

# THE GOLD NUGGET

July 2020

## **The Meetings for July and August have been cancelled!**

The Prospecting Outings Scheduled for Black Hawk has also been cancelled. They are dependent upon Gilpin County opening up their restrictions. Again, I will notify the membership as soon as I can determine any change in their regulations!

Until then, please stay safe and pray for an early return to normalcy!!

### **The Prez Sez by Jim Long**



The 'Safer at Home' Order has changed to a 'Protect your Neighbor' Order for most of Colorado until further notice. However, the state is attempting to return to some form of normalcy in small doses and feeling its way through a labyrinth of problems and situations. We are included in that group of entities which kind of fall into limbo. Our fate continues to depend on the State, and/or Jefferson County, and/or the City of Lakewood deciding on how many people can attend a function. Our meetings draw from 75 to 100. That number will determine when we will be able to reconvene any meetings. We also rely on Gilpin County to provide guidance on when we can get back to prospecting at our Black Hawk site. So the bottom line depends on a number of governmental entities making decisions that control what we can or cannot do. I will advise everyone the very moment I get a decision from anyone that effects our organization.

I have noticed that the Colorado snowpack is so much lower than it was at this time last year. That means that the high water will not be lasting as long and for those of you who desire to venture out into the creeks and rivers should be getting into the water a lot sooner and that is certainly good news for prospecting..! The bad news is that the whole State is still caught up in this Covid-19 stuff so who knows when and if we will ever be able to get out for Club Outings to dig or even to have our annual picnic. Everything remains up in the air and now that all the states around us are having upticks and resurgences of the virus, things are even iffier.

A lot of stuff is happening around with video presentations on mediums such as Zoom and several of our members have asked if that would work for us. The short answer is probably not very well as we do have members who don't have computers and would have difficulty is plugging in. Hopefully, everyone is reading our monthly newsletter and still keeping up with news and information. We are not getting the little things in like the Cache Clue and the Question of the Month or the Finds of the Month and there has not been any gold nugget give-a-ways and I am sure that there are a lot of us who miss those parts of our meetings. It was also brought to my attention that at least half of the membership has not renewed their 2020 memberships and that has reduced the Club's financial line to the point that I will have to carefully watch the bottom line for our gold buys for the coming year. On the other hand, we haven't given away all the gold that we bought for this year so every month we miss, we add a month at the back. Not ideal by any stretch of the imagination but it is what it is. I personally would have no problem getting things going again, but as your President, I have to weigh the well-being of the Club and its membership against everything else. I will always rule on the side of caution in that regard and I am sure that everyone understands that.

On the prospecting side of things, I recently heard of a miner down on the Arkansas River who is fighting with the BLM down there over water. It seems that they are demanding that he apply for a water permit to use the water he is taking from the river with his high banker claiming that he is using the water. He contends that he is only borrowing the water long enough to wash his rocks and returning it to the river undamaged. Not good enough, says the BLM. Any water you take out of the stream is being 'used' and you have to have a permit to 'use' it. Now, I do not have the exact details of all this tom foolishness but if I even have the remotest inkling that I have just described, then this is absurdity at its worst. The miner has a legitimate registered claim and has had for several years. But suddenly things have changed. If this is all true, I am truly astounded. I also just read an op-ed posted in the Seattle Examiner by some idiot who states implicitly that all suction dredging is killing all the poor endangered salmon in the Washington Rivers. He is obviously a wannabe spokesperson for the anti-mining extremist radical eco animal nuts that can be found multiplying in our northwestern states of Washington, Oregon and California. Pretty sure, he is also supporting the radical movement to introduce wolves



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back into Colorado. All of these psycho nuts are totally oblivious to all the modern science which clearly proves suction dredging helps the water eco system and that wolves carry a disease that is fatal to humans. I am guessing they are all antifa supporters or members. The world around us is turning insane, I swear!

Anyway.... that is the view from here and I wish you all Good Luck in your endeavors, no matter what they may be! And until we meet again, keep your sunny sides up and may the bottoms of your pans turn bright with that treasured 'Yaller Gold'

You may contact me at 303-452-6087 or at [jnslong945@msn.com](mailto:jnslong945@msn.com) . Happy and safe prospecting to all!!!

