



Apache Junction Rock & Gem Club – September 2017
Next Meeting: October 12th, 2017

Officers		
President	Chuck Larson	480-983-2672 chuckinaj@gmail.com
Vice President	Chuck Fagen	602-315-1072 cfagen@cox.net
Secretary	Ruth Flynn	480-694-9163 reflynn@cox.net
Treasurer	Linn Mistrot	480-606-8863 jorlinn@aol.com
Trustee	Tom Sundling	402-432-9790 ajroct@gmail.com
Trustee	Con Higley	480-205-9276 cchigley@gmail.com
Trustee	Jerry Fellenz	715-379-6872 convi3@yahoo.com

Submissions can be made to newsletter@ajrockclub.com

Show Co-Chairs:

Steve Sisk – 602-300-8031 or ssisk2@cox.net

Wanda Sisk - 480-294-1156 or wsisk2@cox.net

Dave Zellner & Terri Hunt - 317-473-1251 or jdaviszellner@live.com

Stacey Lindsey - 360-413-9250 or slindse1@gmail.com

Class Coordinator:

Karen Moschinger – 480-248-5529 or classesajrockclub@gmail.com

AJR&GC is a member of the following mineralogical societies:



American Federation of Mineralogical Societies



Rocky Mountain Federation of Mineralogical Societies

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General Meeting minutes for 9/14/17 – by Ruth Flynn

Chuck Larson, President

- Called meeting to order at 6:30
- Led Pledge of Allegiance
- Introduced Officers
- Welcomed guests and new members
- Thanks to monitors, Brian Fermoye and others for all their help
- Announced Silent Auction, 50/50 and door prizes
- Elections will take place next month. Still need nominations for Treasurer and Secretary. If these positions are not filled, the club will be forced to shut down on 12/1/17
- Lots of great rock available for sale at \$2.00 a pound. All money received will go towards the air conditioner fund
- This is a non-profit organization – nobody gets paid

Linn Mistrot, Treasurer

- Gave financial report
- We do have one person who will step up for Treasurer or Secretary if no one volunteers, but she has no experience with Quickbooks or Excel and would need a lot of training. Would like to get someone with experience

Ruth Flynn, Secretary

- Minutes accepted for last meeting
- Secretary's job is not difficult and does not involve doing the newsletter. Requires taking minutes at Board and General Meetings, and sending out cards and thank you letters
- Newsletter articles/pictures can be submitted at newsletter@ajrockclub.com

Tom Sundling, Trustee

- Went with a group to Colorado to collect rhodonite for the Silent Auction at the show. Thanks to Glenn Reesing, Ed Lindsey, Phil Gadd, Alan Koberna and Dave Kaczmariski for going and collecting rock – not an easy trip
- Read proposed changes to the club By-laws. Membership to vote on changes at the October General Meeting

Chuck Larson, President

- Need donations for the raffle for the rock show – monitors will put your nice jewelry, rocks, etc. in the display cabinet

Con Higley, Trustee

- Festival of the Superstitions is November 11th & 12th. Signup sheets are at the shop
- Members will be able to sell their jewelry or other items at our club booth. No business license is required for this event

Jerry Fellenz, Trustee

- Flagg Show is January 5th, 6th and 7th
- We will be doing our Silent Auction again and will need lots of help
- Looking for a plumber and a carpenter
- This is your club – speak up with your suggestions

John Philpot, Nominations Chair

- Please remember to check with the person you're nominating for Treasurer or Secretary – they must be willing to take on the job

John Philpot, Publicity Chair

- Will have flyers at the October meeting for the fall show. Please pass them out to friends, family and to people wherever you go

Steve Sisk, Show Co-Chair

- Fall show is November 18th & 19th at Skyline High School.
- Will have flyers at the club on October 1st for members to take and pass out
- Rock shows are the club's main source of income – extremely important that they do well
- Signup sheets are hanging on the post – need everyone to help in order to make it a success – this is your opportunity to help the club
- Work party on October 14th in the morning to fix tables that will be used at the show
- Looking for nice items to be donated for the raffle
- Thanks to Dave for handling the vendors and to Stacey for working with the school

Alan Koberna, Field Trip Coordinator

- Looking for field trip leaders
- Have five or six new sites to go to this year

Dan Jarvis, Field Trip Leader

- Showed apache tears that were collected on the last field trip and displayed what is supposedly the world's largest tear – over one pound
- Field trip for apache tears at the perlite mine on 9/23/17. Passed out slips for people to enter the drawing – can only take a limited number of people and would like to take those who have never gone before
- Will do another trip to the perlite mine in about three months

