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GOLD

Don Shurtz, Pleasant Oaks Gem and Mineral Club of Dallas

One of the most sought after materials is gold, be it as a mineral specimen, a nugget, or as a metal. Economic gain is probably the number one cause of wars. Possession of gold belonging to another country or nation is one of the leading ways of quickly establishing economic gain, particularly in the not too distant past. If you do not think so, you only need to look to Cortez and his conquistadors. Certainly establishing a claim to the land was a big part of the war, but you only need to look at the plunder the armies took to realize that gold was a major player. Control of the land and the people would also give control of the gold mines. Several of the ships of the Spanish fleet returning to Spain were so heavily laden with gold that they would sink easily, and often!

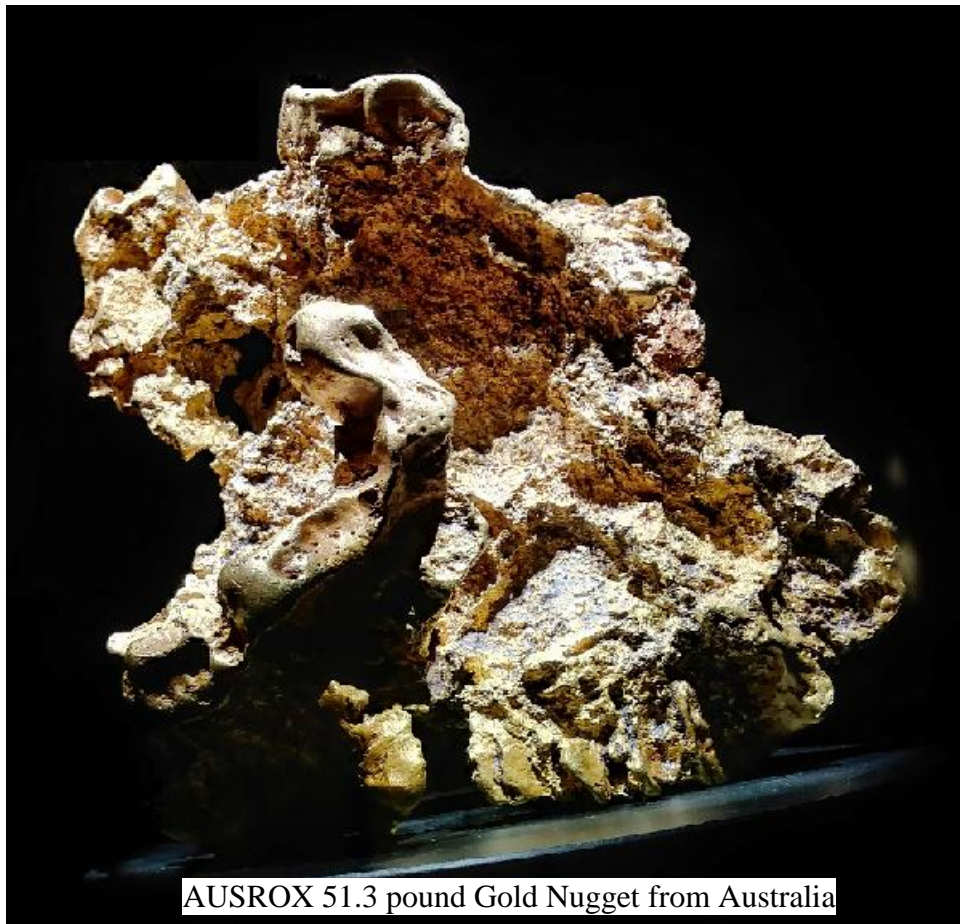
Gold derives its name the Proto-Germanic word *gulþa* which comes from the Proto-Indo-European word *ǵʰelh₃* that means to shine, gleam, or to be yellow or green. However, gold's chemical symbol, Au, comes from the Latin word aurum which comes from the Proto-Indo-

European word *h₂é-h₂us-o-* which means to glow. Gold certainly does match the criteria of yellow and shiny.