## The V.P. Corner by "Joe Fortunato



Another month has passed and we are half way through 2020. I sure hope that the second half of this year is better than what we have had thus far. I still haven't managed to get out and do any prospecting or detecting. Today is Sunday June 28, I plan on getting out to do some coin and jewelry hunting when I get this article completed and sent to President Long. Also, I have planned a one-day gold detecting outing with one of our members around the 1st. of July. We plan on returning to a spot that has produced gold using metal detectors on prior occasions. I have not checked the water level on clear creek for weeks, but I am thinking it could be difficult to work at this time of the year. I haven't done any panning or sluicing this year, so I don't have much to report on that front. I do have a couple of items from the metal detecting side, one of them sad and the other quite good. I will start with the sad news. It looks like Whites Metal Detectors based in Sweet Home, Oregon is closing its doors after 70 years in business. Whites have been a family owned and operated business from the beginning. I feel bad for the family and for the fine folks that engineered and built the Whites line of detectors and related products. I guess there is a chance that Whites could be purchased in some form or fashion but that remains to be seen, time will tell. That was the sad part, now for some good news. Last October, one of my detecting friends moved to the upper mid-west part of the country. He is a skilled detectorist, so after getting moved in to their new place, it was back to detecting for him and his wife. The area is very much rural, and the people who sold them their home own a number of properties, some of which have been vacant for years. They were granted permission to detect and explore one of those old farms. After detecting for a while my friend told his wife that, he was going to take a look inside the old house. He wanted to check out any likely places where valuables might have been stashed away in years past. When he checked the attic, he discovered a large stash of coins. There were several bank bags full of wheat pennies , 9,321 of them!!! As he continued, he found coins from six foreign countries .. 56, US silver dollars .. 4, US silver half dollars ... 165, US silver quarters ... 317, US silver dimes ... 310, US indian head pennies ... 9, US war pennies (steel) ... 26, US Lincoln pennies ... 300, Canadian pennies ... 28, along with some other damaged coins ... the total number of coins ... 10,683 !!!!! What a great discovery, persistence pays off !!!!! I guess that is all that I have for this month, I hope that I have something good to report from my one day gold detecting trip in next months newsletter. Until next time ..... MAY ALL YOUR ADVENTURES BE .....GOLDEN !!!!! Questions or comments ..... Call or Text me.... 303-263-7204 Joe Fortunato

## From the Treasurer/Secretary Ledger by Joe Kafka



The Coronavirus has disrupted everything so whenever we are able to reconvene, the next Meeting will feature a nine (9)-nugget giveaway that will include a 2.4-gram nugget. We should have a new "Special Nugget" by then as well. Be sure and bring extra cash for the nugget giveaways The Club remains in the black and members may request to see the financial report at any time that I have at my desk in the back. Hope to see you all there at the next meeting.!!

## Board Meeting Minutes From Jun 2020

James Long	Joe Shubert	Joe Fortunato	John Johnson
Mike Stevens	Joe Johnston	Chris Kafka	Brandon Luchtenburg
Joe Kafka	Bobby Manning	Andy Doll	Gary Hawley



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THERE WAS NO BOARD MEETING FOR MAY DUE TO THE CORONAVIRUS PANDEMIC.  
HOPE TO SEE YOU NEXT MONTH.

#### QUESTION OF THE MONTH FOR THE NEXT TIME WHENEVER WE MEET?

Subtract the # of electrons in an atom of gold from its atomic weight and that number is the answer to this month's question.

#### 2020 GPR Board of Directors Members

##### President

James 'JJ' Long

##### Vice President

Joe Fortunato

##### Secretary/Treasurer

Joe Kafka

##### 2 Year Board Members

Joe Johnston (2017)

Joe Shubert (2018)

##### 1 Year Board Members

Andy Doll

Brandon Luchtenburg

John Johnson II

Bobby Manning

Chris Kafka

Mike Stevens

##### Past President

Gary Hawley

### General Meeting Minutes From Jun 2020

DUE TO THE CORONAVIRUS PANDEMIC, THERE WAS NO MEETING. WE HOPE TO MEET SOME NIGHT??

