The Apache Junction Rock & Gem Club, Inc.

SMOKE SIGNALS

Jan 2013

Officers of the Apache Junction Rock & Gem Club, Inc.		
President:	Katy Tunnicliff	918-440-9152 katydidnt2007@gmail.com
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Trustee:	Brian Fremoyle	480-983-2003 dabusha06@gmail.com
Trustee:	Ted Montague	480-982-1790 coolwater2k@yahoo.com

The Club meets on the second Thursday of every month October thru April at 7:00 pm at the Carefree Manor RV Park, at the corner of Tepee & Delaware, Apache Junction, AZ

Club Dues - $24 a year per member prorated to first of month of joining. This may be paid at the general meeting or by mail to Ron Ginn, 691 N. Velero St., Chandler, AZ 85225.

In This Issue

Next Meeting – Feb 14, 2013

Field Trips Planned

Dear Club members here are a few things that you requested. The
following are collecting sites and the specimens you can find.

Table Mesa Jasper/calcite
Sheeps Crossing Saganite
7 Springs Onyx/agate/jasper
Burro Creeek/Bagdad Pastelite/agate/
jasper/apache tears
Perkinsville/Jerome Agate/fossils/
Kingman Tavertine(onyx)
Globe Onyx/Serpentine
Diamond Point Crystals/Fossils
Black Canyon Jasper
Rim FR300/123 Chert/Fossils
Roberts Mesa Chert/Fossils
Brenda Jasper
Round Mountain Fire Agate/ Chalcedony

There are a few more sites that I will add in the future. Please consider leading a trip to one of these sites or your favorite site. I am also looking for experienced rockhounds to open your unused rock pile for a local trip.

Minutes of Jan. Mtg.

Apache Junction Rock & Gem Club General Meeting Minutes
January 10, 2013 Submitted by Barbara Bayer

The President called the meeting to order at 7:05 pm. She led the Pledge of Allegiance.
Mr. Orlan Stone was introduced as the new Treasurer and Mr. Ted Montague was introduced as the new Trustee.

- The Secretary's minutes for December 2012 were approved as presented in the newsletter.
- The Treasurer's report is as follows: Lapidary checking account $2,181.86, Lapidary savings $757.58, Lapidary expenses $3,137.00, General Checking account $1,312.34. General savings $121.33, General expenses $174.00, Show checking account $6,482.40, Show savings $2,533.29.
- Publicity and Volunteers: Mr. Frlich reported that volunteers distributed 2,600 coupons at the Flagg show for our February

show. Mr. Koontz was most effective with coupon distribution for people just entering the Flagg show. The raffle at the Flagg show for the four rock specimens earned $320.00. Mr. Frlich called for needed volunteers for the Ming tree activity (construction and the show booth), raffle sales, door security, the rock wheel, silent auction, greeters, membership table, entry table, minor electrical work, and upset, plus tear down work. Ted Montague will move the club trailer to the high school and after the show to the Lapidary shop grounds.

- Membership: Mr. Ginn reported that we have 262 current members and 110 members have renewed the membership.
- Lapidary Shop: Mr. Stasi reports that there is minor work to be done at the shop which includes weed control and painting. He would like help in labeling specimens for the silent auction. Starting February 1, 2013, the shop fees will be as follows: 10 cents per inch for 10" saw, 20 cents per inch for the 14" and 18" saws, hourly rate $2.50 per hour, and annual single person fee of $80.00. The rate of 35 cents for the 24" saw and the couple annual fee of $100.00 remains the same. A person can pay the hourly rate toward the top total of $80.00 annually or just pay the annual fee.
- Show: Mr. Iverson reports there is a new security group for the show. The high school has sent approval for the show location. The high school band members will be selling breakfast and lunch during the show.
- Hospitality: Ms. Kirmel wishes to thank all who contributed to the December holiday dinner. She said it was the best dinner ever.
- The Coalition trip will be held on February 2, 2013 at Hewitt Canyon. We are expecting 30-35 vehicles. Two recommendations for the trip include the use of 4 wheel vehicles and to car/truck pool. Please volunteer to assist this activity.
- Field Trips: Mr. Wright has volunteered to lead one field trip per month. There is a need for a Field Trip leader. Also, there is one Coalition trip per month.
- The membership voted to hold general meetings at the Lapidary shop. There is a need for more parking. We will check with the fire marshal as to the capacity of the building.

