



# The Rockhound Record

*Mineralogical Society of Arizona - April 2011 - Volume 77, Issue 4*

*Going Strong for 76 Years - 1935 - 2011*

## Upcoming Program - Friday, April 8, 2011

**Mineralogy of the Grandview Mine, Grand Canyon  
Presented by Dr. Raymond Grant**

**For more details, please refer to Page 3 of this newsletter for  
Ray's article, Arizona Mineral Collector - Number 138.**

### GRANDVIEW MINE MINERAL LIST

*Contributed by Dr. Raymond Grant*

#### **Sulfides**

- Chalcocite
- Chalcopyrite
- Covellite
- Pyrite

#### **Oxides**

- Cuprite
- Goethite

#### **Carbonates**

- Aurichalcite
- Azurite
- Calcite
- Cerussite
- Malachite
- Smithsonite

#### **Sulfates**

- Anglesite
- Antlerite
- Barite
- Brochantite
- Carbonatecyanotric  
hite
- Chalcanthite
- Chalcoalumite
- Cyanotrichite
- Devilline
- Grandviewite
- Gypsum
- Langite
- Serpierite
- Unnamed Cobalt  
Aluminum sulfate

#### **Arsenates**

- Adamite
- Arthurite
- Chalcophyllite
- Metazeunerite
- Olivenite
- Osarizawaite
- Parnauite
- Pharmacosiderite
- Philipsbornite
- Scorodite
- Zeunerite

#### **Silicates**

- Chrysocolla
- Hemimorphite
- Illite
- Kaolinite
- Quartz

### REMINDER

**At the March 11, 2011, meeting our president, Roger Deming, asked the members to be on the lookout for new places to meet after June 1, 2011, when the museum will be closing. Please bring your suggestions with contact information and details to our April 8th meeting.**

**Thank you, Lois Splendoria**

**Mindat (<http://www.mindat.org/>)  
has Dickite listed.**



## President's Message

As we are coming on to summer, I want to remind everyone to always do your rock hounding in as safe a manner as possible. Most of you know that you do not stick your hands into crevices or holes you haven't explored with the end of a stick first. Always be aware of your surroundings. Know what is above you, below you, and what is to both sides of you. Park in areas where your vehicle will not be damaged by any falling objects, and make sure you park well off the road. Remember other people are using these roads too. Wear the right gear for rock hounding: durable shoes or boots, long sleeved cotton shirts, and good jeans that can withstand whatever pucker bush you are walking through. Have a flashlight, first aid kit, and plenty of water wherever you go. Salt tablets aren't a bad idea either. And if you are as old as Ed Nichols and I, a walking stick would be handy too!

Remember to plan your ascent before you start your climb. I don't remember how many times I have started up a hill to find out I have to backtrack several yards back down to be able to get to the area I was going to in the first place.

Also remember to bring out your trash with you. Leave as little a carbon footprint in the area as possible. And if you see some other trash you can carry out with you, do so. It helps us all to help take care of mother nature for those that will be following us.

**BE SMART AND BE CAREFUL!!! I WANT TO SEE ALL YOUR SMILING FACES AT THE NEXT MEETING. TAKE CARE ALONG THE TRAIL.** I am glad that I have had the chance to ride alongside you all, and I hope that we all have many more SAFE adventures in the future. One more month of school, and I am free.

**NEXT BOARD MEETING WILL BE IN MAY: DATE TO BE DETERMINED BY BOARD MEMBERS AT APRIL MEETING.**

**CHRYSOCOLLA:** The gemstone Chrysocolla is often confused with turquoise. It is a copper bearing mineral found wherever copper deposits occur, especially in areas of southwestern USA, Chili, Zaire, Australia, France, and England.

Eliat Stone is a variegated blue and green mixture of chrysocolla and other copper minerals found in the gulf of Aqaba, near the northwestern end of the Red Sea.

Pure chrysocolla is too soft for jewelry purposes but it is often found in quartz deposits, which makes it hard enough polish for cabochons. It is often found mixed with malachite, turquoise, and azurite.

The drusy form of chrysocolla is a beautiful Robin's egg blue. Pure chrysocolla is between 2.0 and 4.0 on the Mohs scale of hardness.

**FOLKLORE, LEGEND, AND HEALING PROPERTIES:** Creativity, female energy, communication, relieves ulcers and arthritis. Chrysocolla is associated with tranquility and peace, intuition, patience, and unconditional love. It is thought to offer gentle and soothing qualities. (Source: Internet Article)

Thank you all, friends.  
Roger Deming (no relation to Betty), MSA President.