#### A Miner's Laugh

An old miner named Bill was walking down the street the other day when he saw his best friend Jeff. So he walked up to him and mentioned that he had the craziest dream the other night. Jeff listened as the old boy told him that the dream consisted of just one thing...a huge glowing number "5". It was made of gold and sparkled with shiny diamonds. Jeff's curiosity was peaked. The old miner went on to say that the first thing that he did in the morning was to grab the daily racing digest and look up the 5th race. Jeff raised an eyebrow. Bill told him that the #5 horse in the 5th race was named "The 5th Element." Jeff started grinning. Then Bill told him point-by-point what he did that entire day. He ate 5 bowls of cereal for breakfast and drank 5 cups of coffee. He went for a 5 mile jog to clear his head. He took a 5 minute shower to rinse off and dressed in the 5th suit he found in his closet. He then sat in his car for 5 minutes before starting it and then drove to the racetrack and parked in the 5th stall in the 5th row. He then entered through the 5th admissions gate and bought 5 programs. He then went to the 5th betting window and bet \$555 on the 5th horse in the 5th race. He then went and sat in the 5th row of the bleachers making sure there were 5 people sitting on both sides of him. He then settled in and waited for the race to start.



"Well," said Jeff. "Did your horse win??" Bill frowned at Jeff and said, "Nah, stupid horse came in 5th...!"

*Taken from the internet and revised just for all us 'old miners'*

#### The finds of the Month 2020:

Be sure to bring your finds of the month that you have collected since the **February meeting**. All those finds will be in competition when we can reconvene next, which may in fact, not be until May. The judging has started anew for the year 2020 and the November 2019 Finds are included in the 2020 contest.

Be sure to save all your winning items for the November 2020 judging.



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### **Forrest Fenn Treasure has been Found**

A bronze chest filled with gold, jewels and other valuables worth more than \$1 million and hidden a decade ago somewhere in the Rocky Mountain Wilderness has been found, according to a famed art and antiquities collector who created the treasure hunt. Forrest Fenn, 89, told the Santa Fe New Mexican last week that a man who did not want his name release, but was from back east, located the chest around June 6 and the discovery was confirmed by a photograph that the man had sent him. "It was under a canopy of starts in the lush, forested vegetation of the Rocky Mountains and had not moved from the spot where I hid it more than 10 years ago," Fenn said in a statement on his website that still did not reveal the exact location. "I do not know the person who found it, but the poem in my book led him to the precise spot." Fenn posted clues to the treasure's whereabouts online and in a 24 line poem that was published in his 2010 autobiography "The Thrill of the Chase."



Hundreds of thousands have hunted in vain across remote corner of the US West for the bronze chest believed to be filled with gold coins, jewelry and other valuable items. Many quit their jobs to dedicate themselves to the search. At least four people died searching for it. Fenn, who lives in Sana Fe, said he packed and repacked his treasure chest for more than a decade, sprinkling in gold dust and adding hundreds of rare gold coins and gold nuggets. Pre-Columbian animal figures went in along with prehistoric 'mirrors' of hammered gold, ancient Chinese faces carved from jade and antique jewelry with rubies and emeralds. He said he hid the treasure as a way to tempt people to get out into the wilderness and give them a chance to launch an old fashioned adventure. Fenn told the New Mexican in 2017 that the chest weighed 20

pounds and the contents weighed another 22 pounds. He said he delivered the chest to its hiding place by himself over two separate trips. Asked how he felt now that the treasure has been found, Fenn said: "I don't know, I feel halfway kind of glad, halfway kind of sad because the chase is over."