Mr. Jim Armitage, a geology educator, presented mineral and rock specimens. The winner of the 50:50 drawing was announced. The silent auction was held.
The meeting was adjourned at 8:10 pm.

Article of the Month

Deadly Minerals: Uranium and Thorium Minerals

by Andrew A. Sicree

Many mineral collectors avoid uranium and thorium minerals because they are radioactive and thus dangerous. But, while radioactives do present a health hazard, they can be collected, displayed, and stored with safety. A little bit of understanding of the nature of their radioactivity goes a long way toward protecting yourself sensibly without becoming paranoid about the dangers of radiation.

A primer on radioactivity

The first fact to be mentioned is that "radiation" is everywhere. For instance, sunlight, infrared light, and ultraviolet light are all forms of electromagnetic radiation, although their energies are low and their abilities to harm us are consequently lessened. Visible light doesn't do us harm, although it can cause some minerals (such as realgar) to decompose or discolor. Short-wave ultraviolet light (which is higher-energy ultraviolet radiation) can cause tanning, give sunburns, and even eventually contribute to skin cancer, but it is substantially different in impact than the energetic particles or rays that come from the nucleus of certain atoms. Radiation from the nucleus of an atom is called nuclear radiation or *radioactivity*.

Radioactivity is the release of energetic particles and/or rays during the decay of an unstable nucleus. The nuclei of certain *isotopes* of all elements are unstable or radioactive. This means that they will, given enough time, decay. They do not decompose completely, but they will breakdown into smaller nuclei and emit some particles and/or rays in the process. For many elements, the unstable isotopes decay so quickly that they do not exist in nature on the Earth. They only exist if they have been made in a nuclear reactor, or the explosion of an atomic bomb. Stars also make them – but that is another story. Collectors are primarily concerned with natural sources of radioactivity.

Natural sources

It is impossible to escape from radioactivity. The radioactive isotope carbon-14 is continuously created in the upper atmosphere and it permeates the air, water, living plants, and our bodies. All uranium is radioactive, and there are traces of uranium in most granites and many other rocks. Some petrified wood and some dinosaur bones are very radioactive because they contain a fair amount of uranium and along with its radioactive decay products. Potassium-40 is another very long-lived radioactive isotope; this means that all potassium is radioactive. (This is another reason that granites are radioactive – they contain potassium feldspars.) So even our bananas are radioactive!

Usually, when people worry about radiation, they are worried about the type of radioactive particles and rays produced by fallout from nuclear bombs and waste from nuclear reactors. This radioactivity has substantially higher energies than ultraviolet radiation. Naturally radioactive minerals release the same types of high-energy radioactive particles and/or rays, but they are always much lower in activity than are bombs and reactors.

Radioactivity in minerals

In the mineralogical world, there are three types of radioactivity that concern us: *alpha*, *beta*, and *gamma* radiation. Alpha (scientists use the symbol α) particles and beta (β) particles are particles. Beta particles are electrons, and alpha particles are particles that are the same as the nuclei of helium atoms (i.e., they are particles made up of two protons and two neutrons). Gamma (γ) rays are high-energy photons.

Alpha particles are easiest to stop. They're stopped by five or six inches of air and they won't pass through your skin. Beta particles are more penetrating. It takes a thin sheet of aluminum or even steel to stop most of them. Gamma-rays are essentially high energy X-rays and they are very penetrating. They will zip right through your body. Unlike ordinary x-rays, a thin lead sheet doesn't stop gamma-rays. It takes six or more inches of solid lead to stop these little beasties.

Alpha particles may be the easiest to stop, but they can do the most damage if they get inside your body. Because of the penetrating ability of gamma-rays, it really doesn't matter if a gamma-source is inside or outside your body. The gamma-rays will do the same damage either way. But alpha particles are big particles. They strike with much more impact than a gamma-ray does. If a particle of dust containing an alpha-emitter is sucked into your lungs, the alpha particles do not have to penetrate your skin to get at you. If they are emitted within your lungs they will have a direct impact on lung tissues. They'll kill cells and damage DNA, possibly leading to lung cancer. This is why it is a good idea to wear a dust mask when trimming radioactive mineral specimens.

