



GEOLOGICAL SOCIETY OF NEVADA NEWSLETTER

Geological Society of Nevada, 2175 Raggio Parkway, Room 107, Reno, NV 89512
(775) 323-3500 - Hours Tuesday -- Friday, 9 a.m. to 4 p.m. Monday by appointment.
Website: www.gsnv.org • E-mail: gsn@gsnv.org



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CALENDAR OF GSN EVENTS

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dpbryan@sbcglobal.net

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ALS Minerals
Mary.Stollenwerk@alsglobal.com

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siraweiss@outlook.com

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McEwen Mining
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plcapistrant@gmail.com

Kelsey Sherrard, Terraphase Engineering
Krsherrard@gmail.com

PUBLICATION CO-CHAIRS

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shannon.gill@kinross.com

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Camille Prenn

No Meeting in January!

NO SO. NEVADA CHAPTER MEETING THIS MONTH

There will not be a Southern Nevada Chapter meeting in the month of January. Please plan to attend the next meeting scheduled for Thursday, February 6, 2020! Please contact Joshua Bonde for more information. Josh's email is: paleo@lvnhm.org.

**Jan. 15, 2020
WEDNESDAY
(3rd Wed. this month!)**

WINNEMUCCA CHAPTER MEETING—Note 3RD WED THIS MONTH!

The meeting will be held at the Martin Hotel, 94 W. Railroad St. Drinks at 6:00 pm, Appetizers at 6:30 pm, Talk at 7:00 pm. **Speaker & Topic: To Be Announced. Food and Drinks Sponsored by: To Be Determined.** For more information, please contact Chapter President, Robbie Anderson @ Robbie.agau@gmail.com. Details on page 6.

**Jan. 16, 2020
THURSDAY**

ELKO CHAPTER MEETING (3RD THURSDAYS)

The monthly meeting will be held at the Western Folklife Center, 501 Railroad St. Drinks & Appetizers at 6:00 pm, Talk at 7:00 pm. **Speaker and Topic: To be Determined. Food and Drinks Sponsored by: IDS and Layne –the Granite Companies.** For more info please contact Diane Cheung-Harris at: dianehcheung@gmail.com. Details on pg. 7.

**Jan. 17, 2020
FRIDAY**

GSN MEMBERSHIP MEETING (3RD FRIDAYS)

The GSN's monthly meeting will be held at Taps & Tanks, 1155 So. Rock Blvd., Reno, NV. Drinks at 6:00 pm; Dinner at 6:30 pm; Talk at 7:30pm. **Speaker: Brian May, Elko Mining Group. Title, "Updates to the High-Sulfidation Goldfield District, Esmeralda County, Nevada".** **Drinks Sponsored by: MDA a division of RESPEC!** Dinner cost is \$30 Please buy dinner online: <https://www.gsnv.org/dinner-reservations/>. RSVP no later than Tuesday, Jan. 16th! GSN@GSNV.ORG. Details on page 3.

G.S.N. JANUARY MEETING SPONSOR



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FROM THE PRESIDENT
Dennis Bryan, GSN President 2019-2020
JANUARY 2020



Well, we are through with Christmas and I hope everyone got everything they asked for from Santa. And Happy New Year, it's 2020! Kinda sounds like the future has arrived. If someone had asked me in 1970 what life would be like in 2020, I think I figured I'd be long gone. Some may even be looking forward to that day.

Speaking of being long gone, this season we are particularly blessed with the political reality of an upcoming election (albeit another 10 months away). In keeping tabs on the potential candidates and recent issues, I was tempted to voice my 1st Amendment rights and discuss some of those candidates and issues. I felt compelled to point out some, at least what I perceived to be, errors in verisimilitude. But then reality set in. This is GSN and we don't do that. The government says we can't because we are a C3Pio corporation (or some such designation). So rather than pi__ off some of you, or maybe a lot of you (from wherest you come I do not know, nor should it matter), I will refrain from speaking out against any perceived smirches to those candidates with whom I might have a disagreement. And I must confess, I have some disagreements with all the candidates (can I say that?). Guess it depends on what the definition of a candidate is. Maybe I should refer to them as an aspirant to higher office, as opposed to a spirant (a spirant is sometimes referred to as a fricative consonant).

Whatever you perceive the above gobbledygook to mean, I would encourage all those aspirants to remember the old American Indian proverb: "Never judge a man until you've walked a mile in his moccasins". Don't they owe us that much? (Anyone see the PC lapse here?..... they should have said 1.6 kilometers.)

