The Apache Junction Rock & Gem Club, Inc.

SMOKE SIGNALS

Nov 2010

Officers of the Apache Junction Rock & Gem Club, Inc.		
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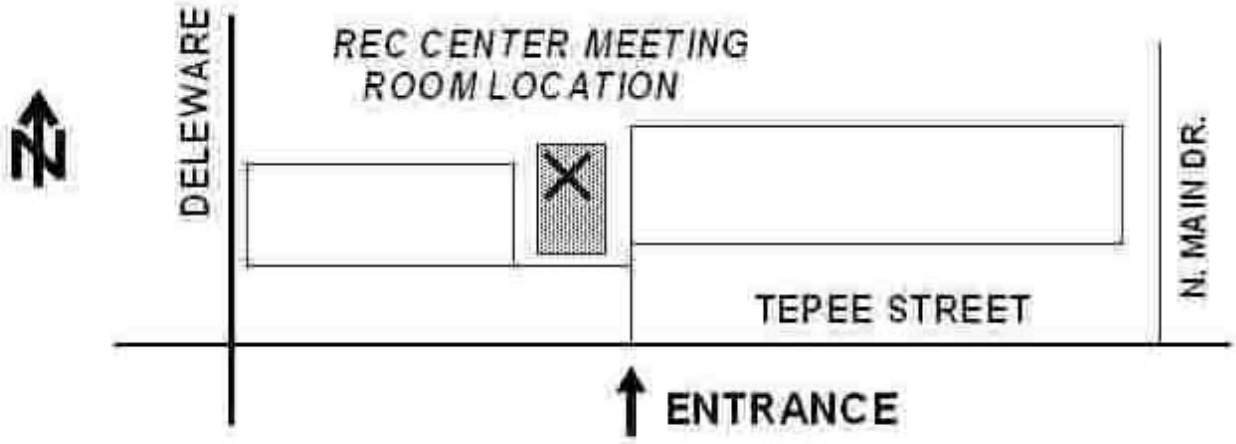
NOTE: NEW MEETING PLACE!!!

Dec 9, 2010

Carefree Manor RV Park,

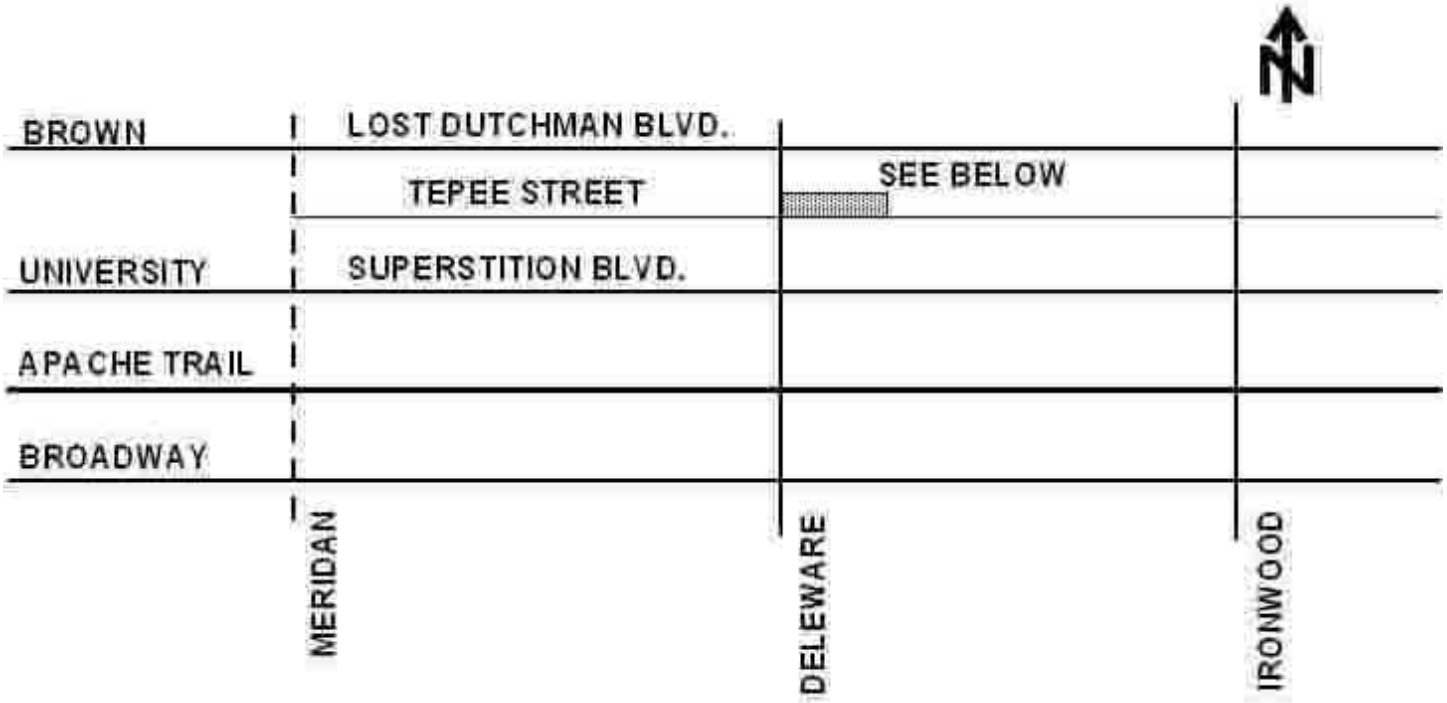
at the corner of Tepee & Delaware, Apache Junction, AZ

