Rock&Gem

Vol. 46, No. 08 • August 2016

REGULAR COLUMNS

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Rock & Gem (ISSN 0048-8453, USPS 486-290) is published monthly by Beckett Media LLC, 4635 McEwen Rd., Dallas, TX 75244.

Periodicals postage paid at Dallas, TX 75260 and at other mailing offices. Printed in U.S.A.

POSTMASTER: Send address changes to Rock & Gem, c/o Beckett Media, 4635 McEwen Rd., Dallas, TX 75244.

 Single-copy price $5.99. Subscription in U.S.A. and possessions: 1 year (12 issues) for $29.95; 2 years for $52.95; 3 years for $74.95. Add $24.00 per year postage for Canada and all other foreign countries.

EDITORIAL CONTACT INFORMATION:
editor@rockngem.com

Printed in U.S.A.

ON THE COVER

Many thunder eggs from the Lucky Strike mine in Prineville, Oregon, have hollow centers and botryoidal formations. (Jim Landon photo)

Garnet Hill, Nevada

This sharp, lustrous, deep-red euhedral spessartine crystal on rhyolite matrix measures 2.2 cm across. (Garnet Hill, Ely, White Pine County, Nevada)

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A Century-Old Gemstone Collecting Site

Story by Thomas Farley

References to Nevada's Garnet Hill kept popping up whenever I scoured my rock and gem guides. It's just outside Ely, in the east-central part of the state. The site seemed promising by its very name. Gold prospectors have a saying: "Find gold where it has been found before." That should apply, too, to any gem or mineral.

A closer look at my books revealed Garnet Hill to be a century-old collecting site. The garnets might be dark and small, but they were there. I was planning a trip from Las Vegas to Sacramento in late April. Though it made no sense at all, I decided to take a huge detour to Ely on my way to California—562 miles worth of detour.

As a disclaimer, I should say that I found little on Garnet Hill—it is a better side trip than end destination if you don't have at least half a day to look—but I did gain some important insights that should help you on your visit. This trip reminded me of my gold-seeking adventures: I might get skunked or spot a soaring bald eagle. On the drive out of Ely, I saw my first antelope. That's worth something to me. Perhaps to you, too.

THOMAS FARLEY

The spray of druse beneath these garnets consists of other minerals, which formed when the garnet crystals were growing.

THOMAS FARLEY

A sign along U.S. Highway 50 points the way to Garnet Hill.

To the public, garnet is an inexpensive red gemstone. An everyday jewel, it is faceted and set in rings, earrings and necklaces. To an industrialist, garnet is a workhorse mineral. With a hardness of Mohs 6-7.5, the stone is employed in waterjet cutting and as an abrasive powder. It is also used to filter water.

To a rockhound, garnet is a worthwhile and generally available rock to search for. Depending on where it is collected, it varies richly in translucency and color. In fact, the USGS says, "Garnet displays the greatest variety of color of any mineral, occurring in every color except blue" (http://minerals.usgs.gov/minerals/pubs/commodity/gemstones/sp14-95/garnet.html).

I first became interested in garnets while gold panning. Since garnets are heavier than ordinary gravel, gold prospecting literature said that they might remain in the pan after the lighter material had washed away. Alas, I never found any alluvial garnets while panning out. Perhaps my aggressive style had spun them downstream, or perhaps their dark color kept them hidden. My gold prospecting friends had equally poor results. None of them could ever show me a single garnet from any sluice box or gold pan cleanup. Well, then, if I couldn't find garnets in a flowing stream, I would go looking in the hills. Garnet Hill, at 7,280 feet, seemed a likely one.

My preparations might seem unusual, certainly tiring. I started exercising. I was out of shape and I knew the high elevation and mountainous terrain would beat on me. With my road trip as motivation, I began running or walking every other day. I also gathered my tools, including the screens I normally used in gold prospecting.

