SOUTHERN NEVADA GEM and MINERAL SOCIETY
Las Vegas, Nevada

The Polished Slab

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Is it Really Quartz?

Art Reed, 4th Place AFMS 1995 Adult Article

Nomenclature is just a fancy word meaning a system of naming. In any scientific field of study an accurate system of naming is required.

There is confusion between common names and scientifically precise names. To some people any evergreen tree with needle-like leaves is a "pine" tree. In the Midwest, a gopher means a small burrowing rodent. In the Deep South, gopher refers to a burrowing tortoise.

For living things, scientific names are derived based on such features as physical structure, reproductive methods, size, and habitat. The scientific study of minerals uses characteristics like chemical composition, atomic crystalline structure, and specific gravity for exact description and distinction.

This article will take a simpler approach. It's only an attempt to clarify the jumble of names used and confused in referring to types of quartz materials. It will rely heavily on consensus from many experts.

To keep it simple: quartz is silicon dioxide: one atom of silicon plus two atoms of oxygen. Silicon and oxygen are the two most abundant chemical elements in the earth's crust. Their compound, usually mixed with other materials, makes up by weight about one-eighth of the earth we known. Quartz is found in some form on every continent.

Its widespread distribution arises from its varied methods of formation. Some is formed when molten rock, magma, cools. Some fills veins in cracks or holes in base rock. Strange as it seems, quartz is in some condition soluble in water, and the solution, silica, leads to secondary deposition in vacancies in basalt, shale, limestone, sandstone, etc.

Quartz analysis starts with a division of types according to crystal size. The forms with large crystals will be considered first. They are formed by relatively rapid cooing and are often mostly transparent even when colored by tiny amounts of mineral impurities.

Absolutely clear quartz is colorless, often called rock crystal, rather rare although it has been found in large masses in Europe, Brazil, and the U.S. It has been prized since prehistoric times, and was a favored carving material of the Romans. Herkimer "diamonds" and Pecos "diamonds" are examples of

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In Praise of the Rockhound

Stephen Blocksage, CFMS Publicity and Public Relations Committee

Often public relations are to putting lipstick on a pig to make the pig palatable to the public for any number of purposes. At times the hypocrisy that seems to purvey society today seems overwhelming and a little sickening. I don't think I would, for a "New York Minute," consider publicity and public relations for some of the institutions of the day.

However, I'm proud to be able to in a modest way bring the story of the "Rockhound" to the public. No lipstick here but only upstanding folks that open with prayer and salute the flag and remember those amongst them who are less than well. To often the 40 year collection of deceased rockhound comes on the market and another contributing voice and hands are lost to death from old age. For some reason perhaps related to the kind of society we have and the means to necessary to accomplish rockhounding the hobby is ebbing away and yet much treasure remains undiscovered out there for those with a sense of adventure and the talent to learn the lessons of the earth and what it has in store.

Surrounding the successful rockhound in their pursuits of the beautiful since that is rockhounding's ultimate reward. The cut geode that reveals a crystal finger backed by stardust, the multicolored lines of chalcedony surrounding the brecciated jasper, the play of light across a gemmy piece of opal, the pattern of cells in fossil bone the plumes agate and needles in sagenite and so on. In order to put one of these items in one's hand the rockhound may need to travel to other states and read maps down to

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Quartz

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clear quartz found in our country.

Well-known colored transparent quartzes are amethyst, citrine, and smoky. In amethyst the shades of lavender and purple, and the yellow of citrine are colored by iron compounds. True citrine is rare. Most commercial "citrine" is heat-treated amethyst. Smoky quartz's color, light brown to gray to black, is due to aluminum or silicon inclusions. Cairngorms and morion are names given to smoky quartz types. Heated amethyst can produce colors resembling precious topaz. Such names as "citrine topaz" and "Madiera topaz" are used, but the material is quartz, not the more valuable topaz.

Some colorless quartz contains visible straw-like fibers of golden rutile or black tourmaline, producing striking patterns.

Other large crystal types are: milky quartz, opaque to translucent white, owing its color to great quantities of very tiny trapped bubbles of air or water, and rose quartz, usually cloudy pink, colored by tiny specks of titanium or iron compounds.