Question from the membership regarding Orientation before field trips

Tom Sundling and Jerry Fellenz, Trustees

- Tom will be doing an Orientation on September 19th at 5:30 PM. You must contact him to confirm – 402-432-9790
- Jerry is willing to do Orientation on Tuesday mornings when he's monitoring. Please be at the shop before 10:00 to participate
- Orientation classes will be available twice a month, beginning in October. Members need to confirm attendance with whoever is giving the Orientation
- Orientation is required before using the shop or going on field trips

Sharon Koberna, Membership Chair

- 388 members, 11 of them are youth
- Membership dues are \$24 a year, pro-rated to the month you join
- Shop fees are \$100 a year or \$3.00 an hour. Shop fees are not pro-rated
- Badges are \$8.00

Karen Moschinger, Class Coordinator

- Friday, 9/22/17, 9:00 AM – Wanda will be doing a demo class showing how to drill a bead – must sign up for this class
- Tuesday, 10/10/17 9:00 AM – Mattie will be teaching a class on wire wrapping a pendant – must sign up for this class
- Phil will do a class on stabilizing with Opticon if people are interested

- Richard is again doing his Friday mornings classes on working with fire agates
- Looking for teachers – please contact Karen to sign up for classes or to volunteer as a teacher 480-248-5529 or classesajrockclub@gmail.com
- Reiterated need for a Treasurer and a Secretary

Richard Holle, Shop Manager

- Has trained monitors on using the machines and is willing to train any members on using and repairing machines
- Repairs all our machines
- Will be scheduling monitors
- Orders shop supplies
- Has drill bits and other items for sale
- Donating half of his slab sales to the air conditioning fund
- Friday mornings – will teach how to work with fire agates

Chuck Larson, President

- Need more monitors, especially one for Saturdays

50/50 and door prize drawings

- Mikayla did a great job drawing and calling the numbers – thank you, Mikayla!
- Pam Carter won the 50/50 and generously donated it back to the club – thanks, Pam!

Chuck Larson, President

- Announced that Silent Auction will close in 15 minutes
- Meeting adjourned at 7:35

Nominations and Elections for club Officers – by Ruth Flynn

Our club Officers will be elected at our November General Meeting. We still need nominations for Treasurer and Secretary. These are critical positions and must be filled.

Nominations can be made to John Philpot at 480-255-5183 or lujlp1@gmail.com

Please confirm with your nominee that they are willing to make the commitment before nominating them.

Proposed changes to the club By-laws – by Tom Sundling, Con Higley and Jerry Fellenz

The current By-laws are on the club's website at <https://www.ajrockclub.com/>. The proposed changes are highlighted below in red. These changes will be voted on by the membership at the October General Meeting. All members have a voice in this.



APACHE JUNCTION ROCK and GEM CLUB, INC.

CONSTITUTION and BY-LAWS

Revised October 12, 2017

ARTICLE I - Name

Section 1: The name of this corporation shall be Apache Junction Rock and Gem Club, Inc., (AJR&GC).

Section 2: Its principal office shall be located at P.O. Box 712, Apache Junction, AZ, 85117. Our Club House is located at: 2151 W. Superstition Blvd., Apache Junction, AZ, 85120 (no Mail here).

Section 3: Other locations for the transaction of business, if any, shall be located at such places as the Board of Directors deems necessary.

ARTICLE II - Objectives

Section 1: The objectives of this Club shall be to promote and further interest in archeology, paleontology, mineralogy, geology and the lapidary arts.

Section 2: This Corporation is formed as a Not-for-Profit corporation, and none of its assets shall be used for the monetary gain or profit of any individual who is or may become a member thereof.

Section 3: All assets, properties and funds of the Corporation shall be devoted to the furtherance of the primary objectives and purposes of the Corporation. Its works, purposes and objectives are purely scientific, educational, social, and recreational and are solely in the interest of the advancement of its member societies, of their members and of the public.

ARTICLE III - Membership

Section 1: The Corporation shall have only one class of members. Those members who were previously approved as Honorary or Lifetime members will continue to be so recognized.

Section 2: Applicants for membership will fill out and sign the official application form. Family applicants under the age of 18 are free and are considered Junior Members. Junior Members are not eligible to vote and must be accompanied by a parent or guardian whenever participating in any club event.

Section 3: The signed application is to be presented to the Membership Chairperson with the current annual dues payment. Applicants may be rejected for just cause by agreement of the Board of Directors. If rejected, the dues payment will be refunded to the applicant.

Section 4: In order for any new member to participate in certain activities it **will** be necessary for that member to attend **an Orientation class** and sign waivers for those activities.

Section 5: All members are expected to work together in a courteous and considerate manner. The AJR&GC will not tolerate any harassment against any member on the basis of gender, race, color, national origin, religion, disability, age, sexual orientation or any other factor protected by law. This includes any verbal statements, written materials or physical contact.