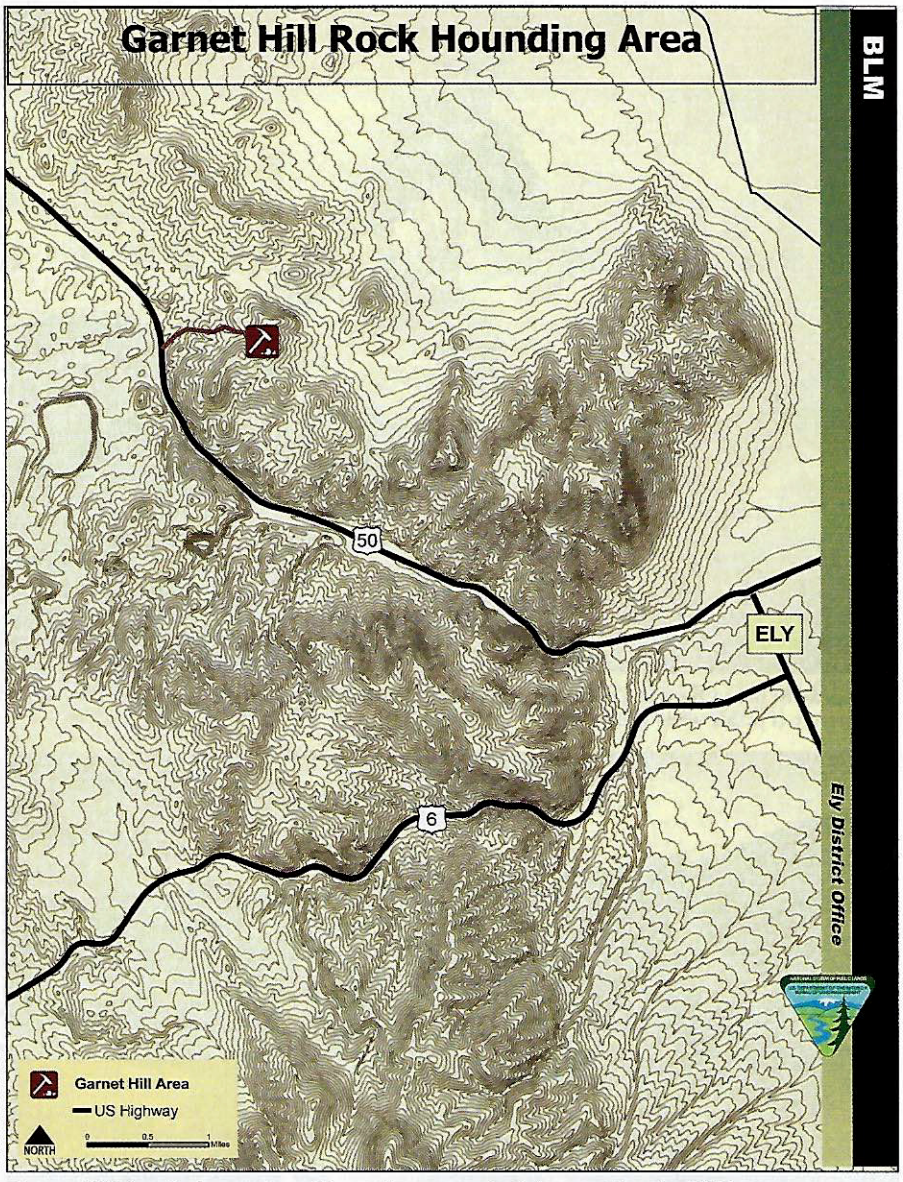
Internet posts by various people who had visited Garnet Hill described how they had screened to separate larger rocks from the very small garnets. I also filled up a 5-gallon jerry can with water to use with my 5-gallon buckets and screens. I knew that dirt and dust could easily hide the gems.

As I do before any field trip, I began reading. Minerals.net makes a concise assessment: "Garnet is not a single mineral, but describes a group of several closely related minerals. Garnets come in a variety of colors and have many different varieties." That sounded straightforward. And most books referred to only five or six varieties, of which pyrope, almandine and spessartine are three. Again, a somewhat approachable subject. The jewelry names applied to these varieties are trickier.

Joe Rothstein, writing in *Lapidary Journal*, put it this way: "Whether the phrase 'whim and whimsy' was invented to describe garnet nomenclature as used in the gem and jewelry trade I do not know but it certainly applies" ("The Gem Garnets", July 1983, p. 606).

The guidebook *Geology Underfoot in Central Nevada*, by Richard L. Orndorff, Robert W. Weider and Harry Filkorn (Mountain Press Publishing Co., 2001), saved me from getting lost. Its Garnet Hill chapter, Desert Gemstones, describes specifically what I'd find. It gives the stone's mineralogical

Rock & Gem gives locality information for reference purposes only. Readers should never attempt to visit any of the sites described in this publication without first verifying that the location is open to collecting and obtaining the permission of the landowner and/or mineral rights holder.