The other main division of quartz types is those with exceedingly tiny microscopic crystals. The term cryptocrystalline is used: *crypto* from a Greek root meaning "hidden", as in cryptography.

The basic type of cryptocrystalline quartz is chalcedony. In pure form it is somewhat porous, translucent, and has a waxy pale gray or white appearance.

When colored by traces of impurities it is called by many names. Often names come from the finders or the location of the chief occurrence. If it is translucent with parallel layers or the impurities form patterns, it is usually called agate. The name comes from the Greek name *Akhates* for a river in Sicily where they were found in great numbers.

Some local names are given to agates. Examples of banded agates are Lake Superior, Fairburn, and Teepee Canyon from the U.S., and the vast quantities from Uruguay and Brazil. True onyx is banded gray or black and white agate. This is not to be confused with the non-quartz "onyx" from Mexico or Pakistan, carved into large pieces such as bookends or ash trays. It is a type of marble.

If the impurities form spots or patterns resembling plant material in a clear chalcedony background they may be called plume or moss agates. Famous varieties of this type occur in Texas, Oregon and Montana. Black inclusions are often manganese dioxide; reds are oxides of iron.

Because it can be dyed, much commercially offered agate has colors seldom appearing in nature – dark blue, orange and bright yellow.

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SNGMS General Meeting Minutes for August 2005

Priscilla Messenger, Secretary Pro Tem

The meeting was called to order by Vice-President Larry Grillett who led us in the Pledge of Allegiance, and we exchanged greetings with those sitting close by.

Field Trip Chair, Bruce Wingate, expressed regrets that both July trips were cancelled because of excessive heat and thunderstorm warnings. The August 20th trip will be to Enterprise , Utah for Indian Blanket jasper. We will meet at the Moapa Indian Casino at Exit 75 off I-15 North at 7 AM. There is a fee of $4.00 per pound of jasper you remove from the site. Bruce also announced an upcoming trip on September 17-18 to Tonopah and an October 8-9 trip to Searles Lake in Trona, California for halite and other crystals.

Our Treasurer, David Finch, gave his monthly report with income being greater than expenses.

Larry requested that members send cards or make a visit to Tom Ainsworth, our librarian, who is a patient at Desert Springs Hospital after continuing heart problems.

Mary Beth Palladino, adult coordinator of the children's rockhounding club, described their recent meeting where each of 10 children built their own volcano. Their next meeting will be August 15 from 6 to 8 PM at the Paladino home. They will work on another badge. The club is sponsoring a competition (open to both adults and children) to produce the most beautiful decorated Christmas glass ornament to put on the tree at our Awards Potluck Dinner.

Beth Jones of the Awards Banquet Committee for the December 11th event announced the following : last name beginning with letters A through H- Bring a salad or vegetable last name beginning with letters I through R- Bring a meat casserole or meat. Last name beginning with letters S through Z-Bring a dessert. The event

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Quartz

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Chalcedony of a uniform translucent color may be green as in chrysoprase, reddish orange as in carnelian, amber to brown as in sard. Aventurine is clear chalcedony with tiny specks of green mica.

When cryptocrystalline quartz has enough inclusions to be opaque it is usually called jasper, flint or chert. Now the nomenclature gets murky. Nature does not operate like a factory, so many rocks are a blend or mixture of jasper, flint, or non-quartz materials. Pure prototypes of a named type are often difficult to find. There is a multitude of jasper types – often with mixtures of colors – mainly red, yellow, green or brown. Bloodstone is a dark green jasper with bright red spots. Certain distinctive deposits will be given their own names. Examples of distinctive jaspers in the U.S. are Bruneau, Morrison Ranch, Willow Creek, Poppy, Owyhee, Biggs, and Wild Horse Canyon.

The distinction between jasper, flint and chert (also called hornstone) is not clear-cut. All are opaque, heavy with impure inclusions. As a generality, flint is considered less "pure" than jasper, but more "pure" than chert. Actually, a given specimen, e.g. an aboriginal point examined by a dozen experts would probably have one or more call it a jasper, flint, chert, or even agate. The precise application of names is not possible. Flint, while often dark brown or black, may be multicolored as in the spectacular Flint Ridge material from Ohio. Chert may be almost any color although the name is most often applied to dark yellow-brown types.

