some of the best, brightest and most beautiful opal yet discovered. The Virgin Valley deposits produce a wide variety material from intensely colored crystal opal to



The Roebling Opal is an extraordinary 2,585-carat piece of opal from Rainbow Ridge Mine in 1917 from Virgin Valley, Nevada.

some of the world's finest black opal. Brilliant flashes of red, blue, yellow, green and all the rest of the rainbow emanate from these spectacular gems.

There are areas at Virgin Valley which are open to rockhounds who would like to pay to dig for the fiery precious black opal. You have a couple of different options, tailings diggings or bank diggings.

The three areas open for rock hounds are:

Rainbow Ridge Mine

Owned and operated by the Hodson family since 1949.Rainbow Ridge Opal Mine is located in Northwest Nevada, approximately 135 miles from Winnemucca, Nevada, and approximately 100 miles from Lakeview, OR. The closest town is Denio, NV, which is 35 miles away. Denio Junction has reopened and food, fuel and rooms are available. Tailings fee is $100.00 per person per day.
Address: Sage Brush Rd, Winnemucca, NV 89445

Royal Peacock Mine

Since 1981, the Royal Peacock Opal Mine has been open to the public as a pay-to-dig mine. It has yielded countless world-class precious opal specimens during that time. Digging isn't cheap, though. They charge $190 per person per day to dig in the fire-opal-rich bank area and $75 to dig in the mine dumps and tailings (piles of rock extracted from the mine).
Address: 10 Virgin Valley Rd, Denio, NV 89404

Bonanza Opal Mine

The Bonanza Opal Mine is renowned for its fire opals. Since the early 1900s, the Virgin Valley has had a reputation for producing unique, world-class precious gemstones. At Bonanza, you can dig for opals amidst the rugged beauty of the Virgin Valley in northern Nevada.

The fee is $70.00 per person/day. Children 12 and under are FREE with paid adult.
Address: 10 Virgin Valley Rd, Denio, NV 89404

Why Rocks Flow Slowly in the Earth's Middle Mantle

For decades, researchers have studied the interior of the Earth using seismic waves from earthquakes. Now a recent study, led by Arizona State University's School of Earth and Space Exploration Associate Professor Dan Shim, has re-created in the laboratory the conditions found deep in the Earth, and used this to discover an important property of the dominant mineral in Earth's mantle, a region lying far below our feet.

Shim and his research team combined X-ray techniques in the synchrotron radiation facility at the U.S. Department of Energy's National Labs and atomic resolution electron microscopy at ASU to determine what causes unusual flow patterns in rocks that lie 600 miles and more deep within the Earth. Their results have been published in the Proceedings of the National Academy of Sciences.

Slow Flow, Down Deep

Planet Earth is built of layers. These include the crust at the surface, the mantle and the core. Heat from the core drives a slow churning motion of the mantle's solid silicate rocks, like slow-boiling fudge on a stove burner. This conveyor-belt motion causes the crust's tectonic plates at the surface to jostle against each other, a process that has continued for at least half of Earth's 4.5 billion-year history.

Shim's team focused on a puzzling part of this cycle: Why does the churning pattern abruptly slow at depths of about 600 to 900 miles below the surface?

"Recent geophysical studies have suggested that the pattern changes because the mantle rocks flow less easily at that depth," Shim said. "But why? Does the rock composition change there? Or do rocks suddenly become more viscous at that depth and pressure? No one knows."

To investigate the question in the lab, Shim's team studied bridgmanite, an iron-containing mineral that previous work has shown is the dominant component in the mantle.

"We discovered that changes occur in bridgmanite at the pressures expected for 1,000 to 1,500 km depths," Shim said. "These changes can cause an increase in bridgmanite's viscosity -- its resistance to flow."

The team synthesized samples of bridgmanite in the laboratory and subjected them to the high-pressure conditions found at different depths in the mantle.

Mineral Key to the Mantle

The experiments showed the team that, above a depth of 1,000 kilometers and below a depth of 1,700 km, bridgmanite contains nearly equal amounts of oxidized and reduced forms of iron. But at pressures found between those two depths, bridgmanite undergoes chemical changes that end up significantly lowering the concentration of iron it contains.

The process starts with driving oxidized iron out of the bridgmanite. The oxidized iron then consumes the small amounts of metallic iron that are scattered through the mantle like poppy seeds in a cake. This reaction removes the metallic iron and results in making more reduced iron in the critical layer.

Where does the reduced iron go? The answer, said Shim's team, is that it goes into another mineral present in the mantle, ferropericlase, which is chemically prone to absorbing reduced iron.

"Thus the bridgmanite in the deep layer ends up with less iron," explained Shim, noting that this is the key to why this layer behaves the way it does.

"As it loses iron, bridgmanite becomes more viscous," Shim said. "This can explain the seismic observations of slowed mantle flow at that depth."

The above story is based on Materials provided by Arizona State University.