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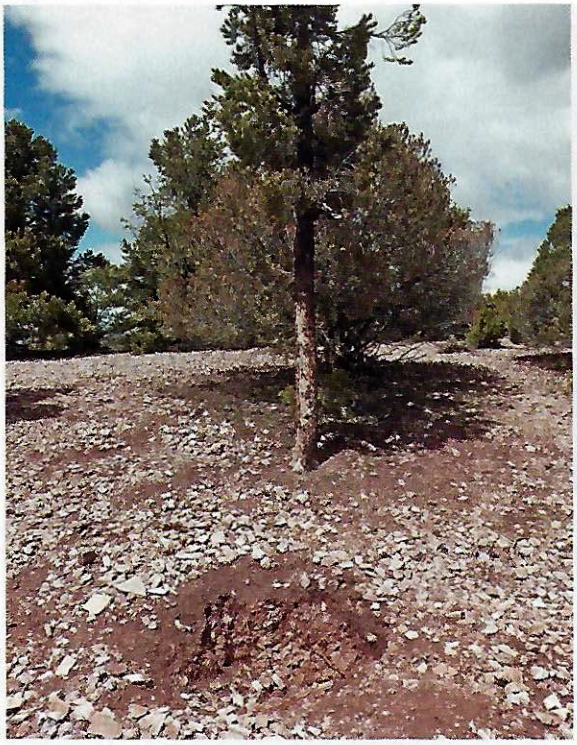
Garnet Hill is a designated rockhounding area administrated by the BLM.

description and its origin. There's no need to read about garnet elsewhere and then apply it to Garnet Hill. The authors have already done it:

> The particular type of garnet at Garnet Hill is a beautiful dark variety called almandine. Almandine consists primarily of the elements iron, aluminum, silicon, and oxygen bound together into a complex three-dimensional network. The element manganese sometimes takes the place of iron in the crystal structure, shifting the composition toward the manganese-rich variety of garnet called spessartine. Some garnets at Garnet Hill contain both iron and manganese in varying proportions. Mineralogists call them almandine-spessartine garnets.
>
> (*Geology Underfoot in Central Nevada*, p. 195)

With this tongue-twisting orientation, I felt more confident about my upcoming road trip. Garnet Hill had one variety of garnet, with one subvariety. Still, I wondered what color I might find. Red? Reddish-black? Almandine-spessartine might be either—even green, if a story I heard later was true.

I left Las Vegas on April 29 in pouring rain. My route on U.S. Highway 93 was due north, through the Mojave and then into the larger Nevada desert. Nellis Air Force Base was to the west. The highlight of those 110 miles was the Pahranagat Valley. It's a narrow strip of sometimes-arable land fed primarily by three large springs. The Paiute Indians called



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▲ **An aluminum oxide grinding stone on my Dremel 952 rotary tool, run at high speed, worked well to separate a garnet from its matrix.**

◀ **Some rockhounds dig holes in the hillside to get to the unweathered rhyolite below the surface.**

this area the "land of many waters". The Pahranagat National Wildlife Refuge visitor center is a "must" stop. Also, six other nearby locations in Lincoln County host native art and archeological sites (www.birdandhike.com/Glyphs/LincolnCo/LincolnCoRockArtGuide.pdf).

At the ghost town of Crystal Springs, there is a dogleg four-way intersection. The desired road north becomes state Route 318. The southwest-trending road is Rachel-Warm Springs Road/state Route 375, the so-called Extra-Terrestrial Highway. Years ago, friends of mine took Route 375 to Groom Lake Road, which they followed to a locked gate that barred access to the fabled Area 51. The road east from Crystal Springs, U.S. 93, is also interesting. Take that road and you'll come to the BLM-maintained Oak Springs Summit Trilobite Area. It's south of the summit at 6,231 feet. Look for the signposted dirt road.

For the next 133 miles, the drive north was uneventful. Twice each year, the Silver State Classic is run along a 90-mile stretch of it. That's a state-approved event in which cars race over the roadway as fast as they can. The record is 24 minutes! As I came into Ely the weather cleared a little. I drove through town and headed west on U.S. Highway 50. The road to Garnet Hill is just a few miles outside of Ely. A sign indicates the Garnet Hill Recreation Area. The access road is dirt, and although there were some muddy ruts from the recent rain, I slogged up with little concern. A normal-clearance vehicle could make it up if driven slowly. I would not advise trailers or large RVs.