### **PRESIDENT**

Roger Deming  
(480) 633-0731

**Rogersweeps@yahoo.com**

### **VICE PRESIDENT / CLUB FIELD TRIPS**

Ed Nichols  
(480) 636-1251

**epidote555@yahoo.com**

### **TREASURER / COALITION FIELD TRIPS**

Betty Deming  
(602) 242-1553

**bd\_mac2003@yahoo.com**

### **SECRETARY**

Julia Tamasiunas  
(623) 512-2892

**julezees@hotmail.com**

### **NEWSLETTER EDITOR**

Lois Splendoria  
(480) 813-3923

**chimes30@q.com**

### **MINERAL CURATOR / LIBRARIAN / DOOR PRIZES / HOSPITALITY**

Bob Holm  
(623) 247-1325

### **REFRESHMENTS**

Lynne Dyer  
(480) 396-2393

**unodyers@hotmail.com**

### **STATUTORY AGENT**

Terry Dyer  
(480) 396-2393

**unodyers@hotmail.com**

### **WEBMASTER**

Patti Polk

**rockhound\_86326@yahoo.com**

### **BOARD OF GOVERNORS**

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# ARIZONA MINERAL COLLECTOR NUMBER 138



By Dr. Raymond Grant

The Grandview mine (also called the Last Chance mine) is located on Horseshoe Mesa near the South Rim of the Grand Canyon. Pete Berry located the property in 1890. In 1892 and 1893 he and others built a four-mile long trail up 2,500 feet from the mine to the rim. Copper mining began in 1893. The ore was hauled by mule train (eight to ten mules) to the rim. From there the ore was taken by wagon to the railroad and then by train to the smelter in El Paso. The mine workings were extensive considering the location. There were 7 levels with over 3000 feet of tunnel and hundreds of feet of shafts and winzes. Mining ended in 1916 and it is reported that \$75,000 worth of copper was mined.

The deposit is one of the many collapse breccia pipes located on the Colorado Plateau. Extensive cave systems formed in the Redwall limestone. This was followed by collapse of the overlying formations into the caves forming the breccias. Initial mineralization of this breccia occurred in several episodes from 200 to 260 million years ago. The Grandview deposit is unusual in that most of the breccia pipe has been eroded away and only the bottom level in the Redwall limestone remains. It is also unusual in that it is the one breccia pipe deposit well known to mineral collectors. The mine is famous for the cyanotrichite collected there. They are among the best cyanotrichite specimens in the world. Recent work on the minerals from the Grandview mine have found several minerals new to the Arizona list and a new mineral species.

Thirty-five mineral species have been identified from the Grandview. They are mainly carbonates, sulfates, and arsenates of copper, zinc, uranium, lead, iron, aluminum, and calcium. These minerals formed from the oxidation and weathering of the primary minerals during the more recent erosion of the Grand Canyon. New for the Arizona mineral list are arthurite and philipsbornite and the new species is grandviewite.

**GENERAL MEETING MINUTES**  
**March 11, 2011**  
**By Lois Splendoria, Secretary Pro-Tem**

The meeting was called to order by president Roger Deming. After the Pledge of Allegiance, Bob Holm welcomed two visitors: Betty gave the treasurer's report and made an announcement about the Coalition field trip on March 26 sponsored by the Arizona Leaverites.

**Announcements**

Roger made the following announcements:

- ◆ Our club will need a new place to meet starting in June of 2011. Everyone is asked to bring their suggestions with details to the April 8 general meeting.
- ◆ There will be a march to the State Capitol on Tuesday, March 15<sup>th</sup>, to protest the closing of the mineral museum. Volunteers are needed to help supervise.
- ◆ The MSA library will be stored at Ed Nichols' trailer temporarily, since the museum will be closing on June 1. The value of the library will then be determined.
- ◆ The club will need to find another place to store its minerals after January 2012 because Ed Nichols will be selling his trailer.
- ◆ The club's 75-year pins were on a shipment from China that was hijacked, so it was not known at the time of reporting where the shipment was.
- ◆ From now on two people will count the money at the Flagg Show booth.

Roger introduced Harvey Jong, who presented a very interesting program entitled "Mineral Collecting in Tasmania." The "critter breaks" were especially enjoyable, with lots of pictures of animals from Australia. Thank you, Harvey, once again, for a great program!

