MEDIUM-GRAINED CLASTIC SEDIMENTARY ROCKS —

Sandstone is a medium-grained clastic sedimentary rock, with sand grains between 1/16 mm and 2 mm diameter. Composition is usually quartz and feldspar—both fairly hardy minerals in the weathering environment (especially quartz). See Figure 1.

### CLASTIC SEDIMENTARY ROCKS

<table>
<thead>
<tr>
<th>Coarse-grained (pebbles, cobbles, boulders)</th>
<th>Medium-grained (sand)</th>
<th>Fine-grained (silt, clay)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRECCIA - large, angular fragments, with fine matrix</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONGLOMERATE - large, rounded fragments, with fine matrix</td>
<td></td>
<td></td>
</tr>
<tr>
<td>QUARTZ SANDSTONE - mostly quartz sand, looks sandy; may shed loose grains of sand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARKOSE - assorted sizes, with visible feldspar; often reddish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRAYWACKE - assorted sizes, with mica and rock fragments; dark gray or greenish-gray</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHALE - composed of clays, which lead to fine layers; dull luster; soft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SILTSTONE - composed of fine particles of quartz and feldspar; massive; gritty feel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FIGURE 1** Clastic Sedimentary Rock Chart  
Chart created by Susan Celestian

The term “sandstone” encompasses a number of varieties:

**Graywacke** is generally dense, fine-grained and angular quartz, feldspar and rock fragments (usually with visible mica); dark-colored; and contains a high percentage of clay. See Figure 2.

**Graywacke Environments of Deposition:** deposited as turbidity currents (underwater landslide) into deep marine environments, such as the depths off the edge of continental shelves or deep ocean trenches. Rivers dump fine-grained sediments on continental edges. These sediments pile up until they are over-steepened and fail, sending a viscous mix of sediment and water roiling downslope.

### MEMBERSHIP SURVEY

Those club members who volunteer to serve as board members want to assure that the club is focused on activities, and is going in the direction, that satisfies the general membership. Additionally, the vitality of the club is dependent on the involvement of the membership.

So…….

**PLEASE TAKE A FEW MINUTES BEFORE THE NEXT MEETING, CONSIDER HOW YOU MIGHT BE INVOLVED, FILL OUT THE MEMBERSHIP SURVEY FOUND ON PAGE 8 OF THIS NEWSLETTER, AND BRING IT WITH YOU TO THE NEXT MEETING -- OR EMAIL TO: DMRMCLUB@GMAIL.COM, OR MAIL TO: PO Box 74215, Anthem, AZ 85086**

**INSIDE THIS ISSUE**

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**Board Meeting Minutes — September 5, 2017**

The meeting was called to order at 5:05 PM by President Ed Winbourne. Those present were: Sue and Stan Celestian, Cynthia Buckner, Tiffany Poetch, Bob Salter, Victoria Peterson and Ed Winbourne. A quorum was established.

Ed opened the meeting stating the Club is in a wonderful position both financially and membership-wise.

**Financial Report:**

Cynthia, Treasurer, provided the financial statement and stated the club received a $500 donation from Pittsburgh Plate Glass (Bob Evans facilitated this donation). Storage costs increased from $66.83 to $71.98 per month. The Club has total cash of $23,928.63.

The Club needs to audit the equipment which has been purchased.

**Motion:** Upon motion made by Ed, seconded by Tiffany and unanimously carried an audit of the equipment in storage will be made by three Board members and provided at the October meeting.

**Suspense item:** Three Board members will conduct the audit to be concluded before the October meeting.

**Field Trip Committee Report:**

Stan plans to hold a Committee meeting when the members who are away for summer return. He reported this coming Saturday a field trip will be held traveling to Diamond Point. There was discussion on the advisability of children attending meetings and field trips.

**Suspense item:** At October meeting we will discuss how to address children as members; ie. a Junior Membership category.