Other specialized forms of quartz are opals, and those arising from the replacement of minerals or organic materials.

Opal may occur in layers in sedimentary rock, or in gas cavities in volcanic rock. It does not have a crystalline structure. Its play of colors is due to light being refracted by the closely packed tiny silica spheres, in the presence of water.

Replacement of fibrous asbestos by silica results in parallel bands of quartz which, when properly oriented, cause a sheen of chatoyant light. The resulting "cat's eye," "hawk's eye," or "tigereye," depends upon the background color being green, blue, or yellow on brown.

Under the right conditions both plant and animal materials may be replaced, cell by cell, by silica. Petrified wood has been found in nearly all of the continental states. The amazing colors of "agatized wood" from Arizona are well-known. Other less colorful types are abundant in the western U.S.

In other situations, organic replacement of animal material such as fossilized bones of dinosaurs, turtles or other reptiles may occur.

An example of mineral replacement is the fossilized coral skeletons from Tampa Bay.

August General Meeting

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will last from 1-4 PM and everyone will pitch in for cleanup after that . The location of the event facility is 700 N. Lamb Boulevard just north of Bonanza. The club will provide drinks cups, plates and utensils. There will be no charge but signup must be by October 1. Tickets for the auction will be 6 for $5.00, and you must put your name on back of the stub you turn in. Donations with a card explaining the contents should be turned in at the September or October general meeting. At the Awards event members should also bring in a specimen rock which will be judged by Ed Rupprecht and Art Lory. The prettiest and the most ugly rock will be selected. This year we will also have a disk jockey.

Show Chair, Sharon Rogow announced that there will be signup sheets for work hours at the December 3-5 Gem Show at the LV Convention Center at the September general meeting. Larry Grillett asked for volunteers to help remove all our equipment from the old workshop at 4777 E. Harris Avenue on Sunday, August 7th beginning at 7 AM. This equipment will be transported to the new storage area

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In summary:
Call it amethyst, flint or agate,
Doesn't matter how you tag it,
What you're holding is still just a piece
Of quartz…it's quartz!

References:

Arem, J. Gems and Jewelry. New York: The Ridge Press, 1988

Cipriani, C. and Borelli, A. Guide to Gems and Precious Stones. New York: Simon & Schuster, 1986

Owens, V. The Lapidary Journal, June 1967, pp.388-400.

Woodward, C. and Harding, D.R. Gemstones. New York: Sterling Publishing Co., 1988.

Field Trips

Bruce Wingate, Field Trip Chair

If you are unable to make the club meeting, you can call me at 702 547-6590 to sign up or find out about the next field trip.

If you are unsure about making a trip, you can call the day before, or show up at the meeting site on the day of the trip.

Some field trip sites have nearly been picked clean. As a reminder, when collecting, take only what you will use. Save some for others.

If any member has a suggestion for a field trip, please contact me.

August General Meeting (cont.)

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After a 15-minute social hour with refreshments, our visitors and new members were welcomed.

Sharon Rogow announced that new classes would soon begin using silver art clay

Then the evening's program was introduced—two 12-minute videos on the towns of Quartzsite and Chloride of interest to rock and mineral enthusiasts.

The meeting was adjourned at 8:10 PM, followed by the Rock Raffle conducted by Mary Beth Palladino.

California Federation of Mineralogical Societies Why Your Club's Membership Is Important

Anna Christiansen (CFMS Newsletter)

The CFMS was organized in 1936. It is devoted to the study of Earth Sciences. It is comprised of societies in the western United States. Many gem and mineral societies, prospecting and treasure hunting clubs in California, Nevada and one in Arizona are under the umbrella of the CFMS.

The CFMS is one of seven regional Federations that make up the American Federation of Mineralogical Societies. (AFMS) The AFMS created a Code of Ethics that is a guideline for field trip groups and individuals that help us leave our hunting areas as we found them, and hopefully a little bit better. Respect for others property will possibly let us be welcomed back at another date in the future.