Joanne Hesterman announced that the museum will have its volunteer recognition dinner upstairs at the museum on Friday, April 8, at 6 p.m.

The raffle was conducted, and the meeting was adjourned.

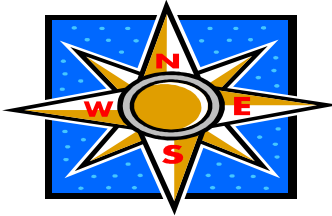
**On the Lighter Side . . .**

Three animals are outstanding examples of the Beast of Burden class: the mule, the camel, and the simple-minded rockhound. The mule is smart - put one pound more than his usual load on him, and he simply balks until it is removed. The camel is even more decided in his ideas - try overloading him and he'll stay in the sand, and if you persist, will spit his cud at you. But that simple-minded rockhound? He takes 15 to 20 pounds of equipment in with him, then tries to load on about 50 to 60 pounds of rock and carry it back to the car on the road. Does this sound familiar to anyone?

**Reprinted from the February 2011**  
**CUTTING REMARKS**  
**Via Rocky Mountain News 10/2010**

# COALITION FIELD TRIP

**WEDNESDAY**



**APRIL 20, 2011**

## **Coalition Field Trip for Petrified Wood near Holbrook, Arizona**

**Hosted by:** Sedona Gem & Mineral Club  
**What for:** Petrified Wood  
**When:** Wednesday April 20, 2011 - All Day  
**Field Trip Leader:** Rita Topp - 928-284-1570

**Where:** We will meet at 9:30 a.m. at Exit 303 (Adamana) which is about 15 miles east of Holbrook on I-40. There is plenty of room along the frontage road on the south side of the interchange. It is not very far to the ranch, but there are some sandy washes to cross, so everyone should be in a high-clearance (4WD would be even better) vehicle. Passenger cars will not make it safely. There are always plenty of spaces in other vehicles to share a ride in. I can suggest a safe place to leave your vehicle while we are at the ranch (until 3:00 p.m.).

**What Will We Find?:** You are the guest of the owner of the 160 acre ranch. He is an interesting person who has lived here alone for 22 years. His ranch borders on a portion of the Petrified National Park and features the same variety and quality of wood as you would find in the Park. He has also excavated an Indian ruin near where he lives. Boulders on the small butte near his home are covered with petroglyphs featuring animals, Kokopelli figures, sun spirals, etc. You are welcome to photograph whatever you want. Please do not collect Indian artifacts or pottery. He has numerous samples he will show you if you ask.

**Fee:** He has sold some of his wood to dealers to help support himself, but only on a very limited basis. He does not harvest the wood with any equipment other than small hand tools, even though he has huge logs weighing tons and measuring many feet in length.

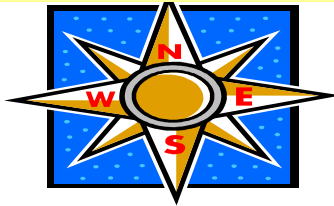
**The Fees:** \$5/person plus \$2/lb for any wood you collect. Bring cash - no checks or credit cards. His wood is as colorful as any you will see anywhere. You can surface collect on his ranch (light digging allowed), and he will also let you choose from piles he has accumulated around his house.

**What to Bring:** Small trowel and rock picks, but please do not hammer on any wood. Bring water, lunch, light shirt or jacket for sun protection.

**Bad Weather:** In case of rain or snow in the Holbrook area on April 19th or 20th, the trip will be canceled. Please pay attention to Internet weather sites or local radio or TV.

# MSA CLUB FIELD TRIP

**SATURDAY**



**APRIL 16, 2011**

The location of our April field trip sites is on the east side of the Bradshaw Mountains. We visited this location 2 or 3 years ago, and it is Sites 31 and 32 in Neil Bearce's excellent book "Minerals, Fossils, and Fluorescents of Arizona." Site 32 is a short distance beyond 31 at Cottonwood Gulch.

Vehicle required for these locations is high clearance, and for Cottonwood Gulch it would be better to have 4 wheel drive.

We will meet at Museum at 15th Ave. & Washington, but only if you need to pick up a rider and are car pooling. That will be at 7:00 a.m. and leaving 7:15 a.m. I'll stop at the Lake Pleasant turnoff at exit 223A. Go east to the McDonald's on left side of road short distance. We will leave there between 8:30 and 9:00 a.m. and back on I-17. If you need gas, food, water, etc., this is the last place available. We turn off I-17 at Table Mesa Rd. This is exit 236 and we go west.