Any complaints to the Board of Directors must be made in writing **within one week of the infraction** and will be investigated immediately. As part of the discipline process, the Board of Directors may take any action up to and including permanent removal of any member who displays misconduct.

Misconduct may include, but is not limited to:

Displaying rudeness or other acts of disrespect toward other members, including the use of vulgar or abusive language or profanity

Behaving in a threatening manner, whether verbally or physically

Deliberately inflicting physical or emotional harm on any other member

Using or possessing or being under the influence of alcohol or controlled substances while on the premises

Possession and/or use of dangerous or deadly weapons on the premises

Appropriate attire is required. Low cut blouses/shirts or shirts with sexual or obscene pictures or messages are not allowed

A member can, for just cause, be suspended or expelled immediately from the premises (activity) by the President or by a Board of Directors member. These actions shall be subject to approval by the Board of Directors at their next scheduled meeting or at a special meeting of Board of Directors called to address the issue. Action taken by the Board of Directors under this section may be appealed by the member, to the Board of Directors, **in writing, and an appeals meeting will be scheduled.**

When a member has had their membership revoked and an appeal has upheld that decision, it is considered final and the member cannot reapply for membership at a later date.

Section 6: Each adult member shall be entitled to one vote on each matter that is submitted to a vote of the general membership.

Section 7: Any member who desires to resign shall notify any elected Officer of the club, either orally or in writing, who in turn shall then promptly notify the Membership Chairperson to remove the member's name from the Club's roster. No member resigning shall be entitled to a refund of dues.

Section 8: Dues for new members will be set by the Board of Directors, and shall be prorated from the first day of the month in which that new member is applying to join the club, for the remainder of that fiscal year. However, a new member applying near the end of the fiscal year may, if so desired, pay for the next year as well.

Section 9: Membership dues must be paid each year on or before January 1. Members who have not paid dues by January 1 are no longer eligible to use club facilities, attend club activities or have voting privileges until such dues are brought current from the first of the year. There will be no proration for reapplying members who were in arrears.

ARTICLE IV – Officers and Elections

Section 1: The officers of this Club shall be President, Vice-President, Secretary, Treasurer and three (3) trustees, elected from the membership at large.

Section 2: The term of office for all Board of Directors, (President, Vice-President, Secretary and Treasurer) positions shall be one year, except that of the Trustees who shall be elected to three (3) year terms, with one Trustee being elected each year.

Section 3: Members must be in the Club for at least six (6) months before holding an elected office. This requirement can be waived by the Board of Directors for qualified candidates.

Section 4: Nominations for officers shall be made by a nominating committee appointed in May by the President. **Any nominations by the membership must be received no later than one week prior to the October General Meeting.**

Section 5: The nominations of officers shall be presented at the September General Meeting. Additional nominations from the floor can be made by the members at large at the September general meeting. Any active member in good standing may nominate any other member in good standing for any office. Elections shall be held during the October general meeting and new officers will assume office at the November General Meeting. The Elections of officers at the October General Meeting shall be by secret ballot, unless there is only one nominee for an office, in which case a floor vote shall take place. A majority of the votes cast for an office shall constitute an election to that position.

Section 6: A vacancy in any office may be filled by the Board of Directors for the unexpired portion of the term.

ARTICLE V – Duties of Officers

The Officers, as a whole, are charged with overseeing all aspects of the Club to ensure smooth operation.

Section 1: President: The duties of this office shall be to assign the work of the Club, to preside at all meetings; to be Chairperson of the Executive Board and to appoint all Standing Committee Chairpersons and any other such committee as deemed necessary to conduct the business of the Club, subject to approval by the Board of Directors.

Section 2: Vice-president: The duties of the Vice-president shall be to assign and direct the Field Trip Chairperson, to assist the President in all duties assigned and to assume all Presidential duties during the absence of the President. The Vice-President is also responsible for scheduling speakers for five General Meetings; November, January, February, March and April.

Section 3: Secretary: The duties of the Secretary shall be to notify all members when board and regular meetings are to be held, keep an accurate record of all Regular Board, General Meetings and special meetings. To conduct the correspondence of the Club by means of e-mail and/or USPS; keep hard copies of all correspondence, act as Sunshine Coordinator and to provide the Newsletter Editor with a copy of the General Meeting minutes in a timely fashion. The Secretary will also create and maintain an Action Item list and have said list available at all meetings of the Executive Board.

Section 4: Treasurer: The duties of the Treasurer shall be to maintain an accurate accounting of all receipts and expenditures and other financial activities of the Club; to serve as Club bank liaison, making all deposits and paying all bills authorized by the Board of Directors or associated with approved budgets. The Treasurer shall present a report monthly to the Executive Board and at the General Meeting of budget accountability, and balances on hand. The Treasurer shall participate in an annual audit review of Club accounts and shall file applicable tax forms and reports.

