The Apache Junction Rock & Gem Club, Inc.

SMOKE SIGNALS

Feb 2013

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.

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Apache Junction Rock & Gem Club-General
Apache Junction Rock & Gem Club – General Meeting Minutes

February 14, 2013

Submitted by Barbara Bayer

The meeting was called to order at 7:10 pm by the President. She led the Pledge of Alliance.

- President's Report: We will need more volunteers for the Rock Show this weekend. The Coalition Field Trip to Hewitt Canyon was well attended with 40+ persons from several other Arizona clubs participating in the event.
- The secretary's minutes were approved as distributed.
- Mr. Stone has resigned from the position of treasurer and gave his rationale for this decision. Martha Montague has volunteered to be the new treasurer and this was accepted by the members present.
- Treasurer's Report: The following accounts reports are: Lapidary Checking account $3,954.94, Lapidary Savings $757.64, Lapidary income $3,324.00, Lapidary expenses $699.00, General Checking $1,362.66, General Savings $121.34, Expenses $160.00, Income $222.00, Show Checking $3292.31, and Show Savings $2,533.50. Correction regarding the liability and building insurance. The fee for such insurance was $800.00 last year. Colorado Casualty is investigating policies and fees for the current year.
- Membership: Mr. Ginn reported that we have 159 members of the club. He sent a reminder email to members to renew their membership for 2013-4. He has developed a car pool communication system using phone or email to connect drivers and riders for field trips. The actual plans for the event would be decided by the driver and riders.
- Lapidary Shop: Mr. Stasi is circulating a survey regarding the lapidary shop. He also

reported that the 18” saw requires repair, but other saws are operating.

- Rock Show: Mr. Frlich requests the need for volunteers as some had to drop out due to illness. He had 12,000 coupons for the show printed and many have been distributed. He states that we will accept newspaper ads, coupons, or flyers for the 50 cent discount at the door admission fee. Advertisements will appear in the Apache Junction News and the Mesa Republic. The Apache Junction Independent has printed a notice of our meetings. Volunteers will be welcome as you attend the show to assist at the Wheel, Silent Auction, Ming Trees, etc. as needed.
- Field Trip: Mr. Wright will conduct a field trip to the Rowley Mine on Feb. 20, 2013. Many people expressed interest in this trip, so Mr. Wright will request that the mine personnel run some equipment to expose chrysocolla. There is a $15.00 charge to the mine for this trip. The roads are paved, so 4 wheel drive vehicles are not required.
- Field Trip Manual: Barbara Bayer presented her idea of a small committee of field trip leaders that would lead one trip per month. This would be in addition of the coalition trips. She suggested that the club rent a bus for trips to Quartzsite and Tucson for their huge rock shows. She has the approval of the club to develop a field trip manual consisting of: rules and release forms, information of guidelines for use of BLM land, etc., maps and requirements of field trips sites, and safety guidelines for those going on trips. This concept was generally accepted by the club members.
- There was an discussion regarding a formal budget needed for the club, plus a nominating committee every November for club officers and trustees.

The Silent Auction and 50:50 drawing were held. Door prizes were distributed.
The meeting was adjourned at 8:00 pm.

Article of the Month

Dangerous Geology: Who Put the Quick in Quicksand?

by Andrew A. Sicree

Can quicksands kill?

In the final scene of many an old time movie, the bad guy met his end slowly sinking into quicksand along the bank of a jungle stream. After a minute or two, nothing remained of the villain but his hat, floating on the now-placid surface of the quicksand. Quicksand makes for Hollywood classics, but does it make scientific sense that a quicksand could kill a man?

The “quick” in quicksand implies “living” or “lively” (from the Anglo-Saxon *cwic*, “living”) – akin to the use of the term “quicksilver” for mercury. A quicksand is a “lively sand” – an apt name for a sand that moves and swallows up unfortunate bad guys.

Without a doubt, quicksands exist in many parts of the world. Reportedly, they are found in environments as disparate as Morecambe Bay, England; coastal regions of New Jersey, North Carolina, and Florida; the Lençois Marahenses of Maranhão, in northeast Brazil; in the Sahara Desert in the Qattara Depression in Egypt; and near Qom in Iran.

The critical question is whether or not one of these quicksands could entrap a man and suffocate or drown him. Experts point out that any mixture of sand and water would have a density greater than that of the human body; thus a human being should be able to float on top of a quicksand. This is, however, only part of the story.

Sand and quicksand

Normal sand is mostly composed of well-rounded grains of quartz transported and sorted by the action of water and wind. Beach sands, for instance, are deposited by wave action and blowing winds, while wind alone forms desert sand dunes. How does a natural bed of sand become a quicksand?