The first people I met were a family of three inspecting a gully alongside the road, about a third of a mile down from the parking lot. They were looking for garnets that had weathered out of the parent rock, which is rhyolite. They said they had found some small garnets, but didn't show them to me. When I got to the parking lot, there were two passenger cars and three trucks. There were a few picnic tables that looked in good order and a vault toilet. Piñion pines thinly cloaked the hill, growing out of the light-pink rhyolite. A small family descended from the top of the hill to the parking lot and asked me if I knew where any garnets were. I said that the previous group had luck with the drainage ditches, but that I, too, was looking. The small children in both groups were crying. They obviously tired of looking long before their parents.

As I organized my tools, scattered snowflakes and light hail began falling. Cloudy skies meant I probably couldn't use reflection to help me. (I had read descriptions of people walking with their backs to the sun, hoping to see a garnet reflect light, like broken glass in a gravel parking lot.) Alas, the sun never came out long enough to help. And I realized later that many garnets were only partially faceted, if at all. That is, they did not all have faces, but were often irregularly rounded stones that would not easily reflect light.

The rain worked against me. It made the soil and every rock darker than usual. Looking for deep-red color, I was instead picking up charred wood from campfires and wet pinecone bits. There was no distinguishing all the black-looking material on the ground. Another approach was needed. Perhaps instead of scanning the ground, I could break open the rhyolite and expose garnets. That, however, also proved difficult.

Most of the broken rock I saw was solid, without voids or fractures, offering little chance of finding garnets. What I wanted were rocks with cavities. Garnet Hill rhyolite contains small holes that Orndorff calls "vesicles". They formed when magma cooled and hardened around gas bubbles. It is in these vesicles, or pockets, that garnets can be found. In a situation that is almost unique to this location, the garnets were produced by hot vapor as the rhyolite magma cooled.

The rhyolite with vesicles that I found only

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From the top of Garnet Hill, the copper mines near Ruth are visible in the distance.

hinted at garnet. I picked up one rock showing material half the size of a small fingernail, too tiny to easily photograph. The rock exhibited a light-colored druse surrounding a protuberance of the gemstone. The spray of tiny crystals reminded me of powdered sugar. The *Geology Underfoot* authors say these are other minerals that formed at the same time the garnet crystals were growing.

I collected two more rocks that glinted red and continued scanning the ground. Here's what I should have done: I should have taken home a 5-gallon bucket or two of promising rock. I could then have carefully hammered the material at my convenience, without being rained on.

Broken rhyolite was everywhere. Was this the natural condition of the hill or was it all the result of garnet hunting? There were some spots of solid rhyolite here and there, exposed at the bottom of holes dug through the rubble and into the topsoil. Unfortunately, my breaker bar wasn't heavy enough to split apart the solid rock. At one point, a bright-green lizard kept me company, posing long enough for a picture. Ph.D. ecologist Jim Boone later identified it as a Great Basin fence lizard, a common resident of central Nevada.

What about my screens? The difficulty was where to set up. When gold prospecting, I'd set up a screening station where I wanted to classify material going into a pan or a sluice box. Good spots were on the inside bend of a stream or where there was a great deal of black sand. Most of the time, I would do a great deal of sampling first by quickly panning out gravel in different locations. On Garnet Hill, I couldn't find any kind of streambed in the main area, and there was just broken rock, no gravel. Given the difficulty of moving around a large tub of water, I decided not to screen.

After two hours, I collected my tools and prepared to head back to Ely. It was still raining. The second family I met came down the hill, also fleeing the rain. They showed me three rocks they had found, each showing garnet stuck to the rhyolite. These stones had significantly more gem material than the ones I had collected. Perhaps, I thought, it was just a matter of putting in the hours. And maybe a group is best: more sets of eyes, to scan as much rock as possible.

I looked around the area once more. The great copper mines near Ruth stood in the distance. In unadjusted dollars, more money has been produced at these copper mines than the silver and gold mines of the Comstock (*Metal Mining Districts of Nevada*, 2nd Edition, by John H. Schilling, Nevada Bureau of Mines Map 37, 1969). Driving back to Ely, I knew I wouldn't be able to come back the next day. Was there a better way to search?