The Treasurer shall maintain an investment account known as the Building Fund. Funds to the Building Fund shall be added to at an amount of no less than \$6000 per year. Additions to this sum can be made in a manner designated by the Board of Directors. Monies from the Building Fund shall NOT be removed for any reason other than Payment of the note due, and/or (deleting this verbiage) an Emergency, as set forth by the Board of Directors. This Fund should be set up in such a manner that it REQUIRES the approval by the Board of Directors and the signatures of three (3) officers of the Board of Directors to remove any of these funds. Verbiage to be deleted

Section 5: Trustee: The duties of the Trustees shall be to conduct an annual audit of Club accounts of the Treasurer, after the January General Meeting, and present the audit findings to the membership at the February General Meeting. The Trustees shall also review and recommend updates to the Club By-Laws at a minimum of every two (2) years from the last revision date. The Trustees shall also perform such other duties as deemed necessary by the Board of Directors.

The Trustees shall be responsible for arranging and seeing that a qualified individual gives an Orientation class to all new members.

The Trustees shall be responsible for arranging for a booth space, for setting up, supervising, and the staffing of all club booths at any outside events such as the Festival of the Superstitions and the Flagg Show.

Section 6: If any officer who is absent from three (3) consecutive regularly scheduled Board of Directors or General Meetings, unless the absence is considered unavoidable by the Board of Directors, may consider that office vacant. Failure to perform the duties of the office held or assigned duties shall result in removal and replacement in accordance with Section 6 of Article IV of the club Bylaws.

ARTICLE VI - Board of Directors / Executive Board

Section 1: The Board of Directors shall consist of the elected officers. Their duties are to approve all decisions necessary to conduct the business of the Club.

Section 2: The Executive Board shall consist of the Board of Directors, the immediate past President, and the Chairpersons of Standing Committee. All standing committee Chairpersons are responsible for the maintenance and condition of all Club property and assets under their control.

ARTICLE VII - Meetings

Section 1: The General Meeting shall be held once each month at the time and place as mutually agreed upon by the Board of Directors and membership, except that meetings may be suspended during the months of June, July, and August.

The Board of Directors and/or Executive Board shall meet prior to the next scheduled General Meeting and at any other time they deem necessary to conduct the business of the Club. All meetings must have a quorum participating, whether electronically or in person. Board of Directors meetings are open meetings and are open to all members, unless said meeting or special meeting is held to discuss personnel, at which time the Board of Directors will go into a closed session.

Section 2: Special Meetings of the members of the Club may be called at any time by the President, upon resolution of the Board of Directors, or upon written petition signed by no less than ten percent (10%) of the members of the Club. The purpose of the Special Meeting shall be stated in the notice thereof, and no other business shall be transacted except such as is specified in the notice.

Section 3: The members and officers present at any scheduled General Meeting shall constitute a quorum of the Club for the transaction of Club business. The voting powers of the members of this Club shall be equal, with each member having one vote only for all purposes.

Section 4: The order of business at all meetings will be established by the Board of Directors.

ARTICLE VIII – Finances

Section 1: The fiscal year shall be the same as the calendar year.

Section 2: Each Committee shall prepare an annual budget for the Treasurer to submit to the Board of Directors for approval at the January Executive Board Meeting. The Final budget will be presented to the general membership for approval at the January General Meeting. No money may be spent for the club by any member unless it is in the current budget or has the prior approval of the Board of Directors.

Section 3: The finances of the Club shall be derived from dues, income from the Annual Rock Shows, sale of property, gains from investments and other such means as may be approved by the Board of Directors.

Section 4: Membership dues (per member) shall be reviewed yearly by the Board of Directors and any necessary changes must be presented to the membership for their approval.

Section 5: The club will limit itself to three bank accounts: one checking account; one money market account and one investment account for the Building Fund.

Section 6: The Building Fund (Investment Account) is solely for the purchase of the club building and property. See Article V, Section 4, Paragraph 2, Duties of the Treasurer, for more detail.

ARTICLE IX – Standing Committees

The following chairpersons will be appointed by the President and approved by the Executive Board. They are ex-officio members (non-voting) members of the Board of Directors and are expected to attend board meetings where they will report on the status of their committee to the Board of Directors.

Section 1: Field Trip Chairperson: Responsible for planning field trips, appointing assistant field trip leaders and guides, assuring compliance with the Field Trip Rules, and reporting to the Vice President.