Park on Tepee, east of Delaware and park nose in instead of parking parallel



CAREFREE MANOR MOBIL HOME PARK LAYOUT

CAREFREE MANOR MOBIL HOME PARK
1615 NORTH DELEWARE DRIVE, APACHE JUNCTION , AZ.



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 - $10 per new member. Renewals are $10 per member. This may be paid at the general meeting or by mail to Ron Ginn, 691 N. Velero St., Chandler, AZ 85225.

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Announcement for members of the AFR&GC who would like to sell their creations.

Richard Grzych has arranged with the Dreams & Legends of the Superstitions Gallery, 2280 N Apache Trail (Hwy 88) to have a rock/art show on Dec 18 &19.
Members of the AJR&GC will be able to sale their personal creations or just display them as you wish.

You can contact Richard at 219-669-2841 for any additional info.
This is planned to be repeated early next year.

Next Meeting – Dec 9, 2010

7:00 pm at the Carefree Manor RV Park, at the corner of Tepee & Delaware, Apache Junction, AZ. See map above

NOTE: This will be a Xmas potluck dinner meeting. Contact Natalie @ 480-982-6275 for dishes to bring. Also, please bring a non-perishable item for donating to the food bank.

New Members

Rosalind Buelow
Dan DeKett
Denese & Jerry Guinta
Martha Johnson
Roberta Sauerwein
Gary Selinger
Susan Walsh

Meeting Minutes Nov 11, 2010

The only thing that I remember of any importance is that the amended Constiuition & By-Laws passed with no dissenting votes after a brief discussion.

Article of the Month

Chemistry & Minerals: An Introduction to Mineral Formulas

by Andrew A. Sicree

The formula

The collector often sees, on mineral labels and in mineralogy texts, a chemical formula. Display labels might read "Quartz, SiO_2, hexagonal, from Arkansas" or "Pyrite, FeS_2, iso., from Park City, Utah." For those who are moving farther and farther away from high school chemistry class, the meaning of these formulas might be murky. This is a brief overview of mineral formulas for the mineral collector.