In a well-packed pile of quartz sand, gaps between the rounded sand grains make up about 25 to 30 percent of the total volume. These voids are filled with air or water. But not all sand grains are spherical, and elongate or irregular sand grains make loose packing possible. In loosely-packed sand, voids make up between 30 and 70 percent of the volume. A loosely-packed sand is metastable – it looks firm, but readily collapses and compacts to a stable, more densely packed bed. Pressure, vibration, or upwelling water serves to overcome the friction between grains and the sand re-sorts itself in a more stable configuration. Studying quicksands in recent years, scientists discovered that not all quicksands are identical.

Fluidized beds

The classical explanation of quicksand is that it is a "fluidized bed." In a fluidized bed, the grains are partially supported by the pressure of the surrounding fluid. A flow of water upwelling through a bed of sand serves to create a quicksand because the water is effectively "floating" the sand enough that the entire bed of sand behaves like a fluid. Anyone walking onto such a sand would rapidly sink down into the quicksand just as though they had walked into the surface of a pond.

Quicksands created by upwelling water occur in many places where there are natural springs. This can be along riverbanks, at the bases of alluvial fans (fan-shaped masses of sand and gravel carried down from the mountains by erosion), or on beaches exposed at low tide. The latter can be particularly treacherous because someone trapped in a beach quicksand might be drowned by the incoming tide before being freed.

Civil engineers watch for "quick-conditions" during construction of buildings, dams, and bridges because upwelling waters can fluidize any soil (not only sands) and cause catastrophic failures of structures built on them. You would never, of course, construct a building on a quicksand deliberately, but a soil or sand that appears firm today might, given sufficient rainfall, become "quick." At that point, some stimulus such as a minor earthquake tremor might cause the underlying sediments to liquefy and undermine the foundations of your building.

The destruction of Port Royal

In the 1600's the town of Port Royal, Jamaica, was "sin city," home to buccaneers, cutthroats, slave traders, and prostitutes. Port Royal sat perched upon a spit of sand on the edge of the Caribbean Sea near Kingston, Jamaica. An earthquake struck on June 7th, 1692 at 11:43 a.m. (we know the exact time from a watch that was recovered from the destroyed city afterward). The city's buildings didn't collapse; they *sank* into the sand, and about 3000 people, half of the city's residents, perished. It was as though the Earth "swallowed them up." Survivors claimed the wrath of God was visited upon the city for its sinful ways. Certainly it must have seemed that way to those lucky enough to live though the disaster.

The 1692 earthquake served as the stimulus for the liquefaction of the sand upon which the town was built. Normally, at Port Royal the water table was only a few feet below the surface. Perhaps the spring of 1692 was wetter than usual and the water table had risen. The shaking of the ground during the earthquake caused the sand to become "quick" and the resulting quicksand swallowed whole streets of buildings. At the same time, the ground surface dropped downward (due to compaction and seaward slumping) and most of the town was submerged. Tsunamis that hit the town after the earthquake did nothing to improve the situation. Today, the town lies at least 25 feet (8 m) below average sea level.

The semi-rigid trap

Quicksands are common in the Lençois Marahenses of Maranhão, in northeast Brazil. Here, sand dunes intermingle with rainwater-filled lagoons. As these lagoons dry up, a soft crust of brown or green algae and cyanobacteria remains, covering pits of water-saturated quicksand. People who have stood on the crust of these quicksands liken the experience to standing on a waterbed. As long as the crust remains intact, the quicksand bed quivers and vibrates underfoot. If you break through the crust (which is easy to do), you'll quickly sink to the bottom of the sand pit. Upon being disturbed, the quicksand "collapses" to a much firmer sand in which the shear strength increases with depth. In other words, the deeper your legs are stuck in the sand, the harder it gets to pull them out. Most of these pits are only about a meter (3 feet) deep, so they don't present an immediate threat to life, but it can be challenging to extricate oneself from them. By laying sheets of plywood on the surface, researchers found they were able to walk across these pits without perturbing the quicksands.

In other parts of the world, such as Iran and Egypt, salt rather than bacteria and algae appears to play a role in holding the quicksand in a metastable condition.

These semi-rigid trap-type quicksands differ from the fluidized bed-type of quicksand in two important ways. First, the semi-rigid traps have stationary water – there is no continuous up flow of spring water. Second, the semi-rigid traps change drastically after they have been disturbed: they switch from a fluid state to an almost solid state.

Death of the bad guy

While it is true that you should be able to float on (and presumably swim out of) a fluidized bed-type of quicksand, the semi-rigid trap-type quicksands present a different challenge. When you walk onto one of these quicksands, you rapidly sink into the sand. Upon being disturbed, the morass changes from a quicksand to a tightly compacted, almost solid, mass, effectively "cementing" you in place. The force required to pull your legs out of the compacted sand can be much greater than that which a single man can exert. If you don't have friends nearby with a rope to pull you out, you'll have to slowly wiggle about and dig to free your legs. If you have the misfortune to fall into a quicksand that is deeper than your height, you might not live to write home about the experience.