Oh, and about discussing the weather. Let's look out the window and rejoice. Temperatures are reasonable and there is adequate snow on the mountains.... and before you know it Spring will arrive and we'll be complaining about how hot it is.

Thanks again and looking forward to seeing you at the first GSN meeting of the year on January 17th at Taps & Tanks.

Dennis

***The G.S.N. wishes to thank
STEVE NEILSEN &
ENVIROTECH DRILLING
for sponsoring
the GSN's Christmas Meeting
in December!***

Envirotech Drilling LLC

GSN MEMBERSHIP MEETING—JANUARY 17, 2020



Speaker: Brian May, Elko Mining Group

Title: “Updates to the High-Sulfidation Goldfield District, Esmeralda County, Nevada”

Drinks @ 6:00 pm; Dinner @ 6:30 pm; Talk @ 7:15 pm

Location: Great Basin’s Taps & Tanks, 1155 So. Rock Blvd., Reno, Nevada

DINNER COST—\$30.00 per person.

(You will be invoiced \$30 if you do not cancel your reservation by Tuesday, Jan. 14, 2020)

For dinner reservations, please e-mail gsn@gsnv.org or call 775-323-3500

Reservations required. Please click on the link to prepay for dinner:

<https://www.gsnv.org/dinner-reservations/>

Reservations due by 5 p.m. on TUESDAY, JANUARY 14, 2020!!!

ABSTRACT:

Updates to the High-Sulfidation Goldfield District, Esmeralda County, Nevada

Brian May

The Goldfield District is in northern Esmeralda County, 27 miles south of the city of Tonopah, and is characterized by gold mineralization predominantly hosted in Tertiary intermediate to felsic volcanic units. The district hosts high-sulfidation/acid sulfate epithermal gold deposit types that are the largest of its type in the USA with a gold endowment (production/reserves/resources) of greater than 5.5 million ounces gold. Key geological features observed throughout this prolific gold district include several ore-hosting horizons, stratigraphic and structural controls, a large alteration footprint, and bonanza gold grades.

The district encompasses approximately 300 shafts, 100+ levels, and 4 open pits from historic workings. Underground production between 1904 and 1946 from the district yielded 4.2 million ounces gold from 8.0 million tons (0.5 opt gold average). Open pit production between 1986 and 1997 from the Kendall-Adams, Combination, Red Top, and Jumbo pits yielded 50,000 ounces gold from 0.85 million tons (0.05 opt gold average).

Between 2017 and 2018, Gemfield Resources LLC has completed drilling at the Gemfield, Goldfield Main and McMahon Ridge deposits to support an updated feasibility study. The programs included 60 diamond holes comprising 31,725 feet completed at Goldfield Main and McMahon Ridge. Twenty-five RC holes comprising 5,260 feet were also completed at Gemfield. The purposes of the diamond and RC holes were to improve geological understanding, increase confidence in historic drill data, resource conversion, advance metallurgical testwork, and update geotechnical plus geohydrological parameters.

Gemfield Deposit: Kennecott Exploration Company discovered the Gemfield deposit in 1992 through exploration RC drilling. Historic mining has not been conducted on the Gemfield deposit. Gold mineralization is hosted in weakly to pervasively quartz-alunite-kaolinite-altered Tertiary Sandstorm Rhyolite with the highest grades typically hosted in pervasively quartz-altered units. Mineralization is also interpreted to be controlled by north-northwest and northeast trending faults. The mineralized zones are strongly oxidized and amenable to heap leach processing.

Goldfield Main Deposit: Mineralization at the Goldfield Main deposit was discovered in 1902 through prospecting at Columbia Mountain. Historic mining at the Goldfield Main deposit involved extraction of high-grade oxide and sulfide material from stopes, and more recently from open pit mining of lower grade oxide material. Mineralization is hosted in variably quartz-alunite-kaolinite altered and veined Tertiary dacite located in the hanging wall of the low-angle, north-northwest trending Columbia Mountain Fault. Northeast trending structures are also observed. The mineralized zones are oxidized and sulfidic, both of which are amenable to heap leach processing.

McMahon Ridge Deposit: The McMahon Ridge deposit, discovered in 1907, consists of the Daisy and Great Bend mines. Historic mining at the McMahon Ridge deposit involved extraction of high-grade oxide and sulfide material from stopes. Mineralization is hosted in intensely to pervasively quartz-alunite-kaolinite-altered Tertiary Milltown Andesite that is localized along subvertical, east-west trending faults. Narrow (<20 feet wide) pervasively silica-altered structures are hosted in both the hanging wall and footwall blocks. The mineralized zones are oxidized, mixed, and reduced; all of which are amenable to heap leach processing.