Elemental symbols

First, the elements: chemical formulas (or *formulae* for Latinists) use one- or two-letter symbols for elements. Elements are the basic building blocks of chemistry and mineralogy. Some symbols are clearer in meaning than others. Thus, "Si" for silicon makes sense, as does "O" for oxygen and "S" for sulfur.

Other elemental symbols are a little more obscure. "Cu" for copper looks like a misspelling, but "Co" is used for the element cobalt, so we take the Latin word *cuprum* to derive "Cu". Iron is "Fe," *ferrum*, and lead is "Pb," *plumbum*, from which we also derive the word plumber. This begins to make sense if we recall that water and drain pipes were at one time fashioned from lead, thus a plumber was originally one who worked lead. If you don't know a symbol, most basic chemistry texts and many dictionaries have a list of elements and their symbols.

Chemical formulas

The formula we use on mineral labels is typically an "empirical" one. This formula gives the elements that make up a mineral and their respective ratios. For instance, quartz is "SiO_2" which means that it is made up of one atom of silicon for every two atoms of oxygen. The subscript number tells the relative number of atoms (if there is only one atom, the subscript one is assumed and isn't written down). More examples: hematite is "Fe_2O_3" and magnetite is "Fe_3O_4". As one can see, both of these minerals are composed only of iron and oxygen, they are both "iron oxides" and are closely related. Hematite has two iron atoms for every three oxygen, and magnetite has three irons for four oxygens.

Importance of structure

The empirical formula gives only a limited amount of information. Two different minerals may have the same empirical formula. Opal, for instance, is "SiO_2" the same as quartz. But opal is <u>not</u> quartz! They are both "silicon dioxide," that is, one silicon atom for every two oxygen ("di" meaning "two"). In quartz, the silicon dioxide is arranged in a "hexagonal" (six-sided) structure and in opal it is "amorphous" (without form). The terms hexagonal or amorphous give structural information that is necessary to define the mineral. Likewise, pyrite is FeS_2, isometric (cubic), and marcasite is FeS_2, orthorhombic. Pyrite and marcasite are both iron sulfides and they are said to be polymorphs (meaning "many-forms") of iron sulfide because they have the same chemical formulas but different spatial arrangements (i.e. crystal systems).

To have a more rigorous definition of the mineral, you need both the composition and the structure, expressed as the chemical formula and the crystal system. On display labels one usually lists the empirical formula followed by the crystal system. There are six

Formulas ***(cont'd)***

crystal systems: isometric (same as cubic), hexagonal, orthorhombic, monoclinic, tetragonal, and triclinic.

Of course, minerals can have more than two types of atoms. Calcite is "$CaCO_3$, hexagonal" or "calcium carbonate." It has three oxygen atoms to every one carbon atom and to every one calcium atom. We call it

"calcium carbonate" rather than "calcium carbon oxide" because the CO_3 portion of the formula represents a special grouping of carbon and oxygen atoms called an "ion." In this case, the ion is called the "carbonate" ion. Similarly, the mineral strontianite is "$SrCO_3$, orthorhombic," or "orthorhombic strontium carbonate" because it also contains the carbonate ion.

Mineral formulas can be quite complicated. Beryl is $Be_3Al_2Si_6O_{18}$, hexagonal; muscovite (a member of the mica group) is $KAl_2(Si_3Al)O_{10}(OH,F)_2$, monoclinic! Although it pays to know the formulas of the most common minerals, I know of no one who has all the mineral formulas memorized.

You can find a mineral's chemical formula and crystal system in various mineral textbooks as well as in listings such as Fleischer's *Glossary of Mineral Species*.

- A. A. Sicree

Dr. Andrew A. Sicree is a professional mineralogist and geochemist residing in Boalsburg, PA. ***Popular Mineralogy*** *provides technical answers to your general mineral questions. If you have a question you'd like to have answered, please send email to sicree@verizon.net*

The Rocking Stone of the Bronx

In the Bronx Zoo in New York, there is a forty-ton glacial boulder of pink granite. This is the famous Rocking Stone. If you apply a force of about seventy pounds, the 80,000-pound stone will rock about one inch. It isn't easy to do: you must push at the right point.