*(I have posted several stories and the poem over the last number of years related to the 'Chase'. There is a lot of anger on some of the forums because no further information is coming out though Fenn says that it will. But people want to know where it was and how the clues applied. Some say it was a huge hoax and Fenn never hid anything at all. As in everything, there are 'believers' and there are 'haters' and it will be so in all things. I believe he hid it. I believe it was located in one of two places in Colorado. Time only will tell if any facts come out to alleviate any of the grumblings or not. I do know this much, this was one of the greatest modern era treasure hunts that has evolved in the last several decades and ranks as number 1 in my book. I hope someone comes up with another one soon. We need diversions such as this to satisfy that internal 'quest for adventure' that can be so alluring. From me personally, I say 'Thank you Forrest, it was fun...'!!!)*

### **What Type of Sluice Box Should I Buy?** By Pres. JJ Long

Well now, that is just about another 64,000 dollar question. I have been hearing this argument from my fellow prospectors for a long time as well. Back in the day, of course, they often used mere wooden slats across their wooden sluice boxes to break up the flow and give the 'heavies' a place to fall out behind the riffles. The 'old timers' usually started off with a pan looking for gold and when they found a place that had good color, they would follow it upstream until they found the source. Usually, they only took smaller flour type gold to buy supplies like coffee, salt, flour and beans with. But they were looking for larger gold like nuggets and vein outcroppings before filing a claim. Once good gold was found, a rush of sorts would generally follow and more claims would be filed. This resulted in limited areas to prospect and the miners began placer operations. Placer mining generally involved more than a gold pan. Enter the sluice box. A sluice box allowed them to move more material more quickly to extract the free gold. Other devices were popular as well, to include a rocker box. But generally, if there was sufficient water moving and sufficient downgrade, a sluice box would be built. If the claim was ran by two or more miners, a sluice box made sense. The design was pretty simple as illustrated in the photo above. Such devices served the miners well during the California rush of 49, the Colorado rush



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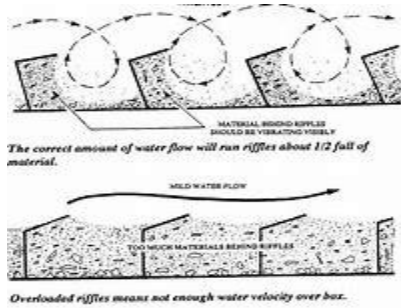
of 59, and the Alaskan rush of 92. Those rushes drew thousands of miners to the gold fields. But there were prospectors spreading out over the entire western and northern holdings.

The search for gold and quick riches were a powerful draw to many and most went broke or barely scraped by. America became settled and industry and agriculture took hold and the country was built. The depression era started another small gold rush and panning for gold was a way to help feed the family. Surprisingly, there was still a lot of gold to be found. Though most of the readily available larger nuggets had been removed, there was still plenty of flour gold available to just about anybody who wanted to pan and work long hours. The cost of living was nowhere near what it is today so a little gold went a lot further. But industry gave some innovative folks ideas when it came to getting gold easier. What if we could make sluice boxes from lighter weight material such as aluminum. Wood never lasted very long and deteriorated in water far too quickly. Metal or alloys would last much longer, maybe forever. Entrepreneurs were everywhere and ready to make it happen. And a new era of manufacturing began.

Even back in the day, many would be miners quickly grasped that all the good ground had been claimed but that all those miners would need supplies. So some changed course and made their fortune by supplying the others with tools and food and clothing. And the expression 'mining the miners' was born, a term that is used to this very day. Digging for gold is hard work for a fact. So it is easier sometimes to design equipment for mining the gold and sell it to the ones who want to mine for the gold. Then compare bank balances to see who struck it rich and who didn't..! Hah.....so let's talk about some of the modern versions of sluice boxes and the difference they have made.