Gemfield Resources LLC is expecting to complete updated resource estimates on Gemfield, Goldfield Main, and McMahon Ridge in early 2020.

“FACES OF GSN”

Rob Ghiglieri, Reno, NV

I was born and raised in northern Nevada where playing outside was more common than inside. As a young child I participated in as many sports and outdoor activities as possible developing an affinity for outdoor recreation. I was immersed at a young age to learn the importance of dedication and volunteerism while earning my Eagle Scout in the Boy Scouts.

While in high school, I played football, hockey, ski-raced, and was in track & field. I took my first geology class during my freshman year but possessing the typical mindset of a high school boy, geology did not stick. It was not until a general geoscience class while studying abroad in New Zealand that geology piqued my interest and set a path. Somehow, I managed

to attend that specific geology class in between road trips across New Zealand and enjoying other collegiate extracurricular activities. I returned to the University of Nevada and switched my major from secondary education of earth science to geology, and eventually received a Bachelor of Science degree in Geology. While attending the University, I played lacrosse for three years and worked the normal array of college jobs such as at a golf course, ski resort, casino valet, and retail. I was fortunate enough to become a Bureau of Land Management Wildland Firefighter and continued to work four summers while finishing school. I already knew I wanted to work in the outdoor industry, but firefighting strengthened my desire to find a career that allowed me to be outdoors.

After receiving my degree, I started my geologic career working as an Exploration Geologist for Rye Patch Gold. While working for Rye Patch Gold, I performed the normal array of duties for a junior exploration company including mapping, sampling, GIS analysis as well as helped develop and worked on drilling programs for five different projects mainly in Pershing County, Nevada.

In 2012, I took a position with the Nevada Division of Minerals as a Field Specialist and became the Chief of the Abandoned Mine Lands (AML) Program in 2013. With the Division, I have the ability to work State-wide and have performed AML field work in all 17 counties. The Division recently received the National Association of Abandoned Mine Lands Program “Remediation of Physical Safety Hazards Award” for the AML work completed at Gold Butte National Monument. At the Division, one of the best parts, and most stressful, is managing the AML Internship Program. To date, I have (cont. on page 5)



The Family at Delicate Arch



(Ghiglieri “Faces” cont. from page 4)

supervised 43 interns and introduced them to general field work inventorying and securing thousands of hazards across the State. They average over 22,000 miles traveled each summer, and many have gone on to work in the industry.

I have been a part of the Nevada Mining Association’s education committee for seven years, which performs two earth science workshops annually to educate K-12 teachers about the practical use and importance of mined materials. These workshops are a rare opportunity for us to educate our teachers on the role that mining and geology play in our everyday lives who may never otherwise be introduced, especially in the Las Vegas area.



While my chosen career field fulfills my sense of adventure (and a paycheck), my true passion is my family. I was married in 2010 to Courtney, an avid outdoorswoman who manages the Range and Invasive Species programs for the USFS, Humboldt-Toiyabe National Forest, Carson Ranger District. We have two children, Hannah (5) and Barrett (3). We spend the majority of our free time together outside camping, hunting, backpacking, hiking, mountain biking, or skiing. Hannah was introduced to skiing at the age of two and Barrett was introduced at one; we pride ourselves on encouraging their curiosity for the natural world and teach them to appreciate the world around them.

Thank you to Kelsey and Patty for having me be this month’s Face of GSN.



GSN WINNEMUCCA CHAPTER MEETING

WEDNESDAY, JANUARY 15, 2020

(Note 3rd Wednesday this month!)

Location: The MARTIN HOTEL, 94 Railroad St., Winnemucca NV

Time: Drinks @ 6:00 p.m; Appetizers @ 6:30 p.m.

Talk begins @ 7:00 p.m.

Speaker and Topic: To Be Announced

Food & Drinks Sponsored by: To Be Announced

Please contact Robbie Anderson if you would like to speak or sponsor this month!

Robbie.agau@gmail.com

GSN SOUTHERN NEVADA CHAPTER MEETING

NO MEETING THIS MONTH!

Mark your calendars for the next meeting on Feb. 6th!

The February food & drinks sponsor is Geosyntec!



Also, if anyone is interested in some paleo/soft rock geology, the Las Vegas Natural History Museum will be hosting the Western Association of Vertebrate Paleontologists Meeting Feb.14-16 with talks/posters on the 15th and a field trip on the 16th. Visit <https://www.lvnhm.org/wavp/> for more information.