Ref.: *Gathering of Animals, An Unconventional History of the New York Zoological Society*, William Bridges (Harper & Row, New York, 1974) pg. 119.

Weird Geology

"Minerals" found in plants

Generally, definitions of "mineral" state that the mineral is abiological in origin. Thus, kidney stone and gall stones aren't usually considered minerals; some definitions will also exclude pearls found in oysters. These pseudo-minerals are not restricted to the animal kingdom, however. Plant-formed "minerals" include tabasheer and the coconut pearl.

The coconut pearl

The term "coconut pearl" or "cocoa-nut pearl" refers, as one might suspect, to a pearl found within a coconut, the seed of the coconut tree (*Cocos nucifera*). In 1841-1850, the naturalist Georg Eberhard Rumphius in a six-volume work entitled *Herbarium Amboinense* described coconut pearls mounted in jeweled gold settings owned by wealthy Malaysian families. These pearls are reportedly calcareous spheres, composed of aragonite, similar to oyster pearls. In recent years, some "coconut pearls" have been offered for sale more than $50,000!

The natives of Caguyan Sulu, an island in the Sulu Sea, part of the Philippines, once believed that possession of a coconut pearl was the only truly efficacious charm against the attack of the "berberlangs" – a type of ghoul. Unfortunately, the coconut pearl only protected the finder; its magical virtues disappeared when the pearl was given away; furthermore, when the finder dies the pearl loses its luster and appears dead.

Supposedly, the coconut pearl is the "rarest gem of the plant world," but there is some real doubt as to whether or not any such pearl could really occur within a coconut. Obviously, given the substantial sums that a coconut pearl commands, there is a terrific incentive to fakery, possibly by inserting the "pearl" into the coconut through the germination pores on the end.

While some botanical museums display examples of coconut pearls, there is no known biological mechanism by which aragonite could be precipitated by the coconut plant. After all, an oyster pearl is merely a sphere of the exact same material that the oyster uses to make its own shell. The coconut pearl is reputedly so rare that

Plant minerals ***(cont'd)***

Rumphius and other authors who have written about the pearls clearly never found one themselves.

Doubt remains about the true origins of these "pearls." However, it is important to note that some authors report that the coconut pearl is really "a stone like an opal" (ref: R. T. Gould, *Oddities*, Bell, New York, 1944), and is a siliceous concretion similar in composition to a "plant opal" known as "tabasheer." If the true coconut pearl exists and is siliceous, it might be akin to *phytoliths* – silica bodies found with plants such as some grasses. A siliceous coconut pearl would be more believable.

Tabasheer

The evidence for the existence of "tabasheer" is much stronger than for coconut pearls. Tabasheer is used in the East Indies as a medicine. Tabasheer and "bambusa" are hydrated silica concretions that come from the joints of the bamboo plant. Analyses of tabasheer reveals that it is mostly hydrated silica with very minor amounts of aluminum, iron, calcium, and magnesium (ref: J. Klinowski, et al., *Philo Mag A* 77:1, Jan., 1998 pp. 201-216). In short, tabasheer really is a "plant opal."

Mineral Etymologies

Etymology is the study of word origins.

Meerschaum: The German words *meer*, or "sea," and *schaum* for "foam" combine to give us *meerschaum*. The term "sea foam" is an allusion to the fact that this soft white clay mineral was often found cast up on beaches and was thought, in ancient times, to be sea foam turned into a mineral. (Meerschaum is easy to carve and was used to make elegant pipes for smoking tobacco.)

Sepiolite*:* The more proper mineral for meerschaum is *sepiolite* a mineral name that comes from the Greek word for the cuttlefish, *sepia*, and from the Greek for stone, *lithos*. Sepiolite is thought to resemble the soft white cuttlefish bone. (Cuttlefish bone is often given to parakeets and parrots to be chewed upon.)