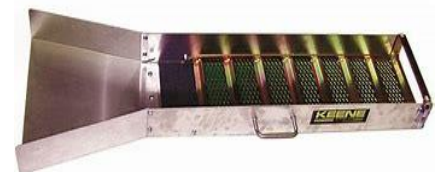
The progression has always been from a gold pan to a sluice box to a high banker to a dredge to a wash plant in terms of moving material and maximizing your potential recovery. For the modern small scale miner, a sluice box is a natural progression in material moving. Colorado is very well known for our smaller flour gold. Is there larger gold available? Absolutely, but most of it is on private or claimed ground. The accessible ground to the average modern prospector will produce predominately smaller flour gold. And a sluice box will work very well at collecting that small gold. But what to choose? The market is flooded with all different styles, brands and designs. My dad taught me to problem solve by using the 'kiss' principle, and by that, he meant to look at problems in their simplest terms by 'keeping it simple (stupid)'. A sluice box merely is a platform consisting of a channel filled with carpet and having riffles spaced along it through which you run water and feed material (dirt) through allowing heavies such as gold to drop out behind the riffles. There are dozens of brand names out there and probably a hundred or more designs. Some are narrow, some are wide, some fold, some are metal, some are plastic, some have removable riffles, some have permanent riffles, some are for slow water and



some for fast water, and on and on and on. If you can imagine it, I suppose somebody has designed and built it. To be effective, any sluice box must contain sufficient riffles to allow material to pass through the channel and permit the heavies to include gold, to drop out behind the riffles and stay in the box while all lighter material is carried a way.

Popular brands are Keene, Royal, GoldPro, Angus MacKirk and many, many others. I personally use a Keene A52 as my primary sluice and am quite happy with it. I have tweaked it considerably to do quite well at capturing fine gold. I have had many sluices over the years to include several

Angus MacKirk, a Royal, several Wolf Traps, Bohrgard Gold, a Pro Mack, and probably a few others I can no longer remember. Some were aluminum and some were plastic. I still have a couple of small ones along with my Keene. My second favorite is my Angus MacKirk. I have included photos of them herein. Each of



my favorites have their own place and use depending on where I am and what I am trying to do. I recommend that if you don't have a sluice box, you get down to the creek and find some folks who are sluicing and check them out. Most miners today are willing to answer a few questions for you and let you see how they are using their equipment. It lets you see what is being used and what is the more popular and why. Also check out the internet. There is a ton of information that is readily accessible on the web. All the manufactures have pages and information, and of course, they will tell you that there product is the best. That is why you need to go to the creek and see some in action. The cost of a box all depends



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on what you decide you want. A Keene like mine will run you around 125.00. A plastic MacKirk can start around 65.00 or so. It won't break the bank and you get a chance to run a lot more material a lot quicker.

To operate a sluice box, there are several keys to remember. The platform (your box) needs to be stable and not moving around. The water flow must be sufficient to move the material through without clogging up the riffles. There should be an average drop of an inch to a foot from the front to the back of the sluice. Water flow is sufficient when you can spread material into the flared mouth and have it all pass over the black matting in 3 to 5 seconds. After running material through for 5 minutes and you can still see the top of the bottom riffle, then you have sufficient drop and water flow. This process always takes a few minutes to work out on the river but once you get it, the results speak for themselves. That is why it is so important to get out and find someone who knows what they are doing and tag along to learn. Owning and using a sluice box is the next progression from a gold pan. Using one can increase your experience level and the gold in your poke. They are inexpensive and can easily fit in most vehicles with no problem. So check them out, find one that fits you and your budget, and get to digging. There is still plenty of gold out there and some of it could be yours..!