Location: Las Vegas Natural History Museum

900 Las Vegas Blvd. North, Las Vegas, NV

GSN ELKO CHAPTER MEETING

THURSDAY, JANUARY 16, 2020

Location: The WESTERN FOLKLIFE CENTER, 501 Railroad St., Elko

Time: Refreshments @ 6:00 p.m., Talk @ 7:00 p.m.

Speaker and Topic: To Be Announced

Food & Drinks Sponsored by IDS & Layne:



Please contact Diane Cheung-Harris for more information.

[**dianehcheung@gmail.com**](mailto:dianehcheung@gmail.com)

Thank you to ALL the generous people and companies who donated to the Chapter's Silent Auction Fundraiser. It was a very successful event and all proceeds will benefit any Graduate Student who is doing their research on Nevada geology.

Thank you to our generous sponsors for the Chapter Meetings in DECEMBER

WINNEMUCCA CHAPTER HOLIDAY FOOD & DRINKS SPONSOR:

Envirotech Drilling LLC

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NEWS FROM THE GSN FOUNDATION

By Cami Prenn, GSN Foundation Chair

Year's end often puts us in the mood to recall our accomplishments, blessings, and goals and at the Foundation, the timing focuses us on the December Christmas Party Fundraiser. Envirotech Drilling has been an extremely generous sponsor over the years and continued that tradition as the Bar Sponsor as well as donor of some fabulous silent auction pieces that are always popular. Thank you, Steve Neilsen! We wish you a happy future as you give up the reins of Envirotech and look forward to seeing you at future GSN events.

Scott Werschky has been a perpetual donor of our gold specimens that are a highlight of the Party in the spirited Live Auction and we thank Scott very much! The other item that's gotten popular in the Live Auction is the toque that's auctioned off after the gold specimens and Dan Kappes was the generous winner of the coveted toque this year! His spirited bidding against Mike Cassidy was a phenomenon you'll only see at the GSN Christmas Party! Who knew it was such a valuable item? Thank you, Greg French for the lively Auction!

All of our donors helped make the party a success; folks are very creative with their donations and there is truly something for everyone. Donors are listed separately and I hope you take a moment to read the list and consider what a big list it is! We are grateful for you all and the Party wouldn't be what it is without your generosity. Mark and Charlotte Stock need a special shout-out for their continued donations of prized mineral specimens that are treasured by many. Another item that was a highlight of the Silent Auction was the antique microscope and accessories donated by Joe Tingley; what a beautiful piece!

Big thanks go to Gregory Crouch, our wonderful speaker. His enthusiasm for his subject spreads to the audience and his talk was fascinating. The volunteers also need a shout-out for their time and effort in putting the Party together. DD LaPointe and Ruth Buffa donate countless hours organizing the raffle and auction items and I hope you take a minute to thank them. We also had great help from Neil Prenn, Steve Green, Lindsay Craig, Jon and Beth Price, Mario Desilets, Mark Stock, Terri Garside, and the Executive Committee who transported ALL those items to the Nugget and helped organize them. Foundation Board Members who also helped out are Bob Thomas, Pam Klessig, and Bob Felder. And we can't do this at all without Laura Ruud, everyone's favorite organizer! If I missed anyone on this list please forgive me – we are grateful for everyone's contributions. The final tally is \$18,600. Thank you to all!

Looking ahead we will be focusing on the Scholarships that have been established through the Foundation. We now have three separate scholarship funds as well as our ongoing contribution to the UNR Foundation for geology scholarships. Newly established this last year is the Great Basin Scholarship which joins the Brian Morris Scholarship and the DD LaPointe GSN Scholarship. Next month I'll focus on those programs, the criteria established for each, and the schedule for applications and awarding the funds.

Happy New Year to all!



Thank you to our generous Foundation donors in December!

G.S.N. FOUNDATION unrestricted)

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Many thanks to all of our fabulous donors:

with special thanks to our top 2019 Auction and Raffle Donor,
Scott Werschky and Miner's Lunchbox



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Renaissance Gold	Steve Neilsen	

*Long time GSN Member, **Richard L. Nielsen, 85**, passed away on December 5, 2019 at his home in Golden, Colorado, from cancer. Dick was an acknowledged early expert in porphyry-copper systems, and a highly-respected explorationist. He was a former President of both the Society of Economic Geologists and the SEG Foundation. A memorial service will be held in Colorado in January, at a date to be announced. I will send an email to the membership once I find out the date and details for the service.*

THIS LETTER OF RECOMMENDATION IS REPRINTED FROM ECON GEOLOGY—NOVEMBER 2007

The Marsden Award was established in 1987. It is given as an accolade, a tribute, as praise and thanks for exceptional stewardship and contribution to the workings of the Society of Economic Geologists.