**Membership Report:**

Victoria reported the Club presently has 136 adult and 7 child members. The Club will be studying the potential of having a Junior Membership category and this will be discussed at the October Board Meeting.

**State Fair Report:**

Ed reported the Board decided not to participate in this year’s State Fair but will consider it for 2018.

There being no further business, the meeting adjourned at 8:30 p.m.

Respectfully submitted,  
Victoria Peterson, Secretary
Wire Wrapping Class

October -- Weave Wrapping

Club member, Jennifer Gecho, volunteers to teach a wire wrapping class. Before each club meeting, those interested can join her to twist some wire and tell a tale or two. The classes are free, although we ask for a donation (suggested at $5-10).

**WHAT:** Wire wrapping: September style is *Weave Wrapping*

**WHERE:** Anthem Civic Building, 3701 W Anthem Way, Anthem, AZ
(Same building in which the club meetings are held.)

**WHEN:** 4:30 on the 1st Tuesday of the month (same night as club meeting)

**BRING WITH YOU THE FOLLOWING:**

♦ 20 gauge wire
♦ 24-26 gauge wire
♦ A stone, larger than a quarter
♦ Tools - pictured below:
  Round nose pliers
  Needle nose pliers
  Side cutters
  Metal spring clamp

**DONATION:** $5-10, for expenses

In honor of the spooky bones of October -- Rutile Quartz cab weave-wrapped by Jennifer Gecho
Executive Board minutes continued from page 2

next Club Newsletter.

Victoria to provide a draft of Junior Membership criteria to October Meeting.

Wirewrapping Class:

There was discussion relative to changing the date and/or time of the wire wrapping class which Jennifer Gecho facilitates. As Jennifer is a Board Member, changing the date/time of the class would allow her to attend the Board Meetings. It was agreed Jennifer would decide on a date and time which would accommodate her attendance at Board Meetings. The Club would continue to pay the room rental, and attendees of the class would be offered the opportunity to provide a donation of $5 to $10 each class. This donation would go to Jennifer to cover her time and expenses.

Suspense item:

Jennifer to advise of any change in date and time of Wire wrapping Class.

State Fair 2017:

There was discussion about whether the Club should have a presence at this year’s state fair.

Motion: Upon motion by Bob Salter, seconded by Stan Celestian and unanimously carried not to participate in this year’s State fair, but to consider it for next year.

Social Media:

The Social Media consists of the Club Website administered by Nancy Gallagher, Facebook administered by Jonathan Mitchell, and Meet Up (Ed to talk with Dahlia regarding a replacement administrator for this site).

Suspense item:

Ed to follow up on a possible Meet Up Site administrator.

Determine Club Goals for the remainder of 2017.

There being no further business, the meeting adjourned at 6:20 PM.

Respectfully submitted,

Victoria Peterson, Secretary

Since water is much thicker than air, when the sediments of a turbidity current come to rest in the quiet depths, the fragments settle out by size — the largest particles settle out first, and progressively finer and finer particles settle out. This produces a sedimentary structure called graded bedding (a subject for a later article). Sequences of turbidity current deposits are called turbidites.

Arkose is generally a gray to red, coarse sandstone (although it can be fine), composed of over 25% feldspar (which shows as chalky white fragments), with quartz, mica, and rock fragments — all angular to somewhat rounded. See Figure 3.

Arkose
This rock is composed of fine to coarse sand, with lots of visible chalky white feldspar grains.
Photo by Stan Celestian

Sandstone continued on page 5.
Arkoise Environments of Deposition:
Remember that feldspar decomposes fairly quickly in the weathering environment, so arkose is often indicative of deposition fairly close to a granitic source. Climate may occasionally be a controlling factor — either too cold or dry to facilitate the chemical weathering necessary to breakdown feldspar. The crushed granite (grus) in many desert landscapes is basically the building block of arkose. Additionally, some stream and alluvial fan deposits will become arkoses. See Figure 4.