## **The Business of Gold** by Tom Massie (April 1989)

A good listener may yet sit in the shade of a wooden awning and hear of gold that has been found, only to be lost again. Stories of the Lost Dutchman's Vein, Breyfogle vein and the Hyspus Mine are some of the more famous lost gold stories. Often the most intriguing stories deal with finds that forever afterward eluded lone discoverers, not infrequently causing searchers to disappear permanently. Prospector Pete was one of these victims who apparently walked into a desert mirage to stay. He had been traveling from the Emigrants Pass area of Death Valley toward Las Vegas. Reaching the foothills of the Funeral Mountains, he climbed a small hill looking for traces of water. Instead of water, he saw a quartz outcrop rich in wire gold. The vein was in a rocky formation, plainly to be seen extending down over a brief stretch of the hillside. The prospector took samples which were seen by assayers in Las Vegas and points in Nevada where he assembled a one-man outfit to head back toward the valley. But he was never seen again after passing the last settlement at Latrop Wells. Those familiar with the repetitious character of those hills can vision the man's attempts to orient his position, one apparently familiar landmark after another luring him on foot for just another try past another hill until food and water ran too low. A minor accident to those supplies or a moment of absentmindedness in their care may make all the difference between life and death. This prospector's find is given evidence for several reasons. Of course, there was no reason for him to show other than genuine samples, or to make a lone return to find his strike except for direct profit from his own labor. The Death Valley region as well as the neighboring Mojave Desert country is mineralized with substantial values of gold and silver. The Funeral Mountains show rock formations belonging to all of the main geological ages. Most lost mines are marked with a secret landmark such as the shadow man of the Lost Dutchman. When the sun is just right in the sky, it strikes a certain rock that casts a shadow which looks like a man standing in the desert marking the entrance to the mine. Some lost mines have been found, such as the Lost Indian Girl mine found in 1971, but most are mere wives tales and tall stories of treasure untold.

## **Top Ten US Hot Spots for Gem Hunting** by Tracy Repp

If you have ever wondered where the best places are in the US to hunt for precious and semi-precious stones, then this top 10 list is for you. The US is a country with a long and complicated geologic history. From mountain building and volcanism, to uplift and erosion, the processes that have shaped the country, and indeed, the continent, have resulted in the formation of a vast array of mineral deposits. There are numerous places country-wide top hunt for amazingly spectacular finds. The following are a sampling of the best of the best..!

1. Emerald Hollow Mine, Hiddenite, North Carolina – The three famed Hiddenite gem mines are known for some of the largest gem discoveries in the world. One of these, the Emerald Hollow Mine, is the only emerald mine in the US open to the public. While over 60 types of gemstones can be found at the mine, emerald is by far the most well-known. The 70 acre mine site is also known to yield sapphire, aquamarine, garnet, amethyst, topaz, tourmaline and the very rare hiddenite, for which the nearby town is named. The mine is open year around and offers sluicing, digging and creeking activities.