Section 2: Membership Chairperson: Receives and processes new member applications and dues. Provides monthly updates of the Club roster (to the Treasurer, Newsletter Editor, Shop Manager, Field Trip Chairperson and Board of Directors) at all Board and General Meetings. Responsible for ordering ID badges for new members. Deleting verbiage in parentheses.

Section 3: Publicity Chairperson: Publicizes Club activities through the news media, radio, TV stations and periodicals. Works with the Show Committee to assist in publicizing the Annual Rock Shows.

Section 4: Hospitality Chairperson: Greets all members and guests who attend meetings. Supervises the serving of refreshments at Club meetings (deleting this information and adding) Responsible for arranging and setting up the annual holiday party.

Section 5: Events Chairperson: Co-ordinates with the Executive Board on any social activities the Club may engage in during the year. Deleting this position

Section 5: Class Coordinator: Responsible for the wire wrapping, beading, and other lapidary arts classes. Maintains all **supplies** owned by the Club that are used in these classes.

Section 6: Silversmith Chairperson: Responsible for the silver smithing equipment and maintain all equipment owned by the Club that is used in this area.

Section 7: Shop Manager: Responsible for all equipment and to maintain this equipment in the shop. To make sure that the equipment is being used properly by Club members who have attended the orientation class and are familiar with the workings of that equipment. **Trains and schedules monitors and orders shop supplies.**

Section 8: Newsletter Editor Chairperson: Writes, publishes, and distributes the monthly Club newsletter, including meeting minutes, field trip information, **new members**, and other subjects of Club interest. **Deleting this verbiage.**

Section 9: Show Chairperson: To work with Club members to attract vendors that are suited to the shows, to organize facilities and coordinate running of all events at those shows.

Section 10: Web Master: Updates the Club web site monthly to include all relevant Club status and events.

Section 11: Scholarship Chairperson: Each year the Club will conduct one or more Rock and Gem shows. Some of the proceeds shall be for a scholarship(s). The Board will appoint a member to contact the recipient organization and set up a procedure that will be used for selection and presentation to the person winning that scholarship.

Section 12: Parade/Float Chairperson: This person shall be responsible for working with members of the club to **decorate** our Parade Float and obtaining permits for that float.

ARTICLE X - Authority

Section 1: The rules contained in the current edition of Roberts Rules of Order, Newly Revised shall govern the Club in all cases to which they are applicable and in which they are not inconsistent with these By-Laws and any special rules of order that the Club might adopt.

ARTICLE XI - Amendment of By-Laws

These By-Laws may be altered or amended and may be adopted by a majority of the members present at any regular General Meeting of the Club, except that the members shall not have the power to change the objectives of the Club so as to decrease it rights and powers under the laws of the State of Arizona, or to waiver any requirements of bond or other provisions for the safety and security of the property, funds of the association or its members or to deprive any member of rights and privileges then existing, or so to amend the By-Laws as to affect a fundamental change in the policies of the Club. Notice of any amendment to be made at a Special Meeting of the members must be given at least ten (10) days before such meeting and must set forth the amendments to be considered.

Section 1: The By-Laws may be amended at any regular meeting of the Club by a majority vote of the members present. All proposed amendments must be submitted in writing. Each voting member should have said copy of the proposed changes, prior to the meeting where they will be discussed. Notification to members may be by newsletter, email, and/or USPS or a combination thereof. The proposed changes will be read at the General Meeting following their submission, and voted on at the next General Meeting.

Section 2: All By-Laws amendments shall be determined to be in agreement with the Articles of Incorporation in the State of Arizona and within the regulations of the Internal Revenue Service.

Section 3: All future approved amendments and revisions shall be incorporated and published in the Club newsletter and the new revision date added to the By-Laws heading.

Apache Junction Rock & Gem Club show at Skyline High School – by Ruth Flynn

November 18th & 19th, 2017. Signup sheets at the club – this requires the help of all members to make it successful. It's fun to work the booths, especially with the kids, and the work shifts are only two hours long. Two hours once a year? Easy! Sign up and support your club!

Subscribe to the Arizona Rockhound website

Our webmaster, Ron Ginn, has created a fantastic website with tons of information for Arizona rockhounds. Check it out at www.ArizonaRockHound.com



Need a ride to meetings

Acellia Cole needs a ride to and from club General Meetings. Major cross streets are University and Val Vista. If you can give her a ride, please call her at 917-714-5211.