Gold is a very stable element. It is resistive to forming chemical compounds and to most acids. Gold is generally found as native gold, not in a chemical compound. When

it is found in a chemical compound (very rare) it is generally with tellurium. Gold will sometimes be found as a natural alloy of copper or palladium.

Gold has a Mohs hardness of only 2.5 – about the same hardness of the typical fingernail. It can easily be scratched by calcite. Gold is the most malleable of all metals. It can be drawn into a wire



AUSROX 51.3 pound Gold Nugget from Australia

only one gold atom in thickness, and can continue to be stretched to about twice the length of the atom before breaking. A single gram of gold can be hammered into sheet 1 meter square. In the not too distance past, one of the test to determine if a material was gold or fools-gold (iron pyrite) was to bite down on it. If the miner could

leave dent in the material it was gold (true) – if he broke his tooth it was pyrite (OK – a little joke-just no dent!).

It is said that a diamond is forever, and apparently so is gold. In 2016, the US Geological Survey estimated that 5,726,000,000 troy ounces (178,100 tons) of gold have been produced since the beginning of civilization, and that 85 percent of it is still in use. About 50 percent of the world's gold is used in jewelry, 40 percent held for investments, and 10 percent for industrial use. The primary industrial use of gold is in electronics; mostly in forming corrosion-free connectors. The connectors are generally free of oxidation except when attacked by free chlorine.

Speaking of oxidation of gold, it was mentioned that gold is resistant to most acids. Gold will not dissolve in nitric acid (HNO₃).

One of the tests used to determine if a material is gold is to attempt to dissolve it in nitric acid – a test that became known as the “acid test”. Gold is attacked by hydrochloric acid (H₂O:HCl), but very shortly after the reaction starts and equilibrium point is reached; for every atom of gold attacked by the free chlorine an atom of gold from the solution returns to the gold – thus very little gold is

dissolved. The only acid that dissolves gold is aqua regia (Royal Water). Aqua regia is a mixture of hydrochloric and nitric acids in a ratio of one part hydrochloric acid to three parts nitric acid. In this combination, the

hydrochloric acid attacks the gold, and then the nitric acid attacks the gold-chloride ion to form chloroauric acid (HAuCl₄), thus allowing the reaction to continue until the gold is fully dissolved.

It is estimated that the world produces 2,700 tons of gold each year. China is currently the leading producer of gold followed by Australia. However, from a historical point of view, most of the world's gold has been produced by South Africa. Gold is found in the United States with California and Alaska being the primary producers. If you want to search for gold in Texas, the best bet would be the Llano River near Llano, but don't expect to make any major or even minor finds!



Crystalline Gold from California

References:

- o Gold, Wikipedia, <https://en.wikipedia.org/wiki>
- o Gem and Mineral Gazette, <https://www.goldandgemgazette.com/texas>

Pictures

- o By Don Shurtz of the AUSROX Gold Nugget and California Crystalline Gold. Specimens on display at Perot Museum of Nature and Science, Dallas, TX

VISIT AN AREA CLUB

- [Arlington Gem & Mineral Club](#), meets the 1st Tuesday of each month at 7:30 pm, 1408 Gibbins, Arlington, TX
[Cowtown Gem, Mineral, & Glass Club](#), meets the 2nd Tuesday at 7:00 pm, CERA 3300 Bryant Irvin Rd. Fort Worth
[Dallas Bead Society](#), meets 1st Saturday of each month at 10:00 am at The Point at CC Young, 4847 W. Lawther Dr., Dallas, TX
[Dallas Gem & Mineral Society](#) meets the 3rd Tuesday of each month at 7 pm, American Legion, 10205 Plano Rd, Dallas (next to their shop)
[Dallas Paleontological Society](#), meets 2nd Wed. of each month at 7:00 pm, Brookhaven College, Building H, 3939 Valley View Lane, 75244
[Fort Worth Gem & Mineral Club](#), meets 4th Tuesday of each month at 7:30 pm, 3545 Bryan Avenue, Ft. Worth
[Oak Cliff Gem & Min Soc.](#), meets the 4th Tuesday of each month at 7:30 pm, Unitarian Universalist Church, 3839 W. Keist Blvd, Dallas,
[Pleasant Oaks Gem & Mineral Club](#), meets the 1st Thur. of each month at 7:30 pm, Garland Women's Activities Bldg., 713 Austin, Garland
[Wild West Bead Society](#), meets 3rd Tuesday of each month at 6:30, Wild Beads, 2833 Galleria Dr., Arlington, TX