Dr. Andrew A. Sicree is a professional mineralogist and geochemist residing in Boalsburg, PA. This ***Popular Mineralogy*** *newsletter supplement may not be copied in part or full without express permission of Andrew Sicree.* ***Popular Mineralogy*** *newsletter supplements are available on a subscription basis to help mineral clubs produce better newsletters. Write to Andrew A. Sicree, Ph.D., P. O. Box 10664, State College PA 16805, or call (814) 867-6263 or email sicree@verizon.net for more information.*

HOW TO ESCAPE FROM QUICKSAND

The danger of quicksand is perhaps more present in the imagination than in reality. Most of the quicksand pits in Brazil extend only about three feet downward, so they are unlikely to prove fatal to the entrapped explorer. Quicksand deaths are more likely to occur in quicksands located out on tidal flats. Tourists exploring the sea floor at low tide have sometimes become mired – not much fun when the tide is rising. An alert buddy with a rope to lasso you makes escaping from quicksand much more likely, but what can you do without a rope?

When in quicksand country, carry a long sturdy pole. Walking across boards or large logs placed on top of a quicksand bog greatly decreases your chances of breaking through the matted upper surface, and logs, poles, or boards give you something to hang onto if you do start to sink.

If you start to sink, jettison your backpack or any other heavy cargo you're carrying. The density of quicksand exceeds that of water so you are more buoyant on quicksand than in water. An unladen person will float on the surface of a quicksand.

The key problem is that, once you've started to sink, it is difficult to extract your legs from the morass. Thrashing about doesn't improve matters. Lay on your back with your arms spread to stop sinking.

If you're carrying a pole or board, try to slide it under your hips. Using the pole to support your hips, slowly work your legs upward. Patiently working your legs back and forth can loosen the sand around your legs and allow you to slowly pull yourself out.

Once you are on top of the quicksand, try to "swim" toward more solid ground. Move slowly. If possible, your buddy can toss you a rope or extend a tree branch to you. Once you are out, use a pole to try to retrieve your pack.

Bench Tips from Brad Smith

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BENCH SHEARS

When cutting sheet metal, it's quicker and easier to use a set of
shop shears as compared with using a hand saw. The cut is not as
precise, but many times you don't need that. Shears will easily cut
up to 24 gauge sheet, and some will cut 22 or even 20 gauge.

Current prices for shears run from $13 - $22 in jewelry catalogs, and
the Joyce Chen scissors recommended on some jewelry blogs run more
than $20. But we found a cheaper alternative at the 99 Cent Store -
some gardening utility scissors that were only $1.07

I buy a half dozen of them at a time for use in my jewelry classes.
They're great for cutting bezels, trimming around a bezel cup, and
cutting a piece off a larger sheet.

BEZEL CLOSER

A bezel closer is a steel punch that makes quick work out of pushing
the metal down over a round stone and burnishing it. The working end
is a concave cavity that fits over your bezel or prong setting and is
pushed and twisted to capture the stone. Sets can be

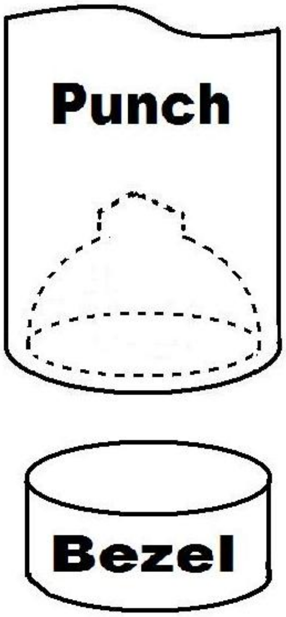
purchased but
are expensive and contain many sizes you will probably never use. If
all you need is one or two sizes, here's how you can make them yourself.

Find a good quality, round steel rod a little larger in diameter than
your bezel cup or prong setting. Cut a 5 inch length. File both ends
flat. Locate the center of one end, centerpunch a divot, and drill a
small pilot hole about 5 mm deep. Remember to use a little oil as
lubricant when cutting steel.

Select a ball bur a bit smaller than the steel rod but slightly
larger than the bezel. Enlarge the pilot hole to a full hemispherical
cavity. Test for proper fit with your bezel. Bezel should first
contact the cavity about a third of the way in. When the size is
correct, polish the cavity using Zam on a length of chopstick in your
flexshaft. If the tool is not polished, it will leave scratches on
your bezel or prongs.

When using the tool, the first step is to capture the stone
correctly. I usually work by hand and push the punch straight down
over the bezel or prongs. This causes the metal to start bending over
the stone. Now inspect with a lens to be sure the stone is staying
level. This is repeated until the stone is seated on its bearing and
can't move anymore.

Next, you want to force the metal down onto the stone uniformly all
the way around. While this can be done by hand, I often gently tap
the punch with a hammer. Finally, I burnish the bezel by twisting the
punch around.



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