Volunteers needed by Ruth Flynn

Monitors – contact Richard Holle at 480-202-6923 or Richard@aerology.com

Field trip leaders – contact Alan Koberna at 602-579-0228 or akoberna@hotmail.com

Help at fall rock show – signup sheets at the club

Youth Group – by Ed Lindsey

The Youth Group will be doing two school shows in October and would love to have club participation in this. The dates are Thursday, October 12th and Thursday, October 26th. If you're interested in showing your rocks to the kids at school shows, please contact Ed Lindsey at 480-380-7400 or sealindsey@comcast.net or contact Wanda Sisk at 480-294-1156 or wsisk2@cox.net

Rhodonite and Colorado – by Ed Lindsey

Fair warning to members who don't like adventure: never go on an exploratory trip with your trip coordinator or trip leaders as there is no telling what you might find yourself engaged in. A case in point: one day I received a pleasant call asking if I'd like to go on a local day trip to scout rockhounding areas around Payson and Mogollon Rim. Little did I suspect that a new adventure was about to develop.

From this point forward names have been redacted to protect the innocent and not so innocent. We were just four merry souls driving the back roads and two tracks scouting new agate locations when someone mentioned needing show rock for our upcoming November Rock Show. One thing lead to another and before anyone knew it we were discussing what type of rock was needed and where to get it. Those who know this reporter, name redacted, also know of his fondness for Colorado. So, when a site in the Rocky Mountain state was mentioned, there was no hesitation to offer to drive, and haul back any rock collected.

When the discussion turned to scheduling our trip, everyone agreed that it needed to happen sooner rather than later. You see, the Rocky Mountains are notorious for late summer snow fall. Driving to southern Colorado is easily an 8-10-hour journey. Allowing for a day of collecting one might assume this is a three-day trip. But NOOOO, we decided to do it in 2 days. One day driving up and one day for collecting and driving home.

Eight days after the exploratory trip, the team assembled at an undisclosed location. Five intrepid souls, two roadworthy vehicles and away..... Approximately 10 hours later, including stops for all the usual things, we pulled into Durango, CO. After finding the only reasonably

priced rooms in all of Durango, we were off to find the world renowned Chinese food (insert your own sarcasm here). Two hours later we were settled into our rooms, and starting to feel hungry again.

Next morning, we headed to our rendezvous point to meet up with 2 more rock-hounds. After the usual dirt kicking and catching up on events we started on our way to the high country, a truck, one SUV, and a UTV.

Now when this reporter lived in Colorado the only moose were in the north-west corner of the state. The reason given by Fish and Game was it was the only suitable habitat. So, you can imagine our surprise when we came around a corner and found ourselves looking at a slightly agitated moose clumsily prancing on the side of the road. As luck would have it, no one got a hood ornament that day. There are now some unanswered questions about how a moose came to be watching traffic at 10,000 ft. in south-west Colorado.

At 12,000 ft. elevation, we met our quarry, Rhodonite. A predominately pink ore, at the site of the Sunnyside Mine. This area is known to produce some of the best Rhodonite found in the USA.



Figure 1: Sunnyside Mine Sample. Pink is Rhodonite and black areas are manganese. Photo credit: www.turnstone.ca

For the science minded reader, Sunnyside Mine Rhodonite is now known as Pyroxmangite. Ideal composition is $MnSiO_3$, Manganese Silicon Oxide. Moh hardness is 6, and specific gravity is 3.7. Samples from this locality normally have ~14% quartz, 6% Sphalerite, and traces of chalcopyrite, galena, pyrite, and feldspar. For the not so science minded, Rhodonite is found as float and in seams

throughout the area around the mine. Collecting is allowed under current BLM guidelines.

Our first stop was at the base of an old mine structure foundation. This spot is at 12,000+ ft. elevation with an incredible view down the mountain toward Durango. There are physiological changes that occur when going from 2000 ft. to 12,000 ft. elevation in 24 hours. The most notable is lack of oxygen, which has an effect on physical and mental function, combined with an incredible wonder at the splendor that surrounds you. Within about 30 minutes of arriving, your intrepid mountaineers had experienced two injuries; a smashed hand and another hand punctured by a rusty nail. Hmm, mental note to self, slow-down, take your time, think it through, before lurching head-long at the object of your interest.

With 6 members in our party we quickly split into two groups of 3; one group went after float and one group headed to a visible vein showing from a cliff-face further up the mountain. As I understand it, the float team enjoyed working the side of a tailings pile, including clinging to ropes while returning to their base of operations. All the while they were serenaded by the only trip member identified by name, Clyde the Basset. Fun stuff, but not for the faint of heart or sensitive of hearing. In the mean-time our hard rock miners were hard at work with wedges and hammers breaking away pieces from the vein. Thanks to millenniums of freeze/thaw cycles, wedges are very effective at separating ore from the vein. Large lungs, deep breathing and a tolerance for oxygen starvation are all nice-to-haves in this line of work. Thanks to a smart plan of attack, hard-work and the dedication of our resolute teams the mission was accomplished at approximately 1200 hours, Mountain Time.