It is an honor and great pleasure to introduce Richard L. Nielsen as recipient of the Ralph W. Marsden Award for 2006. I am the designated citationist. As far as I know, the only previous citation Dick has received was in 1983, after Dick started his consulting practice. Having just purchased a new pickup truck, he was checking out its performance when a highway patrol officer awarded him a citation. I trust this will be a more pleasant, if no less memorable, experience.

Dick Nielsen is the quintessential economic geologist and a committed member of the community—both the community of earth science, and also the greater community. He volunteers at the Mineral Information Institute and the Denver Museum of Natural History, where I have seen him regale kids about the earth and its prehistoric occupants.

Dick says that the most rewarding job he has had with SEG is as chair of the Student Research Grant Committee, in which capacity he has so far served for 9 years. Upon assuming the post, Dick modernized SEG's grant program. Rather than a few large grants, SEG now awards many applicants. There were 102 applications in 2006. About 70 received grants—most in the \$2,500 to \$3,000 range. Dick was a member of the International Exchange Lecturer Committee from 1985 to 1989. He says another highlight of his service was as Chairman of the 1993 stand-alone meeting in Denver. He assembled a strong team of support. Art Barber and Paul Bailly secured \$150,000 from companies and Gary Sidder fielded inquiries about field trips and short courses. The meeting attracted 1,000 attendees from around the world.

Dick served on the publication committee in 1978 and 1979, and as associate editor of *Economic Geology* from 1991 through 1995. He served on Council from 1986 to 1988 and was President of the Society in 1996. Dick was also on a committee to address educational issues in 1997, a committee to select an Executive Director in 1998, and one to advise the Director from 1999 until 2003. Dick is a pleasure to work with. He brings no agenda except to better the Society to serve its members.

Dick's geologic roots extend into the rocks. He received B.S. and M.S. degrees from Caltech in 1957. Paul Bailly, always good at recognizing bright lights, hired Dick to work in the Great Lakes region for Bear Creek Mining Company. In 1960, Dick went on to the University of California, Berkeley, where he worked with Chuck Meyer and Howell Williams, and mapped the Pilot Mountains in the west part of the Walker Lane, Nevada, for a Ph.D. degree in 1964. He taught for a year, when Doug Cook spotted this rising star and took Dick to Bear Creek's Coordinating Unit in Salt Lake. He studied leached cappings there with Jim Anderson. From 1970 until 1977, he was in-house consultant and later Chief of Geologic Research, working in Indonesia and Papua New Guinea and Nevada.

Sam Adams took Dick off the street when Bear Creek's Coordinating Unit was closed in 1977. With Anaconda, he was on the uranium beat. When ARCO acquired Anaconda, they sent him to charm school in an attempt to groom him as a manager. Knowing what that was all about, he launched out in 1980 as a consultant (not in management, but in exploration). He has remained in demand, exclusively for Hecla in the early years and, after 1984, for major and junior mining and exploration companies.

I can think of no one in the Society who is more deserving of this award. In case you have not done so already, please recognize Dick Nielsen.

Geoffrey G. Snow

BRAND NEW 2020 GEOLOGY & MINING CALENDARS

*Nevada Bureau of Mines & Geology's
Nevada Geology Calendar 2020—
For Sale Now!*

This 12-month calendar (January through December 2020) is full of beautiful photos highlighting Nevada's scenic wonders and features a different geologic topic each month: Clan Alpine Mountains, White River Country, East Humboldt Range, Strata, Fissure Ridge, Little High Rock Canyon, Ragged Top, Nevada's Largest Earthquake, Geothermal Energy, Clayton Valley Dunes, Walker Lane, and Mormon Well Road.

Click here to view/order the calendar:
<http://pubs.nbmj.unr.edu/Nevada-geology-calendar-2020-p/cal2020.htm>

You may select "Pick up" on the shopping cart so you can pick yours up at the NBMG Gold building, 2175 Raggio Parkway.