I'll have a map for the vehicles on the trip at the April MSA meeting and at McDonald's.

Tools for the trip are rock hammer, small or large sledge, pry bar and light digging tools. On past visit to these locations we collected fluorescent calcite, mica at the pegmatite location, and some hornblende schist that I liked. I thought these locations were very interesting because of the combination of geology igneous intrusive and extrusive, and metamorphic all within a short distance of each other or actual contact.

See you at the April 8th meeting.

Ed Nichols  
YeOlde Rockhound



**Follow the fate of the  
Arizona Mining and Mineral Museum  
on Mineral Museum Madness at:**

**[www.minmumad.blogspot.com](http://www.minmumad.blogspot.com)**

***New posts will continue to appear as information becomes available.***

## **DIAMOND**

### **April Birthstone**

**D**iamond is the best-known gem. Its history is so long and complex that the beginning is lost in antiquity. India was a source of many of the world's most famous diamonds. Diamonds were traded in India as early as four centuries before the birth of Christ, many gems reaching Ceylon (now Sri Lanka) and the Middle East. Other stones found their way into the Roman Empire, where their supposed magical powers enhanced their value. Arabian and Persian merchants brought diamonds to China, where they served as Jade-cutting and pearl-drilling tools in the first few centuries A.D. Diamond tools were highly regarded in China and were considered gifts worthy of royalty.

Indian superstitions about diamond eventually spread throughout the world. The Buddhists believed that a person's soul had to be purified before joining the "universal soul," or karma. The steps in this process involved incarnations as animals, plants, and even minerals. This fostered the belief that minerals and gems have life, a notion that persisted for centuries. The Greek philosopher Plato believed in life among gems, and rated diamond as the noblest. Such ideas were held well into the Renaissance. Jerome Cardin who, in the 16th Century, first designated stones as "precious," believed that minerals and gems were "born" of the fluids in rock cavities.

Diamond, with its remarkable properties of hardness, dispersion, and brilliancy, was also considered a strong medicine. The powder of white, flawless diamonds would, if swallowed, impart health, energy, and long life. Flawed stones, however, might have the opposite effect! Diamond powder was for centuries considered to be a deadly poison and the death of many prominent rulers and politicians were attributed to this agent. Diamond was supposed to have many other mystical powers. If held in the mouth, a diamond would cause the teeth to fall out. It repelled phantoms and demons, and prevented nightmares. Diamond could ward off magic and protect the wearer in battle by giving him courage, virtue, and invincibility.

Diamond is pure carbon, the element that is also the foundation of life. Carbon has interesting chemical properties that enable it to form a truly vast number of compounds with many other elements. Some of these are biologically active. Another form of pure carbon is the mineral graphite. Graphite is so easily powdered that it is used as the "lead" in pencils (mixed with clay for this application), and so greasy that it is widely used as a lubricant. Yet diamond is the hardest known substance, and will easily scratch any other material.

***From Gems and Jewelry***

Reprinted from the April 2011 Rimstones Review

## ***DISTINGUISHING CUBIC ZIRCONIA FROM DIAMOND***

By Thomas A. Nupp, Member of Grant County Rolling Stones and a Gemologist

Here are a few ways to differentiate unmounted faceted cubic zirconia (CZ) from diamond:

**Read through:** A line can be seen through an upside CZ, whereas this is not possible with a diamond. The easiest thing is to place the stone upside down over news print. It is easily "read through" a CZ, however this is not always prop positive. I have seen large emerald cut diamonds that can be "read through." Read through is a property of the critical angle of the stone, type of cut, and the method of faceting. Cleavage: If it can be observed, CZ has no cleavage, whereas diamond is perfect in four directions.

**Fracture:** If you can find fracture, CZ will be concoidal versus diamond's step-like fracture. The most likely place to find a fracture is on the girdle.

**Hardness:** CZ's hardness is 8.5 versus diamond's 10. If the stone has numerous surface scratches, chances are it is a CZ. (Yes, and could have numerous scratches and a new CZ can be unscratched, but scratching is far more common in CZ).

**Inclusions:** Under 10X magnification (a good quality hand held loupe is sufficient) CZ often shows included bubbles or solid high relief particles of unmelted zirconium oxide. Diamond will have all kinds of characteristic inclusions, often erroneously called "carbon spots", however I have yet to see a CZ with these black inclusions. But just as sure as I write this, someone will manufacture one and sell to the unwary.