There are several ways in which the CFMS can help individual clubs. Some of them are:

1. They publish a newsletter to keep members aware of what are happening with articles, a list of club show dates, Earth Science seminars, safety tips and field trips. This newsletter is available to all members. You can obtain a subscription by sending your name and address to: CFMS, PO Box 1657, Rialto, CA. 92377-1657. ($5.50 for 11 issues per year).

2. The CFMS has manuals and publications on various subjects. Some of them your club might have an interest in are: a publication listing slide shows available to help you present a program at a club meeting and a manual (Podium People) that list speakers who are willing to come to your club and present a program. For those interested in exhibiting, there are rules manuals.

3. The CFMS website is another valuable tool that offers clubs information on many subjects (cfmsinc.org). You can send in your club show information and it will be posted to the website.

4. The CFMS and many clubs give scholarships to students that otherwise would not be able to continue their education in the field of Earth Science. Hopefully they will also encourage other to learn about the many areas that involve earth science.

5. The Federation hosts Camp Paradise in the north part of the state and ZZYZX in the desert near Baker, California. For the very reasonable price of $250 per person per week you receive all your meals and lodging. Instructors can help you with hobby related activities. Just to name a few, faceting, wire art, carving, casting, silversmithing, PMC and glass bead making

6. Junior members can now participate in a Merit Badge program earning badges in the many areas of lapidary arts and earth science.

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In Praise of the Rockhound

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the dotted lines notated four wheel drive only. They camp where there are no amenities at all, are willing to dig if not tunnel to find the seam whether in soil or solid rock.

Modern technology has eased to degree the location and distance problems associated with going to an exact patch of rock or earth with the advent of the GPS. However comparing that to the local quadrangle map is still a problem of orienteering that would daze the average person. Rockhounds are generally aware that they that they can make holes and leave tailings behind so they strive to be good citizens a fill their holes and leave the site better than they found it.

They are in fact conservationists at their core and abhor the commercial miner who follows their finds with backhoe and bulldozer. They often see parts of the desert and mountains and seashore beautiful beyond compare that harbor their treasures that few men have even contemplated. They excel at what people are prone to call four wheeling going places in compound low that would make a mountain goat think twice. There is nothing like coming home with load of rock that shows promise and just awaits the saw to reveal every pattern and color some not seen anywhere else in nature.

This brings up the home phase of operations where rock is turned into display pieces, jewelry, and bookends, clocks and even coffee tables. What will the next cut reveal and there are disappointments where the rock just doesn't hold up or fractures or the pattern dissolves but these are countered when the saw oil is wiped away and the rockhound sees the work of 100 million years ago that they alone are able to posses and contemplate. There is the skill to shape polish and mount the treasure and ultimately display it. 0ften those rocks that are too big or are suspect even though in the fields they looked like keepers are lined up along walkways and strategic points in the garden.

Often photography and the art off displaying the material to be judged or just admired in shows. Often times there is more than just beauty but educational or on occasion a monetary consideration as some of the things found should be in museums or indicate the possibility of mineral wealth. Some rocks become the sculptor's work, as the rockhound does not ignore onyx, or marble the workable rock if the patterns are pretty. Crystals, beads, cabochons, gems, carvings, sculpture, intarsia, are end products of the rockhound's and lapidary's handiwork.

People who choose to accomplish these pursuits are not those who shy away from life, whose character is suspect and who choose to do that which is wrong. On another hand rockhounds are friendly usually free of bad habits, hardworking, well studied and considerate. At their shows one does not hear slang, profanity, people dress modestly and appropriately, you would not have to wonder what happened to a young child that wandered off there would be someone taking care of them looking for the parents. In short they make the kind of person that most would want to call a friend even if they spend too much time out on the desert and in their garages working to all hours of the night.

Often if you are lucky enough to know a rockhound you may well get the product of their work usually with a disclaimer such as "well its not as nice as it could be" while you can't believe that someone would give something like that away. Rockhounds do believe that public lands should be in public hands and worry about the future and access to those places they hold dear. They have named the state's gem, and seek to reclaim the poppy jasper a victim long ago of development on private land in short what's good for the rockhound ought to good for the state both in conservation and the character of its future.