Quartz Sandstone is sandstone that is composed of mostly quartz sand grains. While quartz is a major component of all sandstones, these are over 95% quartz. See Figures 5-7 (increase the size of your onscreen view for a near-microscopic look).

Quartz is an extremely hardy mineral at Earth’s surface. It is hard, with very strong atomic bonds, and does not cleave. As a result, quartz will persist, while feldspars, micas, amphiboles, and pyroxenes break down and weather away. Remember the Rock Cycle? Sedimentary rocks containing quartz may re-cycle over and over again — and each time, the relative percentage of quartz goes up.

Quartz Sandstone Environments of Deposition: Quartz Sandstone is typical of very selective environments, such as marine and lake beaches, stream bars, barrier islands, and dunes. See Figures 8-10, for pictures of future quartz sandstones.
Sandstone continued from page 5

Following is an example of the type of quartz crystals I accumulated on the trip.

**FIGURE 9** Dune Sand, Indiana Dunes, IN

Wind is a VERY selective transporter — it will move only a narrow range of sand sizes. The result is a fine-grained sand of rounded and frosted grains. *Photo by Stan Celestian*

**FIGURE 10** Beach Sand, Boca Grande, FL

Sand on the beaches of Florida has travelled very long distances, after having originated out of the igneous and metamorphic rocks of states to the north. By the time the sand makes it to Florida, there is almost nothing left but quartz — pretty well-sorted and well-rounded quartz. A few shell fragments can be seen, as chalky white grains. *Photo by Stan Celestian*

Diamond Point Field Trip

*By Stan Celestian*

The field trip to Diamond Point was sparsely attended, perhaps due to the destination, the time of year or distance to the locality. The members who did show up were greeted with wonderful weather in the cool pines as well as amiable conversations. Unfortunately the collecting was limited to just scanning the ground for quartz crystals as the ban on digging in the area lasts March 1-Sept 30.

Nose to the ground, Michael Pollack scans for quartz crystals. *Photo by Susan Celestian*

These crystals represent the remnants of calcite-filled pockets that have been weathered away. The very durable quartz remains and accumulates on the surface. If you were able to collect in the area 60 or 70 years ago, there would have seen much better crystals laying about the forest floor. But, after many years of collecting by rockhounds, most of the exposed crystals have been removed.

So, you may ask, why go back to the area again and again. The answer lies in what *can* be found. Digging in the soil around the limestone outcrops can yield excellent crystals, reminiscent of Herkimer Diamonds. Below are some better crystals I have uncovered by digging on past trips.

The quartz crystals at Diamond Point developed along with calcite (sometimes crystals) in vugs (hollow cavities) in the limestone.

*Photo by Stan Celestian*

Diamond Point continued on page 7...
Here is an example of a calcite-filled vug in limestone. Breaking it apart could reveal the presence of the sought after quartz, but may also damage the crystals. Another, more time-consuming procedure, is to etch away the calcite with muriatic acid (dilute hydrochloric acid), commonly sold as pool acid. The process also dissolves the limestone matrix. Monitoring the dissolution progress is important as most collectors prefer to have the crystals attached to the matrix rather than just having a loose crystal.

Below is an example of an etched boulder of limestone that has exposed a vug containing two nicely formed quartz crystals. Notice that a bit of calcite remains and the vug is also lined with small, white barite crystals. I decided to stop the etching at this point to ensure the quartz crystals would remain attached to the walls of the vug.

Occasionally, amethyst crystals can be found. Colored by iron, these rarities are a real find for this locality. I have only found 3 in my years of collecting at Diamond Point. My favorite is shown below.

It is an acid etched vug. In addition to the nice little amethyst crystal (center) a very nicely formed quartz crystal is on the right and, surprisingly, a quartz pseudomorph after barite is on the left. This one’s a “keeper”.