Shows and Activities – Upcoming Show and Activity Dates

- Aug 10-11, Gonzales, LA, Baton Rouge G&MS, Lamar Dixon Expo Center, www.brgemandmineral.org
- Aug 17-18, Bossier City, LA, ARK-LA-TEX G&MS, Bossier Civic Center, larockclub.com
- Aug 24, San Antonio, TX, Southwest G&MS, Wonderland Americans Mall, jspeck2@att.net
- Aug 24-25, Jasper, TX, Pine Country G&MS, The [Jasper] Event Center, www.pinecountry-gms.org

- Oct 4-6, Albuquerque, NM, Jay Pen Expo, NM State Fairgrounds, <http://abqfallsow.wixsitelcom/abq-fall-show>
- Oct 11-12, Mt. Ida, AR, 32nd Annual World Championship Quartz Digging Contest, Mt. Ida area Chamber of Commerce, Montgomery County Fairgrounds, www.mtidachamber.com
- Oct 11-13, New Orleans, LA, Louisiana G&MS,
- Oct 11-13, Dallas, TX, International Gem and Jewelry Show, Market Hall, <https://www.intergem.com>
- Oct 12-13, Temple, TX, Tri-City G&MS, Mayborn Civic and Commerce Center, <http://drarhie.wixsite.com/tcgme>
- Oct 18-20, Austin, TX, Austin G&MS, Palmer Events Center, www.agms-tx.org
- Oct 18-20, Houston, TX, International Gem and Jewelry Show, NRG Center, <https://www.intergem.com>
- Oct 26-27, Oklahoma City, OK, Oklahoma M&GS, State Fair Park, omgs-minerals.org

- Nov 8-10, Humble, TX, Houston G&MS, Humble Civic Center, <https://hgms.org>
- **Nov 23-24, Mesquite, TX, Dallas G&MS, Mesquite Rodeo Center Exhibition Hall, dallasgemandmineral.org**

Ref:

- July - August SCFMS News
- SCFMS Local Shows,
- Rock & Gem Show Dates, <https://www.rockngem.com/ShowDatesFiles/ShowDatesDisplayAll.php?ShowState=ALL>

President's Message

Roger Burford, SCFMS President



Last time my note explained some of the many benefits of belonging to a Federation Like our own South Central Federation of Gem and Mineral Societies. There are many more that I just couldn't list all of them.

This time I want to take from President Kennedy's inauguration speech and say ask not what your club/federation do for you, ask what you can do for your club/federation. There are so many positions in most clubs and even the Federation which seem to go unfilled every year. It seems that no one wants to raise their hand and volunteer for almost any position. Just think what you can contribute and only spend a few hours a month to handle almost any of them.

Almost every club has a core of 10 to 20 people who do the day-to-day functions of your club. By adding your name you add new blood and new ideas from the differing experiences you have had both in our hobby and your work. Clubs need people to help check out rock hounding locations, create training programs covering any number of subjects, and teach what you have learned over time.

So during this year raise your hand and be a part of the growth and improvement of your club.

Thanks, Roger

Blast from the Past - Bring on the Heat

Don Shurtz, Pleasant Oaks Gem and Mineral Club of Dallas

Editor's Note: This article was written for the July 2016 Chips and Chatter, but it still something to think about. We have had our share of hot weather this summer, and we still have August to go. August is typically the hottest month of the year. You will find some inconsistencies in the first paragraph – it was written in 2016. This year we have not had any days with a temperature of 100 degrees or greater, but we have had Heat Advisories in both June and July. DCS

Summer is now officially here, and all indications are that it will be a hot hot hot summer! We will soon have our first triple digit temperature for the year. However, we have had our first “feels like” over a hundred degrees day, in fact we have had several of them. It is the “feels like” or, more properly, the Heat Index, which determines if we have a Heat Advisory. A Heat Advisory will normally be issued by the National Weather Service if the heat index is predicted to reach 105 to 115 degrees for 3 or more hours on 2 or more consecutive days, if the heat index is predicted to exceed 115 degrees, or if the night time heat index is predicted to be 80 or more degrees for 2 or consecutive nights. We met those criteria for several days running in late June.