Some common radioactive minerals

Commonly collected uranium minerals include carnotite [$K_2(UO_2)_2(VO_4)_2 \cdot 3H_2O$], uraninite [$UO_2$], and autunite [$Ca(UO_2)_2(PO_4)_2 \cdot 10H_2O$]. Thorianite [$ThO_2$] and thorite [$ThSiO_4$] are among the thorium minerals. "Gummite" is a general term for any of the yellow- and orange-colored secondary uranium oxide minerals (in other words the radioactive yellow stuff that forms when uranium ores weather). Uranium has a rather complicated chemistry so there are a wide variety of uranium minerals. Some of the rarer uranium minerals can be found in pegmatites, concentrated in the center. Uranium minerals also occur in some phosphorus and vanadium deposits because uranium tends to form phosphate or vanadate minerals. Weathering of primary (original) uranium deposits creates a slew of secondary oxidized uranium minerals – many of which are brightly colored yellow or orange.

Dinosaur bones and petrified wood logs will concentrate uranium because the organic matter originally in these fossils created a reduced zone within the fossil. Uranium tends to precipitate in reduced zones so uranium dissolved in groundwater will tend to "drop out" (precipitate) from the water when if encounters buried bones or wood.

Potassium-containing minerals, such as orthoclase ($KAlSi_3O_8$), are radioactive by virtue of containing potassium-40. But this radioactivity is hard to detect in minerals because the decay products are stable (non-radioactive) so, unlike uranium and thorium, there is no chain of radioactive daughter-products. Also, with a long half-life of 1.3 billion years, the rate of decay is very low.

The uranium-238 decay series

All uranium and thorium minerals are radioactive. This is because of the radioactive isotopes uranium-238, uranium-235, and thorium-232. Each of these isotopes is unstable, but they have very long half-lives so it takes a long time for

them to decay away. Uranium-238 has a half-life (the time it takes one-half of the isotope to decay) of 4.5 billion years, uranium-235 has a half-life of 700 million years, and thorium-232 has a half-life of 14 billion years – a pretty long time! Eventually, a stable atom of lead-206 results from the decay of uranium-238. Likewise, stable lead-207 results from uranium-235, and stable lead-208 is the end result of the radioactive decay of thorium-232.

Radon gas

All minerals containing uranium will emit a small amount of radon gas. How is this gas generated? When uranium-238 decays it produces thorium-234, which decays to protactinium-234m then to uranium-234. Uranium-234 decays to thorium-230, which in turn produces radium-226. Up until this point the parent (uranium-238) and its daughters have mostly remained within the uranium-bearing mineral, but when radium-226 decays, it produces an atom of radon-222. Being a noble gas, the radon doesn't bind to atoms in the mineral and so it will slowly seep out of the mineral along cracks and cleavage planes if it gets the chance.

Once radon gas is in the air, it doesn't do much damage. You can breathe it into your lungs and it will be exhaled without reacting with your body. Only if the radon happened to decay when it was inside your lungs would it present much of a problem. However, radon-222 will decay to polonium-218, which is also an alpha emitter. When a free-floating atom of radon-222 decays to polonium-218, the resulting polonium-218 atom is ionized (it has a charge). This polonium-218 ion is left floating in the air but, unlike radon, polonium is not a noble gas. It has a strong tendency to react with fine dust particles (or fine smoke particles) in the air. If you breathe one of these polonium-218-laced dust particles into your lungs, you then have an alpha-emitter in direct contact with lung tissues – it isn't going to kill you immediately, but it isn't the best recipe for good health.

All uranium minerals continually produce small amount of radon, so they do present a modest health risk.

Ways of limiting your danger

First, collect fewer specimens. Store only those you really need. Second, limit your exposure to the radioactivity. This means to shorten the time you handle them, protect yourself from dust if you are trimming them, use protective shielding when possible (lead sheets, or leaded glass help), and keep the specimens as far away as possible. Even techniques such as placing radioactive specimens in the rear of a display case will decrease exposure. Store your specimens in a well-ventilated area, preferably one that is not in a living space. This prevents them from creating a radon problem in your house. In other words, don't keep them under the bed, in your basement (radon will migrate) or in a garage attached to your house. Putting them in a locked metal cabinet in a drafty detached garage or a shed is ideal.

You could in theory devise a shielded storage cabinet (with thick lead walls, for instance) that would truncate any alpha, beta, and gamma radiation, but it is very difficult to seal up a specimen so that it does not leak radon gas. Being a noble gas, radon it won't react with anything in the rock, in the packaging materials, or in your body. Over time it will, however, tend to diffuse out of containers such as zipper-lock plastic bags. A container would have to be completely gas-tight in order prevent long-term leakage.