**Luster:** CZ has a sub adamantine luster versus diamond's adamantine, however this takes a whole lot of experience to tell the difference.

**Pavilion flash:** If a microscope with dark field illumination is available, CZ has a very distinct orange brown pavilion flash. Diamond will exhibit a rainbow flash.

**Thermal:** Thermal testers will show whether the stone is a diamond or CZ; however, they will not separate Moissanite from diamond, so be careful. Also, I have heard of (but never seen) diamond CZ doublets and diamond garnet doublets wherein a very thin layer of diamond is bonded to the table of stone. If the thermal tester is only tried on the table, this doublet will register diamond.

**Ultra Violet:** UV fluorescence varies with the color of the stone, with colorless CZ showing greenish yellow to yellowish orange under LW UV and yellow under SW UV. I have seen the exact same colors from a diamond, however I have never seen a CZ show the very strong blue that sometimes is displayed by a diamond. I would not suggest using UV as a definitive test, only as another bit of evidence.

**Cut and Polish:** Probably the most common separation of diamond from CZ is by visual inspection of the girdle of the stone under 10X magnification. I have heard so many different ways of describing this that I won't try to be specific; however, I have heard the diamond girdles described as "waxy" or "melted wax" and the CZ girdle described as "shiny, metallic looking, or granular" Take your pick, but experience is the best teacher. Here again, there is no hard and fast single rule. I one time saw a CZ that had been cut with a variable thickness girdle that had been faceted and polished. The facet junctions of the upper girdle and crown facets also did not align. The stone had been cut that way intentionally for one purpose only: to deceive; one poor jeweler was so used to seeing perfectly cut CZ's that he bought it.

**Weight:** CZ has a specific gravity of 5.80 (+/.20) vs. diamond 3.52 (+/.01). CZ will feel unusually heavy when hefted in the hand. Even very small stones will feel this way.

**Other:** There are other methods of sorting CZ from diamond, absorption spectrometer, dispersion, etc., but they require specialized equipment and are seldom diagnostic by themselves. There is no one foolproof way to separate diamond from CZ. That's why it (cubic zirconia) is such a good imitation, however, using a 10X loupe and making careful observations, an experienced individual can be fairly confident they have properly identified the stone. Unless you are one hundred percent sure of your experience and abilities, get some expert help before you buy. As always, if the deal sounds too good to be true, it usually is!

## LET'S GO TO A SHOW!

### April

**April 9-10, 2011 - Kingman**

#### **Kingman Annual Show**

Kingman Academy of Learning HS

3420 N Burbank St., Kingman, AZ, 86401

Sponsored by: Mohave County Gemstoners

P.O. Box 3992, Kingman, AZ, 86402

Displays, silent auction, dealers, demos, raffle and door prizes.

Hours: Sat. 9-5, Sun. 9-4

Admission and parking: Free

More Info: Nan Russell 928-846-0927 or visit

**[www.gemstoners.org](http://www.gemstoners.org)**

For a complete listing of shows for the 2010-2011 season, go to:

**<http://www.admmr.state.az.us/Publications/circ136showlist2010-2011.pdf>**

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**Easter**

**April 24, 2011**

**LOIS SPLENDORIA**  
MINERALOGICAL SOCIETY OF ARIZONA  
1502 West Washington  
Phoenix, AZ 85007

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**Founded 1935**  
**A Non Profit Organization**  
[www.mineralogicalsocietyarizona.org](http://www.mineralogicalsocietyarizona.org)

**Purpose:** To promote popular interest in the various Earth Sciences, and particularly the fields of Geology, Lapidary, Mineralogy, and related subjects. ID badges are available from the Treasurer.

**Meetings:** 7:00 p.m. at the Arizona Mining and Mineral Museum, 1502 W. Washington, Phoenix, AZ, *on the second Friday of the month, September through June (except February, which is the third Friday).*

**Dues:** Families & Couples - \$20.00, Single Adults - \$12.00, Juniors (18 yrs. and under) - \$2.50. Please mail your dues to:

**Betty Deming**  
**2922 West Claremont**  
**Phoenix, AZ 85017-1629**

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First Class Mail

<b>UPCOMING MEETINGS</b>	
<b>FRIDAY</b>	APRIL 8, 2011
<b>FRIDAY</b>	MAY 13, 2011
<b>FRIDAY</b>	JUNE 10, 2011
<b>FRIDAY</b>	SEPTEMBER 9, 2011

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