General Meeting Minutes for September 2005

Charlotte Robinson, Secretary Pro Tem

The meeting was called to order by president, Dave Rogers at 7:02 on September 12, 2005.

Wesley Bryant volunteered to chair the nominating committee for 2006 and has asked members to come forth and offer their services. Nominations will be announced in October and the voting will be held in November. The new officers will be sworn in at the December Awards and Christmas party.

Reminder from Beth Jones, the party will be held December 11th at the Teamster's Union Hall at 700 North Lamb. We will be setting up the affair at 12:00 and start at 1:00. If your last name starts with A-H- please bring a Veggie or a Salad; I-R- please bring a main dish, meat will be provided by Dave and Diane Rogers; if your last name starts with S-Z- please bring a dessert. Those that do not cook please bring appetizers or hors d'oeuvres.

Why Your Club's Membership Is Important

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7. The Federation maintains a committee to keep us informed on land use policies and to inform the government policy makers of our views regarding public land. We have to speak up or lose our rock hunting areas. This also effects future generations.

8. The Federation and a host club present an annual show and convention to promote interest in rocks, gems, and minerals and to educate the public and newer club members as to what is available to them as future rockhounds. A few things they can learn about at the show is information on gem and mineral clubs in their area with an invitation to join local clubs, see demonstrations on silversmithing, wire art, lapidary, glass bead making, stone carving, faceting and other areas. The Federation provides a show coordinator to see that the show runs smoothly. At the Directors' meeting your club has an opportunity to be represented by a club member who brings back information for the clubs use.

9. Club Insurance - Without the CFMS, many of the clubs would not be able to get insurance and would not be able to operate. Under the umbrella of the CFMS, insurance is available to us at a reasonable rate.

These are some of the benefits of a club belonging to the CFMS. Excerpts taken from the CFMS Brochure on the CFMS website. Article by Fred Schaefermeyer, "What Does the Eastern Federation Do For You?"

We have some beautiful gifts that have been donated for the raffle and don't forget, we will have the Gay Fyfe running the most beautiful and the most ugly rock contest. If you have not signed up yet to bring a gift, please call Charlotte at 658-1120 and let her know you will be bringing a nice gift to raffle off.

Sharon Rogow will have news about the show the first weekend in December at the Convention Center so look for her article.

The club had a field trip, August 20th to Enterprise Utah to collect Indian Blanket Jasper and had a very good time with many new members going on the trip. September 17th and 18th, the trip will be to Tonopah, Nevada to collect Bull's-eye Ryolite and then going out to the famous Otteson's turquoise mines.

Ronald Antoku took up a collection for the victims of hurricane Katrina, and the members gave a total of $212.00. Thank you Ronald for your generous caring of others.

One of our own is ill, Judi Auerswald and get well cards would help cheer up her day.

September's outing for the Pebble Pups will be to Lake Mead and Hollywood to look for fossils. The kids are merrily making the Christmas decorations for the party in December and need your Apache Tears if you have any to spare.

One of the most favorite members of our club, a genuine rock hound and prospector, Roy Beeson gave a presentation on some of his 50 year old collection of goodies that covered two tables and the members just couldn't ask enough questions about all that he was showing. Thank you so much Roy, we enjoyed all you had to present.

Our next meeting we will have a show and tell so bring your goodies to set up and sell and show the members what it is that you do.

Meeting adjourned at 8:30

Our Past

Submitted by Bruno and Phyllis Syzdek

The following is from the October 1986 issue of Polished Slab.

"GYPSUM" REPORT ON September's Program

Mr. STEVE KUPFERMAN of the GENSTAR GYPSUM PRODUCTS COMPANY showed slides of GYPSUM MINING here in the LAS VEGAS (NV) area. The slides were interesting and descriptive, as was Steve's explanation of them.