Forty-two hours after leaving the undisclosed rendezvous point, 4 dirty and weary souls returned to AJ with three injuries and enough rock for the Fall show. The only the relatively uneventful part was the 10-hour drive home. Lesson learned: when someone makes an innocent sounding request to accompany them on an exploratory trip, be careful of what you commit to.

Just a reminder – Richard is teaching fire agate classes on Friday mornings.

FIRE AGATE v. PRECIOUS OPAL

Story and photos by Bob Jones, published in the May 2012 issue of Rock & Gem magazine

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Fire agate, the American Southwest's colorful desert gem, is a form of chalcedony that has a rainbow of colors within it. Fine precious opal is even better known for having play of color, which is even more brilliant than fire agate's. Though both are silica gems, fire agate is not a type of opal, even though the better pieces approach the quality of good opal. The difference is that opal is a silica mass filled with the polymorph cristobalite, which causes the bright colors, while fire agate is normally drab chalcedony with an internal structure that interferes with light, resulting in an array of nice colors. The rainbow colors, therefore, while similar, are not due to the same physical phenomenon.

Opal displays what are called "primary" colors, resulting from an action called "diffraction of light", in which the gem's internal structure of orderly cristobalite spherules bends white light and separates it into its primary colors. Nothing interferes with those colors save for the opal groundmass itself. In some cases, as in Mexican opal, the groundmass is transparent, so the colors are really brilliant.

The somewhat duller colors of desert fire agate are produced by a less direct process called “interference of light”, in which light is separated by platelets of a slightly wedge-shaped substance. This results in white light being separated into colors, as in opal. But because the process happens repeatedly, it is possible that some wave lengths of light interfere with other, similar wavelengths, resulting in the dimming of that particular color. Of course, the reverse can also happen. One color can be complemented by the same color being repeatedly produced by the same interference action and so be intensified.

Another reason fire agate’s colors are less brilliant than opal’s is the presence of iron oxide, which seems to be a requirement for the agate to show color, though we’re not sure how it does this. Every piece of fire agate I have ever seen is some shade of brown due to the presence of iron oxide. While the iron oxide is necessary for fire agate to form, exactly what that role is has not yet been defined. The compound has something of a Jekyll and Hyde effect on the agate’s fire, being necessary for fire to be present, but clouding the colors somewhat at the same time. The task of the lapidary is to remove the maximum amount of chalcedony to expose the fire layer without cutting into it.

Yet, because fire agate can be collected by rockhounds and allows amateur lapidaries an opportunity to create quite lovely gemstones, it is very popular. It is also nowhere near as costly as fine opal. It is, in effect, the rockhound’s inexpensive answer to costly opal.

Chalcedony is one of the more common forms of quartz found in desert environs. It forms more or less solid, reniform or botryoidal clusters at ambient temperatures and requires no amount of heat. It is very common in silica-rich volcanic rocks, particularly rhyolite. One common form of chalcedony is lovely, white roselike cluster that are found in the weathered debris below rhyolite outcrops. Sometimes, these rounded clusters hold tiny, discrete quartz crystals that developed in the central part of the rose. When a trace of uranium salts is included, they fluoresce a brilliant green under short-wave ultraviolet light.

What is exciting for rockhounds is that fire agate is not particularly rare. It is found in a number of localities in the greater Southwest. Some sites are under claim, but allow fee digging. Other areas are open to prospecting by amateurs.

Fire agate, as a gem material, owes its discovery to rockhounds and prospectors who recognized its potential. One reference suggest the gem has only been known for a few decades and may well have been recognized during the rockhounding craze that started after World War II. It is more likely that fire agate was known before that; however, the emergence of thousands of amateur prospectors and rockhounds, coupled with the availability of inexpensive lapidary equipment, helped reveal the real potential of the gem.

Fire agate is more or less pure silicon dioxide. It is usually white to colorless and milky, due to included water and impurities. Chalcedony is the cryptocrystalline form of quartz, meaning that it has no visible crystal structure. It tends to be fibrous, as its crystals are microscopic and tightly packed together to give the overall effect of being solid. In reality, the material is not that solid. Chalcedony is porous enough to be stained and dyed quite readily. I often wonder whether some chalcedony was stained naturally when later solutions, such as those rich in iron oxides, soak into the material.

Just what gives fire agate its rainbow effect has been repeatedly studied, and the answer is still debated. Several differing explanations have been put forth through the decades. Some research has established the probable cause of the colors as goethite, or more specifically beta-goethite, which acts as a diffraction grating. The theory is that small disks of the mineral act like an interference plane, splitting and bending white light into its several colors so that they become visible. These small mineral disks cause interference, not diffraction.