As indicated, the heat index is the “feels like” temperature. There are two factors, which determine the heat index, air temperature and humidity. The reason that humidity enters the equation is that the body tries to cool itself by perspiration (sweating), but if the humidity is high then the perspiration can't readily evaporate and cool us down. There is a complicated formula for calculating the heat index, but it is much simpler to just look at a table from the National Weather Service (download the PDF chart at <https://www.weather.gov/ama/heatindex>) (Editor - updated link) or other on-line sites, or just listen for the heat index on your television or radio weather forecast. or just listen for the heat index on your television or radio weather forecast.

Heat is DANGEROUS! It can lead to heat exhaustion or, even worse, heat (sun) stroke and even death. Heat exhaustion has been known to occur in infants and the elderly just due to the heat alone – no physical activity required. However, if you are physically active out doors on a high heat index day, it can occur. Symptoms include nausea, dizziness, headache, thirst, and excessive sweating. If you think you have heat exhaustion, move to a cool place (even just moving to a shaded area will help), take off any extra layers of clothing, cool off by sitting in front of a fan or using cool wet towels. If not promptly treated, heat exhaustion could lead to heat stroke. Heat stroke is hyperthermia of the body with core body temperatures greater than 105.1 degrees. In addition to high temperature, other symptoms include disorientation and lack of sweating. Treatment is to cool the body core temperature. Cooling can include bathing or showering in cold water, cold compresses to the body, neck, head, and groin, or at least a fan or air conditioner to aid in evaporation of sweat or water (toweling or misting). Hydration (taking in fluids) is important. Water or sports drinks may be a good starting point, but too much water may lead to an electrolyte imbalance. Pedialyte® can be helpful in hydration and adding electrolytes. Pedialyte® is not just for infants! Also, don't be reluctant to call 911 for emergency help – it could save a life.

Of course the best way to treat heat exhaustion or heat stroke is to take proactive steps to avoid them. If the heat index is way up there, say inside in the air conditioning (going to a mall or a theater is a good option if your air conditioner is broken). If you must work outside, take it easy. Take frequent breaks, drink lots of fluids, and cool down if you start feeling any symptoms. When roofers came last week to do our roof, they were an older crew trying to help out and earn a few extra bucks. At first there were 5 workers, by the end of the day only 2 were still working. The next morning only 3 returned, and basically only the same 2 worked. On Day 1 they had run out of their water and sports drinks about 1:00 in the afternoon and didn't tell anyone. They kept cool by hosing down, but they needed hydration. They only had to mention it and the hydration issue would have been solved.

How does all this apply to rockhounds and our activities? For one thing, we tend to be a hobby of senior citizens with a smattering of younger members mixed in. We all need to take care and watch for symptoms. Field trips should be planned for the months with historically milder temperatures. If you do go on that trip in the summer months, try to plan to do the strenuous activities in the cooler hours of the morning or evening. However, even the cooler temperatures may not be enough – the moisture is all ready in place, so in the morning the relative humidity is even higher, thus it is harder to cool down from just sweating. If you have to hike to your area, take plenty of water (along with sunscreen, insect repellent, etc.). Take frequent rests and keep yourself as cool as possible. Better yet, do it earlier or later in the year.

PRESIDENT'S MESSAGE

Ling Shurtz, POGMC President

The fall IGEM show will be October 11 – 13 at Market Hall. Plan for set-up on October 9. Our next meeting is August 1st at the Garland Activities building starting at 7:30 pm. Warner will give a presentation (pictures and talk) about his recent trip to Pakistan – plan to attend. There are four SCFMS club shows in August. Two will be in Louisiana (Baton Rouge and Bossier City), one in San Antonio, and one in Jasper. There are no local shows in September.