I spent that night at the excellent and historic Hotel Nevada. It has many celebrity-themed rooms and a 24-hour restaurant. The next morning, I fell into conversation with the bartender. He said locals frequent Garnet Hill and it is not worked out. The key, he said, was to go when conditions were dry. Locals scan the ground for what looks like dried blood. He said that, over the years,

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There is a detail-rich information board near the Garnet Hill parking lot.

he's gathered enough garnets to fill a bottle. With two nice stones, he had earrings made for his wife. And just recently, a friend of his claimed to have found a green garnet. The bartender said he hadn't seen it yet, but was looking forward to it. I asked about hammering the rhyolite apart. He grinned broadly and said that might work, but he doesn't do it. He said there were enough garnets left that most people simply looked at the ground for loose stones. I thanked him and told him I would be back when I had more time and when it wasn't raining.

After I got home to Las Vegas, I started researching Garnet Hill again. Perhaps I could continue my search from a distance. I reached out to local rockhounds, with no luck. No one had recent experience with the site. And a local rock shop had no specimens from Ely. I then went on online and quickly discovered that people were indeed finding garnets on Garnet Hill.

My first stop was at John Betts Fine Minerals (www.johnbetts-fineminerals.com). John is a fine-mineral dealer. His photo gallery displayed 16 gem-grade garnet specimens, all of which had been sold. I then went to eBay. There were nine listings, each showing garnet attached to pinkish rhyolite. They weren't spectacular pieces, but ones that I imagined were more typical of the area. I wound up buying 10 rocks from two dealers for $35. If I could not go back to the mountain, the mountain would come to me. Within a few days, I had both shipments and plenty of material to try out an idea I had.

Would it be possible to cut out the garnets from the rhyolite so that I could tumble them? I selected a rock at random to experiment on. I put an aluminum oxide grinding stone on my Dremel 952 rotary tool. At high speed, it worked well. Low speed did not work well, but produced the same odor as when you get your teeth drilled! After a few minutes, I removed a garnet from its matrix and then tried removing the excess rhyolite. That's where things broke down: I couldn't get the excess removed. Trying to do so would bring the grinding stone too close to the garnet, possibly breaking it. The stones would have to be tumbled as they were. This experiment taught me that searching the ground is probably the best approach if one wants individual garnets.

I then looked closer at my remaining lot. Each rock had fracture marks, apparently from being broken from bigger pieces. So despite what the bartender told me, people were also finding worthwhile garnets by breaking rhyolite. That was good news, as it kept all doors to discovery open.

Garnet Hill is best as a side destination if you have only a few hours to spend. If you have more time, make it a group hunt and hold a picnic. Stay overnight in Ely or camp on the hill; the BLM permits tents and small RVs. Trailers aren't recommended since you may have trouble turning around (www.blm.gov/nv/st/en/fo/ely_field_office/blm_programs/recreation/rock_collecting.html).

OTHER ATTRACTIONS

Ely also boasts other attractions that are worth a weekend or several days. One is a world-class railroad museum, with both steam and diesel locomotives operating on miles of track. Of note is the occasionally scheduled Rockin' & Rollin' Geology Train. The museum touts it as "A lively presentation by a local geologist talking about the railroad, mining history, and a show and tell of ore samples. All of this occurs as the century-old steam engine is pulling your train through the great geological 'museum' right outside the window of your coach" (http://nnry.com/pages/special.php).

The Great Basin National Park is 70 miles from Ely. Tours of the outstanding Lehman Caves are given year round (www.nps.gov/grba/planyourvisit/lehman-caves-tours.htm). I still have fond memories of the tour I took with my family over 40 years ago. The National Park Service puts it concisely: "Lehman Caves is a beautiful marble cave ornately decorated with stalactites, stalagmites, helictites, flowstone, popcorn, and over 300 rare shield formations."

Nevada's Ward Charcoal Ovens State State Historic Park is 17 miles from Ely. In the 1870s, Italian stonemasons built these beehive-shaped ovens to produce charcoal for use in forging and mining operations. The park offers opportunities for hiking, mountain biking, snowshoeing, and cross-country skiing in appropriate seasons (http://parks.nv.gov/parks/ward-charcoal-ovens-state-historic-park/).

It would be wonderful to say I made out handsomely on Garnet Hill, but I did not. Still, I saw beautiful country and learned lessons for my next trip. The next time, I will spend several days—enough to enjoy the garnets, the railroad, and the caves. If you are interested, find a used bookseller and order *Geology Underfoot*, perhaps buy a rock from eBay, and get ready for your Garnet Hill adventure.

Thomas Farley is a freelance writer living in Las Vegas. He enjoys exploring the wild and wonderful backcountry of Nevada.