In most cases the question as when to use hydrochloric acid to etch away the calcite is based on the presence of visible quartz and the quality and size of the crystal(s) present. If no quartz can be seen, there may not be any in the vug and a bit of breaking
Daisy Mountain Rockchips

in the field may be needed to expose any quartz that may be lurking in the vug. If a clear crystal is exposed it will most likely appear dark, as the clear crystal is being shaded by the enclosing calcite. Below is an example of an un-etched vug that shows the natural surface of the calcite and a nicely formed quartz crystal.

Quartz crystals from this locality are typically stubby and doubly terminated. However, because these are natural crystals, there is quite a range in the size of crystal faces, shape and the overall perfection of the crystals faces. The more perfectly formed crystals are clear and the milky crystals contain microscopic droplets of water as an impurity. In fact, it is often the imperfections that make the crystals more interesting as well and desirable. The amethyst coloring of some of the crystals is an imperfection that, in some cases, increases the value of the specimen. The vast majority of all mineral crystals have some type of imperfection. The faster the crystal grows, the more likely for imperfections to develop, and, the larger the crystal, the more likely it is to have developed some types of imperfections.

This diagram shows the most common crystal forms for the quartz found at Diamond Point. The green faces, top and bottom, are referred to rhombohedral faces (commonly, but erroneously, called pyramid faces). The blue faces are prism faces.

Below is a single quartz crystal of this style from Diamond Point. It is fairly obvious to see where the rhombohedral and the prism faces are located, but they are not very uniform in shape or size. This crystal has quite a few imperfections including:

- **Internal Cracks** - Some of which are colored by the interference of light by the slight offsets of the crack.
- **Inclusions** of water droplets that produces the white color, especially as seen along the base of the crystal (the brownish color is due iron oxide coating the crystal).
- **Growth Hillocks** on the rhombohedral faces. In the photo below is a closer view of the illuminated rhombohedral face. The little bumps on the crystal face are the growth hillocks. They are created by accelerated crystal growth.

Little irregularities develop as atoms, arriving at the surface of the growing face, are not quite in alignment with the existing crystal structure. But because the crystal is growing rapidly, these irregularities (or imperfections) are trapped and actually grow in size. Below are a couple more examples of growth hillocks found on quartz. Note that they are similar in shape, basically triangular. They are very common on Diamond Point crystals as well as Herkimer Diamonds and quartz crystals from other localities too. Check your quartz crystal to see if you have any. Hold the crystal so that the rhombohedral face reflects the light from a light bulb. The growth hillocks are small, so look closely.

_393x729 to 393x770_

[Photo by Stan Celestian]

_Diamond Point continued on page 9..._
UPCOMING FIELD TRIPS

WHEN: October 14 & 15
WHERE: Gem-o-rama, Trona, CA
WHAT: Pink Halite, Hanksite, Sulfohalite, Tincalconite after Borax, others
MEET: Meet between 7 and 8 a.m., at the field trip site in Trona. There are two lines that form at the back of the clubhouse (there will be signs).

The Trona club chalks out rows, to create two long lines, for the drive out onto the flats. Stan and Sue will get in line at 7:30 am, and will park their red Chevy truck at the head of a segment, removed from the main line body, hoping that as club members arrive, they can park behind them, and the group can stay together. Stan will hover in the area where attendees pay for their tickets

LEADER: Stan Celestian

OTHER: There is a dry campground of sorts in Trona ($8/night), or motels in Ridgecrest, 24 miles away. The Celestians will be staying at the Best Western there. Everyone staying in Ridgecrest, will be responsible for making their own motel reservations. Let’s make plans to meet for dinner together on Saturday night.