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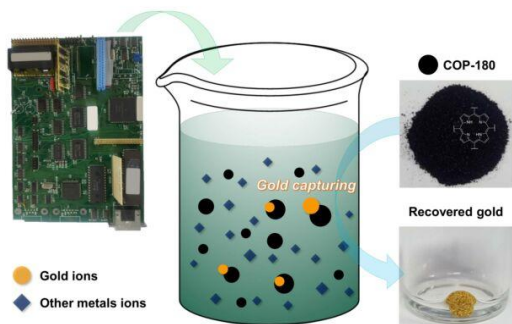
2. Crater of Diamonds State Park, Murfreesboro, Arkansas – The Crater of Diamonds State Park is in an ancient volcanic crater about 120 miles southwest of Little Rock, Arkansas. Famous for being the only existing diamond mine where visitors can prospect and keep their findings, this park is a popular tourist attraction. Diamonds are so common here that they are often found just lying on the ground. The park's website keeps a record of large diamond finds, including a 16 carat diamond discovered in 1975 and an 8.5 carat gem found in 2015. In all, over 30,000 diamonds have been found by visitors at the site since it opened to the public.
3. Gem Mountain Sapphire Mine, Phillipsburg, Montana – Montana's Gem Mountain Sapphire Mine is one of the world's largest sapphire deposits. The mine which has produced over 180 million carats over 120 years, provides gravel buckets loaded with sapphires of all shapes and sizes for the mine's visitors to sift through. The mine provides staff to help visitors clean and assess their finds and offers ready-made Montana sapphire jewelry. You can buy a bucket of sapphire gravel to go or order gravel online to be shipped to our home.
4. Morefield Mine, Amelia, Virginia – The Morefield Mine is an underground mine that cuts into a pegmatite dike containing almost 80 types of minerals. The mine is most famous for its production of amazonite, but garnet, topaz, amethyst and other sought after minerals can be found. As the underground mining activities progress, rock is hoisted to the surface and laid out for collecting. The mine was temporarily closed as of January 2020 while the owners continue to advance exploration underground.
5. Cherokee Ruby & Sapphire Mine, Franklin, North Carolina – Located 115 miles from the Gem Mountain Gemstone Mine, the Cherokee Ruby and Sapphire Mine is another site in the beautiful Blue Ridge Mountains. The placer mine site produces ruby, sapphire, garnet, moonstone, rutile and more.
6. Crystal Grove Diamond Mine, St. Johnsville, New York – The Crystal Grove Diamond Mine is known for its deposit of beautiful Herkimer diamonds, which include matrix and druzy forms, as well as loose crystals that can be found lying in the dirt. Herkimer diamonds are not diamonds, they are double-terminated quartz crystals found in the dolomite of Herkimer County, New York. Their brilliant clarity and natural faceting earned them the diamond nickname. The mine has an adjacent forested campground, which is a plus for visitors intending to enjoy a longer stay in the region. For embedded crystals, a chisel and hammer are recommended and can be rented on site.
7. Gem Mountain Gemstone Mine, Spruce Pine, North Carolina – With the Blue Ridge Mountains as a backdrop, Gem Mountain Gemstone Mine is a beautiful place to spend the day. The mine is the place to go for aquamarine, as well as rubies, moonstone, garnet, citrine and more. Only flume mining is offered here but you keep your finds and can have your stones cut and made into jewelry on site by experienced gem cutters.
8. Jade Cove Trail, Big Sur, California - This unique location is a lovely place for jade hunting. The 1.5 mile Jade Cove Trail is part of the Monterey Bay National Marine Sanctuary and, as such, has strict guidelines for jade hunting. According to the National Oceanic and Atmospheric Administration, if jade specimens are in plain sight, they can be collected. If interested in visiting, consider going during the Big Sur Jade Festival, which is held annually in the fall.
9. Graves Mountain, Lincolnton, Georgia – Arguably the most famous collecting site in Georgia, the Graves Mountain location is known as the world's premier location for large, multi-twinned rutile crystals. Other minerals found at the site include lazulite, pyrite, quartz, indeseent hematite, muscovite and much more. The site is normally only open to collecting by appointment, but a couple of times a year the site opens to visitors. Bring your own tools, as there are no facilities available here.
10. Royal Peacock Opal Mine, Virgin Valley, Nevada – The Royal Peacock Opal Mine is one of several opal mines in the Virgin Valley area of Nevada. The opals are found in the layers of clay that blanket the area from a volcanic eruption some 14 million years ago. According to the mine's website, black, moss, lemon, crystal and white opal can all be found here and the mine is the only place in the world where fluorescent opal can be collected. This is an expensive place to spend the day though, as the mine charges \$190.00 a day per person to dig and \$75 per day to sift through mine dumps and tailings.

**New polymer easily captures gold extracted from e-waste** [Scott K. Johnson - 6/28/2020](#)

**Dissolve waste electronic circuit board, harvest gold, profit.**



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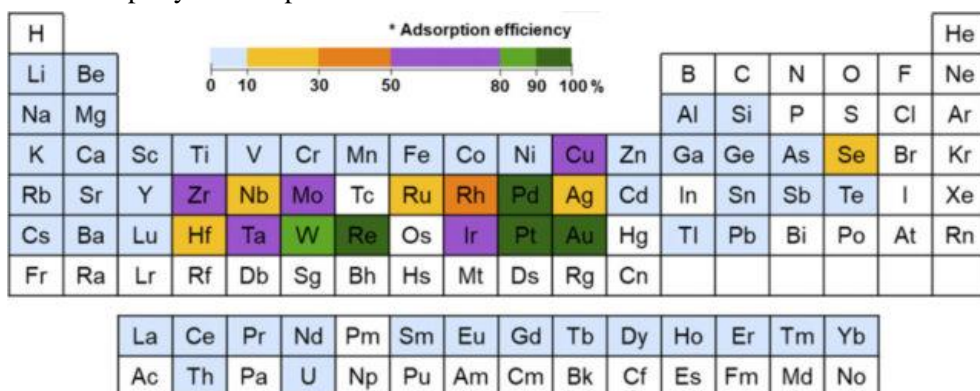
The polymer, called COP-180, selectively captures gold after it has been leached from e-waste.