Quantity discount: If you buy **10 or more** calendars per order, **you will receive a 20% discount!**



Mining Activity Update

Mike Brady, November 2019

www.activityupdate.com

NEVADA

US Gold Corp. announced that it completed its acquisition of Orevada Metals Ltd. for 2,000,000 shares. Orevada has an option to earn a 70% interest in the Maggie Creek Property. *E/MJ*: October 2019

Nevada Copper Corp. announced that it now has stockpiled at the surface 95,000 tons of development from the Pumpkin Hollow Mine ore that is ready to be processed. (resource = 49,172,000 tonnes @ 1.39% Cu, 0.17 gpt Au measured+indicated) *Press Release*: November 15

Hecla Mining Co. announced that mining operations at Midas are expected to end in the 4th quarter due to the lack of any developed ores. *Press Release*: November 7

Gold Standard Ventures Corp. announced that recent drill results at the Pinion/LT Project include 32.0-44.2 meters @ 1.58 gpt Au (LT19-02). *Press Release*: November 12

Newmont Goldcorp Corp. announced that reserves at the Carlin Mine aggregate 207,600,000 tonnes @ 1.88 gpt Au proven+probable. (was 234,500,000 tonnes @ 1.09 gpt Au proven+probable) *2019 Annual Report*

Newmont Goldcorp Corp. announced that reserves at the Phoenix Mine aggregate 133,100,000 tonnes @ 0.65 gpt Au, 0.18% Cu proven+probable. (was 226,300,000 tonnes @ 0.55 gpt Au, 0.16% Cu proven+probable) *2019 Annual Report*

Newmont Goldcorp Corp. announced that reserves at the Long Canyon Mine aggregate 22,300,000 tonnes @ 1.33 gpt Au proven+probable. (was 19,600,000 tonnes @ 1.67 gpt Au, 0.16% Cu proven+probable) *2019 Annual Report*

Barrian Mining Corp.(50.1%) announced that recent drill results at the Bolo Project include 79.3-201.2 meters @ 1.19 gpt Au (BL19-04). *Press Release*: October 28

ROCK TALK

Man Keeps Rock For Years, Hoping It's Gold. It Turned Out to Be Far More Valuable

JACINTA BOWLER, 27 DEC 2019 (Reprinted from Sciencealert.com)

<https://www.sciencealert.com/a-man-kept-this-rock-for-years-thinking-it-s-gold-turns-out-it-s-a-spectacular-meteorite>

In 2015, David Hole was prospecting in Maryborough Regional Park near Melbourne, Australia.

Armed with a metal detector, he discovered something out of the ordinary – a very heavy, reddish rock resting in some yellow clay. He took it home and tried everything to open it, sure that there was a gold nugget inside the rock - after all, Maryborough is in the Goldfields region, where the Australian gold rush peaked in the 19th century.

To crack open his find, Hole tried a rock saw, an angle grinder, a drill, even putting the thing in acid, but not even a sledgehammer could make a crack. That's because what he was trying so hard to open was no gold nugget. As he found out years later, it was a rare meteorite. "It had this sculpted, dimpled look to it," Melbourne museum geologist Dermot Henry [told The Sydney Morning Herald](#). "That's formed when they come through the atmosphere, they are melting on the outside, and the atmosphere sculpts them."

Unable to open the 'rock', but still intrigued, Hole took the meteorite into the Melbourne Museum to be identified. "I've looked at a lot of rocks that people think are meteorites," [Henry told 10 daily](#). In fact, after 37 years of working at the museum and examining thousands of rocks, Henry explains only two of the offerings have ever turned out to be real meteorites. This was one of the two.

"If you saw a rock on Earth like this, and you picked it up, it shouldn't be that heavy," another Melbourne Museum geologist, Bill Birch, [told The Sydney Morning Herald](#).

The researchers have recently published a scientific paper describing the 4.6 billion-year-old meteorite, which they've called Maryborough after the town near where it was found.



(Melbourne Museum)

It's a huge 17 kilograms (37.5 pounds), and after using a diamond saw to cut off a small slice, they discovered its composition has a high percentage of iron, making it a [H5 ordinary chondrite](#). Once open, you can also see the tiny crystallised droplets of metallic minerals throughout it, called [chondrules](#). "Meteorites provide the cheapest form of space exploration. They transport us back in time, providing clues to the age, formation and chemistry of our Solar System (including Earth)," [explains Henry](#). "Some provide a glimpse at the deep interior of our planet. In some meteorites, there is 'stardust' even older than our Solar System, which shows us how stars form and evolve to create elements of the periodic table. "Other rare meteorites contain organic molecules such as amino acids; the building blocks of life."



(Birch et al., PRSV, 2019)

Although the researchers don't yet know where the meteorite came from and how long it may have been on Earth, they do have some guesses. Our Solar System was once a spinning pile of dust and chondrite rocks. Eventually gravity pulled a lot of this material together into planets, but the leftovers mostly ended up in a huge asteroid belt. "This particular meteorite most probably comes out of the asteroid belt between Mars and Jupiter, and it's been nudged out of there by some asteroids smashing into each other, then one day it smashes into Earth," [Henry explained 10 daily](#).