WHEN: October 28, 2017
WHERE: Dragon Mine
WHAT: Pegmatite minerals; thundereggs
MEET: 9:00 am at the McDonald’s in Wickenburg

WHEN: November 11, 2017
WHERE: Yellow Pine Mine and area, near Las Vegas, Nevada
WHAT: Lead-zinc minerals, feldspar pseudomorphs, travertine

WHEN: November 18th, 2017
WHERE: New River
WHAT: Yellow jasper

WHEN: December 9, 2017
WHERE: Purple Passion Mine
WHAT: Fluorescent minerals, wulfenite

DATES SUBJECT TO CHANGE

Field Trips continued on page 10...
## UPCOMING FIELD TRIPS

### WHEN: January 20, 2018  
### WHERE: Aguila  
### WHAT: Geodes, Apache tears

### WHEN: February 2018 (TBA)  
### WHERE: Tucson Gem & Mineral Show  
### WHAT: Minerals, jewelry, artifacts for sale

### WHEN: February 17, 2018  
### WHERE: Seven Springs/Red Rover Mine  
### WHAT: Jasper, copper minerals, travertine

### WHEN: March 2018 (TBA)  
### WHERE: Pete the Miner  
### WHAT: Gold mine tour (fee)

### WHEN: April 2018 (TBA)  
### WHERE: Peridot Mesa  
### WHAT: Peridot in basalt (fee)

### WHEN: May 2018 (TBA)  
### WHERE: Payson area  
### WHAT: Zebra agate, peach agate, Pennsylvanian fossils

### WHEN: June 2018 (TBA)  
### WHERE: Jerome  
### WHAT: Fossils, possible Gold mine tour (fee)

DATES SUBJECT TO CHANGE

Stan Celestian has created a page in Flickr where he is posting photos from club field trips. If you have some photos that could be added to the albums, send them to stancelestian@gmail.com.

Post field trip pictures on the club website. His site can be found at: [https://www.flickr.com/photos/149654042@N02/albums/with/72157682683515735](https://www.flickr.com/photos/149654042@N02/albums/with/72157682683515735)  
Don’t forget to also post good trip pictures on the club’s Facebook page!
UPCOMING AZ MINERAL SHOWS

**September 2017**

**Monthly - Tempe, AZ**
Gallery TCR, 906 S Priest, #107; Sat 9-6; Free. For specific dates, go to: https://www.facebook.com/pg/gallerytcr/events/?ref=page_internal

**October 6-8 - Buckeye, AZ**
Helzarockin’ Gem & Mineral Show, Helzapoppin’ Arena, 802 N 1st St (Miller Rd); Fri-Sat 9-4, Sun 9-2; Admission: $3/adult; children under 12 free.

**October 14-15 - Sierra Vista, AZ**
Huachuca Mineral and Gem Club; Cochise College, 901 Colombo Av; Sat 9-5, Sun 10-4; Admission: Free.

**October 21-22 - Sedona, AZ**
Sedona Gem and Mineral Club; Sedona Red Rock High School, Hwy 89A & Red Rock Loop Rd; Sat 10-5, Sun 10-4; Admission: $3; children under 12 free.

**November 3-5 - Black Canyon City, AZ**
High Desert Helpers Rock-a-Rama Gem and Mineral Show; High Desert Park, 19001 E Jacie Ln; Fri 9-4, Sat 9-5, Sun 9-4; Admission: free.

**November 18-19 - Payson, AZ**
Payson Rimstones Rock Club, Inc.; Payson H.S./Longhorn Gym, west of Longhorn Rd., east of McLane; Sat 9-5, Sun 10-4; Admission: $2, children 12 and under free.

**November 25-26 - Wickenburg, AZ**
Wickenburg Gem and Mineral Club; Wrangler Event Center, 251 S. Tegner St.; Sat 9-5, Sun 10-4; Admission: free.