One thing holding back e-waste recycling is the actual recycling process itself. We need cheaper, safer, cleaner, or more effective methods of separating and recovering the valuable elements from electronics before we can make the whole endeavor more attractive and profitable. Some current methods use large amounts of energy to melt components down, but chemistry could provide some tempting alternatives.

A new study led by Yeongran Hong of the Korea Advanced Institute of Science and Technology involves a chemical with an impressive affinity for gold. Subject some circuit boards to an acid treatment to release its materials and this stuff will gather up all the dissolved gold. And after it lets go of that gold, it's ready to be used again.

The researchers' gold-scrubber is based on an organic compound called a porphyrin. Linked together in a polymer, it possesses lots and lots of little pores that, energetically, want to host a metal atom. That's the kind of structure chemists look for to help with recycling.

The researchers put their polymer through a number of different tests to work out which metals it worked best on and how much it could capture. It's most effective with a small number of precious metals, most notably gold. In fact, compared to the number of pores in the polymer, they found it was capturing about 10 times as many gold atoms. For other elements like platinum, each pore only hosts one atom (responsible atomic social distancing, shall we say). But gold atoms seemed to make a party at each pore.



These are the elements that play well with the polymer. But because its affinity for gold is the highest, it tends to fill up on that first.

That behavior was verified by measurements and explained by some modeling. The researchers found that the polymer would interact with the gold atom—aided by ultraviolet light—and hand it some electrons, which happens to make it possible for more gold atoms to join in a clump. Sure enough, repeating the test with varying amounts of ultraviolet light had an impact, although capture was still quite high even without it.

Finally, the polymer was put through a pretty authentic test. The researchers took seven circuit boards from a junkyard and put them in an acid bath to leach out the metals. Then they mixed in their polymer, adjusted the solution, and kept it stirring for a couple of days. (Although other tests showed that 99 percent of gold can be scavenged in about 30 minutes.) Filtering separated out the polymer and its haul of gold. Adding acid again causes the polymer to let go of the gold, which precipitated as a solid nugget that accounted for 94 percent of the gold leached from the circuit boards.





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Given the results, the economic case for this technique seems easy to make. The researchers say the polymer costs about \$5 per gram to produce, and that gram can capture \$64 in gold. And since the polymer can be reused, it would be considerably cheaper than that over time, adding little to the overall cost of a recycling operation.

“Although [printed circuit boards] contain more precious metals than the ores in mines,” the team writes, “80 percent of this waste still goes to landfills chiefly because of the lack of selective, high-yield, noncyanide recovery procedures.” As similar processes are found to more easily harvest other elements, all that waste is going to increasingly look like economic opportunity—and help close the loop by turning old devices into new ones instead of trash.

**Colorado State Gold Panning Championships for 2020 will be held at the Western Museum of Mining and Industry in Colorado Springs on August 7, 8, and 9<sup>th</sup>. Try your hand if you feel lucky. Contact WMMI if you are interested in competing or just show up for the festivities....**



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**Contact the GPR President**

*(Layout Design Subject To Additional Cost)*



**Coming Announcements and Special Events for Aug 2020**

(**WMMI** - Western Museum of Mining & Industry, 225 North Gate Blvd. Colorado Springs, CO 80921  
(<https://www.wmmi.org/>) (Free to GPR Member with badge)

SUN	MON	TUE	WED	THU	FRI	SAT
						1 <b>WMMI</b> WESTERN SALOON NIGHT!!! Saturday 6:00 PM 9:00
2	3	4	5	6	7	8
9	10	11 <b>WMMI</b> Lecture Series: David Abbott: Industrial Minerals; Much Used Little Recognized 7:00 PM 8:00 PM	12	13	14	15
16	17		19 <b>GPR Club Meeting</b>	20	21	22 <b>WMMI</b> Outdoor Display & Machinery Demonstration 10am & 1pm
23/30	24/31	25	26	27	28	