While it appears that federal regulations do not explicitly prevent collectors from owning or storing radioactive minerals, some state level regulations may come into play. Heightened security conditions may mean that it will become more difficult to transport radioactive specimens. For instance, some friends of mine were stopped at Niagara Falls when they tried to return to the U.S. after a mineral collecting trip in Canada. Apparently, they tripped some type of radiation alarm at the border. They opened the trunk of their car to show the customs officials their rocks and were allowed to pass.

Bench Tips

See more BenchTips by Brad Smith at
Facebook.com/BenchTips/ or
Yahoogroups.com/group/BenchTips/

PICKLE PROBLEMS
Dropping a hot item into the pickle after soldering causes a hiss that sends
small droplets of the acid pickle into the air. This will rust your
nearby tools
and can't be all that good to breathe either. My solution is to use a coffee cup
of water next to my solder block to quench the piece before dropping
it in the pickle.

Also, a hot pickle pot gives off fumes that bother me in my home workshop.
I get around that by using my pickle cold. I mix it a little stronger
than with a
hot pot so that it works about as quickly. I keep it in a large-mouth
peanut butter
bottle and cap it off whenever I'm done using it.

MODIFY TOOLS FOR PRONG SETTING
When setting stones in a prong mount avoid slipping by grinding a groove
in the face of your prong pusher or one jaw of your flat-nose pliers.
Easiest way to cut the slot on the pusher is with a file., and the easiest
way to cut the slot on your pliers is with a cutoff wheel in the Foredom.

USE A SPRAY BOTTLE
Those little spray bottles you can find at the drug store are great for
firescale preventors and debubbling solutions. A quick firescale
preventor is liquid flux, and a homemade debubbling solution is a
little Dawn liquid in rubbing alcohol.

BROKEN DRILLS
Have you ever broken a drill bit off in a hole? Sometimes you can grab it
with pliers, but other times the steel piece is below the surface in the hole.
If this happens, you can usually dissolve the steel in a solution of alum.
Alum is typically available from a food store or a drug store. Use about
a teaspoon per cup of warm water. Submerge your piece so that the
partially drilled hole is facing up to let the bubbles float free and not
block the hole.

Rock Shows

Jan

18-20—GLOBE, ARIZONA: Annual show; Gila County Gem & Mineral Society; Gila County Fairgrounds; 3 miles northeast of Junction U.S. 60-70; Fri. 9-5, Sat. 9-5, Sun. 9-4; adults $3; contact Roy Trobaugh, 738 South St., Globe, AZ 85501, (928) 200-1592; e-mail: splashcopper@yahoo.com; Web site: www.gilagem.com

Feb

25-17—TUCSON, ARIZONA: Annual show; Elliot Glasser; Executive Inn; 333 S. Drachman St.; Daily 9-5; free admission; more than 130 showrooms, buy, sell, trade; contact Elliot Glasser, 6060 E. Thomas Rd., Scottsdale, AZ 85251, (602) 620-3999; e-mail: EGlasser@cox.net; Web site: USGRC@USGRC.BIZ

31-17—TUCSON, ARIZONA: Wholesale and retail show; Eons Expos LLLP; large tent; 22nd St. at Interstate 10; Daily 9-6; free admission; 180 dealers, minerals, fossils, articulated dinosaurs, meteorites, petrified wood, amber, gems, jewelry; contact Christine Perner, (516) 818-1228; e-mail: lowellcarhart@yahoo.com; Web site: www.22ndStreetShow.com

1-28—QUARTZSITE, ARIZONA: Wholesale and retail show; Desert Gardens RV Park; Desert Gardens RV Park; 1055 Kuehn St.; Mon. 9-6, Sun. 9-6; free admission; crystals, minerals, rough, polished, jewelry, lapidary equipment; contact Sharon (manager), 1055 Kuehn St., Quartzsite, AZ 85346-2818, (928) 927-6361; e-mail: info@desertgardensrvpark.net; Web site: www.desertgardensrvpark.net

2-16—TUCSON, ARIZONA: Wholesale and retail show; Martin Zinn Expositions LLC; Ramada Ltd.; 665 N. Freeway; Daily 10-6; free admission; 80 vendors from around the world, minerals, fossils; contact Regina Aumente, PO Box 665, Bernalillo, NM 87004, (505) 867-0425; e-mail: mzexpos@gmail.com; Web site: www.mzexpos.com