If you are travelling, a good source AND clubs is http://www.the-vug.com/vug/vugshows.html or http://www.rockngem.com/ShowDatesFiles/ShowDatesDisplayAll.php?ShowState=AZ For out-of-the-country shows: http://www.mindat.org/shows.php?current=1 A good source for a list of Arizona Mineral Clubs and contact information is http://whitemountain-azrockclub.org/Public_AZ_Clubs_Links.html

![A vivid green acorn among the leaves at Diamond Point, AZ.](Photo by Susan Celestian)

NOTE FROM THE EDITORS

**Have a geological interest?** Been somewhere interesting? Have pictures from a club trip? Collected some great material? Send us pictures -- or write a short story (pictures would be great). We encourage topic suggestions also.

**Deadline for the newsletter is the 22nd of the month.**

Mail or Email submissions to:
Susan Celestian
6415 N 183rd Av
Waddell, AZ 85355
azrocklady@gmail.com

**Facebook**

Visit the club website periodically. See what is happening, and boost our visibility on the web. Go to: The Daisy Mountain Rock and Mineral Club. It is set up so you can post photos of outings or related items.

This is a new site. Join The Daisy Mountain Rock and Mineral Club. To Unjoin, go to The Daisy Mountain Rock and Mineral Club, click on Groups (in bar at page top). Both the new and old sites should come up with option to Join and Unjoin.

**Officers and Chairpersons**

President: Ed Winbourne…..ewinbourne@gmail.com
Vice President: Stan Celestian
Secretary: Victoria Peterson
Treasurer: Cynthia Buckner
Publicity: Victoria Peterson
Editors: Susan & Stan Celestian……………… azrocklady@gmail.com
Field Trip: Stan Celestian
Show Chair: Ed Winbourne

Meetings are held the 1st Tuesday of the month at the Anthem Civic Building, 3701 W Anthem Way, Anthem, AZ 85086. Business meeting at 6:30 pm. **We do not meet in July or August.**

DMRMCLUB@GMAIL.COM

Membership Dues: $20.00 Adults per Person
$25.00 Family

**Meeting Dates for 2017**

Jan 3, Feb 7, Mar 7, Apr 4, May 2, June 6, Sept 5, Oct 3, Nov 7, Dec 5
MINERALS IN OUR EVERYDAY LIVES

HISTORIC & CURRENT USES OF SANDSTONES

Building/architectural stone:

- facing stone
- building block — for example, the Brownstones of the east coast are built out of arkoses, deposited during the Jurassic and Triassic
- flooring
- flagstone/paving (for example, the Permian Coconino Sandstone of northern Arizona
- curbing
- whetstone, such as wheels for grinding wheat into flour
- armor rock for seawalls — graywacke

Industrial stone

- source of silica for glassmaking: for example, the Ordovician St. Peter’s Sandstone of Missouri
- proppant (holds open fractures and cracks) in the oil and gas industry
  - aggregate in cement, concrete and mortar
  - soil conditioner

Other

- tombstones, sculptures, monuments
- coasters: being porous, sandstone coasters absorb the “sweat” off the glasses of icy beverages
DMRMC MEMBERSHIP SURVEY

As the Club membership has almost doubled in the last year, the Board wishes to ascertain what particularly members enjoy and appreciate about our Club as well as what items you would like to see us provide. To that end, we are providing this survey and would appreciate your completing it to assist us in making our Club enjoyable for all members. Please fill out and bring to October meeting, email to dmrmclub@gmail.com, or mail to PO Box 74215, Anthem, AZ 85086

Meetings:
Do you attend monthly members meetings? If so, what would you change about the content? If not, why not?

Rock and Mineral Show:
Have you attended the show? Have you volunteered at the show? What do you like and/or would change about the show, ie. facility, dates of show, vendors, food, admission costs, marketing?

Volunteering:
For our club to continue to be successful, we depend upon volunteers; we have no paid staff. In what areas are you willing to volunteer? Board, Committees (ex. Social Media, Publicity, Membership, Field Trip, Website…), Show:

Field Trips:
Have you attended field trips? What did you like and dislike?

Other Group Activities:
The Club generally holds a holiday party in December and a picnic in the spring. Have you attend one or both of these? What other types of group activities would you like to see provided?