Carbon dating suggests the meteorite has been on Earth between 100 and 1,000 years, and there's been a number of meteor sightings between 1889 and 1951 that could correspond to its arrival on our planet. The researchers argue that the Maryborough meteorite is much rarer than gold. It's one of only 17 meteorites ever recorded in the Australian state of Victoria, and it's the second largest chondritic mass, after a huge 55-kilogram specimen identified in 2003. "This is only the 17th meteorite found in Victoria, whereas there's been thousands of gold nuggets found," [Henry told 10 daily](#). "Looking at the chain of events, it's quite, you might say, astronomical it being discovered at all."

It's not even the first meteorite to take a few years to make it to a museum. [In a particularly amazing story](#) we covered last year, one space rock took 80 years, two owners, and a stint as a doorstop before making it to a museum.

Now is probably as good a time as any to check your backyard for particularly heavy and hard-to-break rocks - you might be sitting on a metaphorical gold mine.

The research has been published in [Proceedings of the Royal Society of Victoria](#).

This article was originally published in July 2019.

OTHER UPCOMING EVENTS

9 January 2020 Nevada Petroleum & Geothermal Society, Reno, NV monthly meeting. Tamarack Junction , 13101 So. Virginia Street. Reno NV. *Cocktails at 6:30 PM, Dinner at 7:00 PM.* **Speaker: William Osborn (Geothermal Solutions, Inc.) will be giving a talk titled: "Geothermal Systems, Saline Lake Basins and Mineral Extraction".** *Please make reservations by Tuesday, January 7, 2020.* [Click here to register online](#) and reserve your seat.

13 January 2020 SME Northern Nevada Section Monthly Meeting. Circus-Circus Mandalay Room, Reno NV. Speaker and Topic To Be Announced. Happy Hour @ 6 pm, Dinner @ 7 pm. Please contact Sarah Lightner for more information at 775-746-7147 or NnevSME@gmail.com

13 January 2020 DREGS (Denver Region Exploration Geologists), Speakers: Drs. Paul Bartos and John Dreier. Title: "DREGS GOES TO IRELAND - The Irish Zn Pb Orefield". Social 6 p.m., Presentation 7 p.m. at Berthoud Hall, Room 241, CO School of Mines, Golden. For more info. contact James Piper at geopros@q.com

14 January 2020 Arizona Geological Society meeting, Speaker: Vit Kuhnel presents "Fluid Mechanics Versus Fracture Flow". 6 to 9 p.m. at the Sheraton, 5151 E Grant Rd. (& Rosemont), Tucson, AZ More information and online registration: [Vit Kuhnel Presents Fluid Mechanics Versus Fracture Flow](#) . Dinner closes at 11 am Friday January 10, 2020.

20-23, January 2020 AME Mineral Exploration Roundup, Vancouver, BC. Registration Information click here: <https://roundup.amebc.ca/attendees/registration-info/>. The NMEC's "NEVADA ROOM" will be back in room 18 up the escalator from the lobby. This is THE place to meet up with other geos or to purchase some of our many GSN Publications! If there is a particular guidebook you want, please let Laura Ruud know so we can make sure it is available. gsn@gsnv.org

10-13 February 2020: 2019 NWRA Annual Conference Week – Monday, February 10, 2020 to Thursday, February 13, 2020. Location: *Tuscany Suites & Casino, 255 East Flamingo Road, Las Vegas, NV.* Sessions include: Water Rights in Nevada ~ MIKE SHE Workshop ~ Dam Safety Symposium ~ Drilling Symposium and much more. Go to <http://www.nwra.org/2020-annual-conference-week> to register & for hotel information. For more information call Tina Triplett at 775-473-5473 or creativerno@charter.net.