2-16—TUCSON, ARIZONA: Wholesale and retail show; Martin Zinn Expositions LLC; Hotel Tucson City Center; 475 N. Granada; Daily 10-6; free admission; more than 300 dealers, minerals, fossils, gems, lapidary materials, decorator items, Gallery of Artists, dinosaur displays; contact Regina Aumente, PO Box 665, Bernalillo, NM 87004, (505) 867-0425; e-mail: mzexpos@gmail.com; Web site: www.mzexpos.com

2-16—TUCSON, ARIZONA: Wholesale and retail show; Martin Zinn Expositions LLC; Mineral & Fossil Marketplace; 1333 N. Oracle; Daily 10-6; free admission; dealers, rocks, minerals; contact Regina Aumente, PO Box 665, Bernalillo, NM 87004, (505) 867-0425; e-mail: mzexpos@gmail.com; Web site: www.mzexpos.com

2-17—TUCSON, ARIZONA: Wholesale and retail show; The Rock Show; Kino Sports Complex; 2500 E. Ajo Way; Daily 9:30-5:30; free admission; minerals, jewelry, cabs, slabs, beads, lapidary equipment, rough rock, crystals; contact Trym Gibbons, PO Box 246, Cortaro, AZ 85652, (800) 983-0133; e-mail: rockshowtucson@gmail.com

14-17—TUCSON, ARIZONA: Annual show; Tucson Gem & Mineral Society; Tucson Convention Center; 260 S. Church Ave.; Thu. 10-6, Fri. 10-6, Sat. 10-6, Sun. 10-5; adults $10 (2 days $17), Active Military and seniors (62 and older) receive $2 off on Fri.; contact Tucson Gem & Mineral Society Inc., PO Box 42588, Tucson, AZ 85733, (520) 322-5773; e-mail: tgms@tgms.org; Web site: www.tgms.org

Mar

7-10—DEMING, NEW MEXICO: 48th Annual Rockhound Roundup Gem & Mineral Show and Sale; Deming Gem & Mineral Society; SWNM Fairgrounds; 4200 Raymond Reed; Thu. 9-5, Fri. 9-5, Sat. 9-5, Sun. 9-5; free admission; jewelry and rock-related items, displays, demonstrations, spinning wheel, geode cutting, guided field trips, children's corner, silent auction, live auction, door prizes, cash raffle; contact Maurice Crawford, 713 W. Spruce St. PMB 726, Deming, NM 88030, (575) 546-0056; e-mail: thedgms@gmail.com; Web site: dgms.bravehost.com

Thanks to Our Volunters

I want to thank and recognize all our wonderful, club-member volunteers who worked at least one two-hour shift at the Flagg Show distributing discount coupons to our club's annual show in February. Our volunteers also sold many raffle tickets as we raffled off two pieces of petrified wood, a set of onyx bookends, and a piece of amethyst as a money-making project for the club. We distributed approximately 2,600 orange coupons which is a record number by far in my seven years as the club publicity person. Our annual show at Skyline High School will be held February 16-17, 2013.

I also want to thank Bill Stasi, Christina Spadafino, and Katy Tunnicliff for donating rocks to give to kids who passed near our tent. That little rock gift made many kids happy, and it gave us a chance to talk to their parents about our club and about attending our show. The raffle and giving rocks to kids was Bill Stasi's idea. A big thanks to Katy Tunnicliff, David Bayer, Claude Koontz and Bill Stasi for setting up and organizing our tent and tables. Several of the following volunteers worked multiple shifts.

Barbara Bayer (2)	Paul Garland
Richard Porrett	David Bayer
Garth Harker	Don Raker
Ray Bayless	Natalie Kirmiel (2)
Carolyn Sillings	Roy Broadbent
Claude Koontz (3)	Christina Spadafino
Sharon Broadbent	Sandra Lindner (2)
Bill Stasi(2	Tobia Eaks (2)
Ken Perkins (2)	Connie Sundling
Wally Frlich	Lois Perkins (2)
Tom Sundling	Lynne Garland
Jeanette Porrett	Katy Tunnicliff (10)

Raffle Winners:

First Prize	Wayne Mynster
Second Prize	Karen House
Third Prize	Jerry Ciptak
Fourth Prize	Bruce Conte

Thanks again to all of our club-member volunteers who made the Flagg Show a big success in our preparation for our show at Skyline High School. We will need many more volunteers for our February show.

Wally Frlich