Ref.: *Thereby Hangs a Tale*: *Stories of Curious Word Origins*, by Charles Earle Funk (Harper & Row, New York, 1950).

Field Collector Safety

Lightning Awareness

You're in a quarry and, looking up, you see dark clouds moving in. Rain is on the way, but the flashes of lightning are more worrisome.

Every year, hikers, golfers, and others caught outdoors during a thunderstorm are struck by lightning. Because they work outdoors, miners and rock collectors are at risk of lightning strike.

Florida leads the nation in lightning deaths with 126 cases documented for the period 1990-2003. Texas comes in as number two with 52 deaths. Colorado, Illinois, Pennsylvania, and Ohio are all in the top ten. Many of the states of the old Confederacy also have high numbers of lightning deaths.

How do you estimate lightning distance?

First, look at the direction of the wind. Is it blowing from the direction of the lightning flashes? If so, Thor is headed your way with his thunderbolts.

How far away is the storm? Many lightning strikes occur within 10 miles of a storm system, either before the storm hits or after it passes. The quick method to estimate distance to lightning: (1) see a lightning flash, begin counting seconds ["Thousand-one, thousand-two, etc.]; (2) hear the thunder, stop counting; (3) divide seconds by five to get miles away [thus, 5 seconds = one mile, 10 seconds = two miles, etc.].

How do you limit the danger?

The best way to avoid lightning strike is to get out of the way. A building provides more protection than a vehicle. Staying low, off the top of hills or ridges is important. Lone trees might attract lightning and should be avoided. How long should you stay under cover? The Boy Scouts use a 30 minute rule, waiting that long after the lightning passes before resuming activities.

Don't let risks keep you out of the field but do take some simple precautions to limit your chance of being zapped.

Field Trips in Nov & Dec

Harry's trip to Agate Mt. for amethyst * agate has been rescheduled to Sat., Dec. 4th. Contact Harry Warren if you have any questions at **rockharry@netscape.com** or 480-986-5852.

Rock Shows in November & December

November, 13-14, 2010 Lake Havasu City
41st Annual Gem & Mineral Roundup
Community (Aquatic) Center, 100 Park Ave., Lake Havasu City, AZ 86404
Sponsored by: Lake Havasu Gem & Mineral Society
Website: www.lakehavasugms.org
Hours: Sat. 9-5, Sun. 9-4
Admission and parking: Free
Demonstrations, raffle, hourly door prizes, games & prizes for children.

Show Chairpersons: Carol Stone, Kathy Ernst
showchair@lakehavasugms.org

November 19-21, 2010 Green Valley
Green Valley Artisan's Festival
West Social Center, Green Valley, AZ
Sponsored by: Green Valley Lapidary and Silversmith Club
Hours: Fri., Sat. 9-4, Sun. 11-4
Admission: Free
Festival Chairman: Margi Smith, 520-393-1228

November 27-28, 2010 Wickenburg
10th Annual Gem & Art Fair,
Wickenburg Community Center,
160 N. Valentine St., Wickenburg, AZ 85390
Sponsored by: Wickenburg Gem & Mineral Society
Over 40 vendors, with gems, minerals, jewelry, artists, photo exhibit, door prizes, grab bags, spinning wheel, food and more . . . . .
Raffle drawing Sunday: Tickets $2 ea. or 3/$5
Admission and parking: Free
Hours: 9-5
Show Chairperson & Dealers Contact: Beth Myerson, 21825 W. Date Creek Rd., Wickenburg, AZ 85390, 928-684-0380, myerbd@gmail.com

December 10-12, 2010 Tombstone
Tombstone Gem Show's 1st Annual Miners' Mania Tombstone Territories RV Resort, 2111 E. Hwy. 82
Sponsored by: Rhinestone Cowboy, 520-457-9505
Website: www.tombstonegemshow.info
Admission and parking: Free