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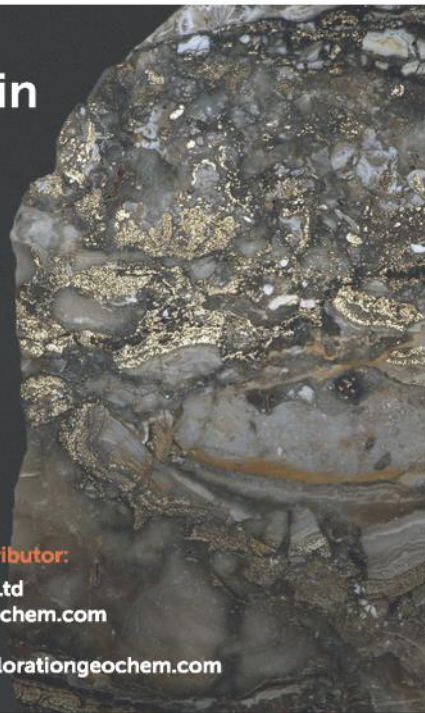
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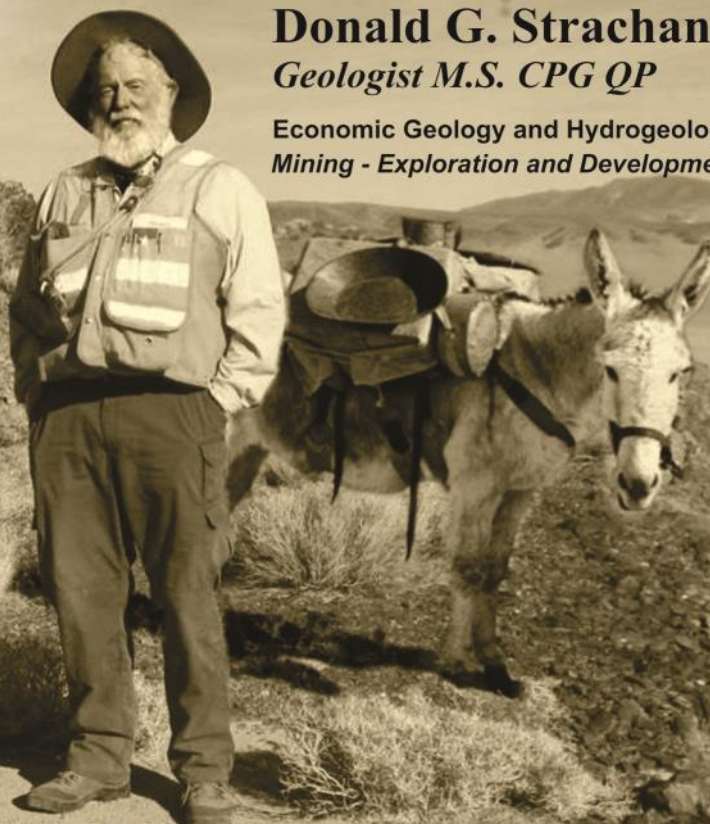
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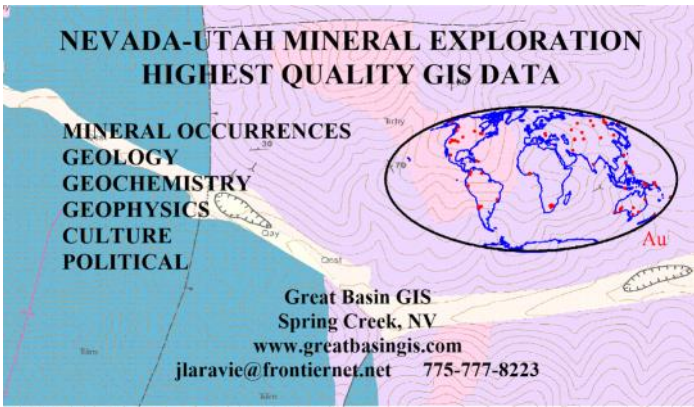
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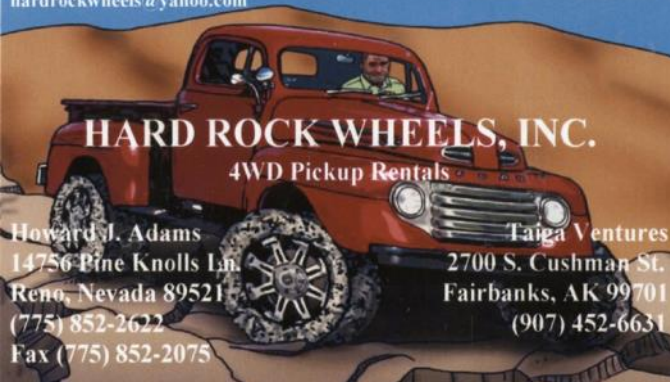
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Check out this line up of Keynote Speakers!

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Eric Sedorff—Opening Speaker
Keith Meldahl—Luncheon Speaker
Chuck Thorman—Closing Speaker

Tuesday, May 19, 2020

Elizabeth Miller—Opening Speaker
Joe Mazumdar—Luncheon Speaker

Wednesday, May 20, 2020

John Prochnau—Opening Speaker 1
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