CLUB OFFICERS FOR 2019

President:	Ling Shurtz
1st VP, Programs:	Carolyn Grady
2 nd VP, Field Trips:	Open
Secretary:	Lee Elms
Treasurer:	Del Grady
Editor:	Don Shurtz
E-mail:	don.shurtz@gmail.com, L.SHURTZ@gmail.com

MEETING MINTUES

The July 2019 meeting was on the Fourth of July. Due to expected holiday activities in downtown Garland, we chose to hold our meeting at the Spring Creek BBQ in

August Birthstones

Don Shurtz, Pleasant Oaks Gem and Mineral Club of Dallas

Did you notice anything different about the August Birthstones in the Show & Tell above? If nothing caught your eye, try again. Now do you see it? Spinel is now recognized as a birthstone for August. The official recognition came in 2016, but now it is catching on. Spinel is just one member of the Spinel Group, and has the chemical formula $MgAl_2O_4$. It has a conchoidal fracture and a Mohs hardness of 7.5 to 8.0. Spinel is often confused with Ruby, but a simple scratch test can easily distinguish between the two as the Mohs hardness for Ruby is 9.0. To say that Spinel is often confused with Ruby may be an understatement. The “Black Prince’s Ruby” and the “Timur Ruby” in the British Crown Jewels are actually Spinel, as is the “Cote de Bretagne” from the French Crown Jewels. The largest known Spinel is the Samarian Spinel, previously called the “Samarian Ruby” from the Iranian Crown Jewels, weighs 500 carats. Therefore, if you were born in August, you now have a choice of three different birthstones, Peridot, Sardonyx, and Spinel.

Reference

- Birthstones, American Gem Society, <https://www.americangemsociety.org>
- Wikipedia, <https://en.wikipedia.org/wiki>

Picture: Engraved Spinel from India, Wikimedia, <https://commons.wikimedia.org/>, used under Creative Commons Attribution – Share Alike 3.0 Unported license

Chips and Chatter

Pleasant Oaks Gem and Mineral Club of Dallas, TX

Richardson. There was no club business transacted; no minutes were maintained. However, we did have some good food and two nice door prizes were awarded.

MEETING

Our August 1st meeting will be at back at the Garland Activities Building starting at 7:30 – in other words, back to normal! Warner will present a picture show and talk about his recent trip to Pakistan.

VISITORS ARE ALWAYS WELCOME

Show and Tell

The August birthstones are Peridot, Sardonyx, and Spinel. A fossil would also be appropriate.

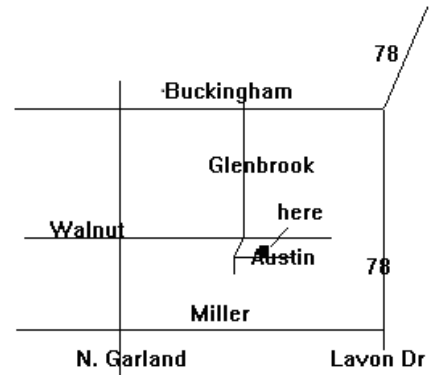
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Meetings
 First Thursday of each month, 7:30 PM
 Garland Women's Activities Building
 713 Austin St., Garland, TX
 (Northeast corner of Austin & Glenbrook)

Membership
 Single Adult: \$16.50,
 Junior: \$5.00, Family: \$27.50
 (Plus badge fee for new members)



PURPOSE

The Pleasant Oaks Gem and Mineral Club of Dallas is organized for charitable and educational purposes to promote interest in the various earth sciences, particularly those hobbies dealing with the art of cutting and polishing gemstones, the science of gems, minerals and metal crafts, as well as their related fields. Pleasant Oaks Gem and Mineral Club of Dallas is a Section 501(c)(3) not-for-profit organization

CHIPS AND CHATTER

Pleasant Oaks Gem & Mineral Club
 PO Box 831934
 Richardson, TX 75083-1934

To:

VISITORS ARE ALWAYS WELCOME

Next Meeting: August 1, 2019. Warner will present a picture and talk presentation about his recent trip to Pakistan

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