Iron oxide, in the form of goethite, crystallizes in orthorhombic form. These crystals can be waferlike in form when the "C" axis is extremely short. These flat crystals can orient themselves in such a way that they form a wedge-shaped or grating type pattern that can interfere with light, releasing its color components. This is one explanation of the rainbow of colors seen in fire agate.

Yet another proposed cause is the possible presence of aragonite in the original silica solution or silica gel. Aragonite crystallizes in hexagonal forms that are often disk-shaped. If arranged in a very orderly way, they can also cause interference of light, resulting in the spread of colors.

The above mentioned studies were completed some decades ago. A more recent study in 1994 has shown that the interference with light in fire agate—which is the cause of color play—is most likely due to submicroscopic crystals of quartz arranged in an orderly pattern of hexagonal platelets. Given that the solution of silica is the source of the chalcedony, it seems quite likely the quartz platelet evidence is the better reason for the colors in fire agate. Keep in mind, however, that the goethite layers in the agate seem to at least control the placement of the layers of crystal platelets that cause the interference of light.

There is an established relationship between iron oxide and the fire in this agate. Every piece of fire agate has a base shade of brown, from dark brown to tan, due to iron oxide, which may act as an inhibitor by dimming the emerging colors. So we have a catch-22 situation: iron oxide is necessary for there to be fire in the agate, but it also has a diminishing effect on the emerging colors.

Fire agate is a product of volcanism. Virtually all fire agate deposits in Mexico, Arizona and New Mexico are found in volcanic rock, most often rhyolite, in which silica comprises 68% or more of its weight. Rhyolite is extruded from a volcano and flows exceedingly slowly because of its high silica content. The rock cools slowly, and this allows chalcedony to form in gas opening. The mineral is found as small, curving, botryoidal masses or as seam fillings. If iron oxides develop in those layers of silica as they solidify, fire agate might be the result. For that reason, the presence of iron oxide seems to be vital for the formation of – or, at the very least, the control of the development of – the fire agate layers. Often, the initial find of fire agate is made by searching the debris produced by the weathering of rhyolite.

Basalt, the more common volcanic rock, is low in silica (usually less than 10%) and high in manganese, iron minerals, and feldspar. When it pours forth from a volcano, such as those in Hawaii, it flows rapidly.

When a lapidary works a piece of fire agate to reveal and bring out the best possible color layer, the task is very difficult. Great care must be taken in grinding down through the layers of silica that lack fire to get to the thin layer responsible for the play of colors. What aggravates the problem is the normally undulating or botryoidal surface of the chalcedony. Full of humps, curves and valleys, the surface requires the lapidary to use small grinding tools to work down toward the fire layer. If the lapidary does breach that layer and is lucky, there will be a second layer of color worth exposing, but the main goal is to expose as much of the initial layer of fire over as large an area as possible. The result can be a lovely reniform or botryoidal surface full of color that will show nicely, even when the stone is viewed from various angles.

Because fire agate is a form of quartz (Mohs 6.5 – 7), diamond bits are used to grind and polish it. Using the finest grit for a final polish should be successful. Again, be careful not to penetrate the fire layer. It can be lost very easily! To get down around the curving humps on the gem, you need very narrow points. Some lapidaries use diamond paste on a flat wooden stick, similar to a Popsicle® stick.

The benefit of fire agate for the rockhound is that it occurs in enough places that prospecting and collecting the gem is certainly possible. Some time ago, a club I belonged to was invited to collect on a site that had been found by a prospector years before. The prospector was eventually sold to a rockhound, who worked it, but was also generous enough to invite my club for a day of collecting. The day was very successful. One ledge we opened up proved to have a streak of chalcedony several feet long, and all of it showed fire.

Folks who could not swing a sledgehammer worked the talus slopes below the fire agate site. They were also very successful in finding gem rough! Digging in the ledge was hard, but rewarding work. In the place were not under claim, I'd give directions to it, as it is only about

20 miles east of Quartzsite. Fire agate might be found anywhere volcanic rhyolite outcrops, however. In checking round that claimed area, I saw plenty of evidence that fire agate should occur on nearby, unclaimed areas.

Another region that has been very productive is the Black Mountain, located east and north of Kingman, Arizona. Unfortunately, the place is now off limits to collectors because of the bighorn sheep preserve located there.

While the fiery colors in fire agate are special and important, what is really important about the gem is its availability to the amateur lapidary who can use it to hone his skills, while creating a lovely gem from a self-collected stone.



Photo 1: Lapidaries turn common desert chalcedony into gorgeous sculptures like this fine work, which is displayed at the Lizzadro Museum of Lapidary Arts.

Photo 2: The carved white chalcedony on the perimeter makes a stark contrast with this colorful fire agate.

Photo 3: A piece of carved chalcedony, highly stained with iron oxide, crowns a large botryoidal mass of fire agate.

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