Some of the special facts brought out were that it takes two tons of waste removal to get one ton of Gypsum and most of the time it is necessan; to blast to get to it. This blasting is usually done twice a month, at the day's end of shift, with a lot depending on wind direction. The Mine is very careful not to allow the resulting clouds of dust drift into our populated areas. Blasting agent used is ammonium nitrate with diesel oil. The charges only go 12 to 20 feet ...which is usually the depth of the Gypsum layer.

With the slides, Steve explained the Mine operations. He said the TRAM is a very interesting "critter" and needs guite a bit of maintenance. The tram is used to convey Gypsum to the Mine, One tram wreck resulted in two to five weeks "down time", and it took JAKE'S 100 foot CRANE to untangle the wreck.

A lot of the Gypsum deposits in NEVADA are difficult to get to. ..having been deposited in a lagoon or ocean environment. In Nevada with a 20 to 60 foot deep layer of limestone over Gypsum, it will probably never be mined, ..too costly.

Gypsum is Calcium Sulfate with water molecules. Gypsum without water is Anhydrite. Selenite has the same composition, as does Satin Spar. Gypsum is a harmless mineral and is used as filler for toothpastes and for cosmetics. Alabaster, the micro-crystalline variety of Gypsum, is found in other locations in the United States, but none here in the Blue Diamond area.

Gypsum is used mostly for wallboard, its main property is that it is fireproof. It is now being used to make fireproof shaft linings for elevators to make public buildings safer.

Steve Kupferman brought samples of Gypsum for the Club Members to see and presented a slab of Gypsum about 20 inches in diameter to the Club.

Program Chairman, Ann Spector, presented Mr. Kupferman with a specimen of * SOLNHOVER Limestone with Dendrites,.. each side of the specimen showed a different "picture", both very beautiful.

The large slab of Gypsum will be on display at GEMS FOR THE 80s-87, in a case with other Gypsum specimens, ..be sure to look for it at our SHOW in MAY.

* OR was it Solenhofen ??? Batcha! Rocky...

OCTOBER'S PROGRAM:

The OCTOBER 7TH PROGRAM will be an unusual and most important one for everybody concerned;

"SAVING LIVES THROUGH EDUCATION" will be presented by Mike Stella.

...What should you do if an intruder is trying to enter your home or car?

...What should you do if approached by an attacker?

...What is a safe, legal alternative to guns, knives, etc.?

An up-to-date SAFETY PROGRAM will be thoroughly explained by a representative of Las Vegas "Citizens Against Crime".

If you value your life and safety, this is the time to learn how to protect yourself and loved ones.

Ann Spector

Ann Spector
Program Chariman

TECHNICAL HELP

From the Rocky Mountain Federation of Mineralogical Societies, RMFMS

Do you have a mineral, fossil, or fluorescent that you cannot identify? Well have you tried one of the "Technical" Committee people? How about a lapidary question? We have a "Technical" person for that too.

According to the RMFMS Directory, the Fluorescent Technical Committee, the Fossil Technical Committee, the Lapidary Technical Committee and the Mineralogical Technical Committee are to answer requests for information

from RMFMS members. So the next time you have a question, contact one of the following

Lapidary Technical
Leon Reeder
6410 N Antler Ridge Rd
Sand Springs, OK 74063
918.241.1455

Mineralogical Tech
Jim Hurlbut
2240 S. Adams
Denver, CO 80210
303.757.0283
jfhu@earthlink.net

Fluorescent Tech
Chet Hazlewood
Rt. 4, Box 608
Oklahoma City, OK 73121
405.427.1439
chethokc@att.net

Fossil Technical
Jordan Sawdo
10956 Melody Dr
Northglenn, CO 80234-3935
303.452.7792

RMFMS has many committees to help you. If you have a question and don't know who to ask,

send it to:
Sandy Riekeman
220 W Harry St.
Wichita KS 67213
316-262-7473
wgms2001@yahoo.com

General Meeting Minutes for October 2005

Charlotte Robinson, Secretary Pro Tem

The meeting was called to order at 7:00 by president, Dave Rogers.

Tonight is show and tell night with members bringing their hobbies and crafts to display and sell for all the members so our meeting will be short so all can be enjoyed.

Bruce Wingate gave a glowing report on the trip to Tonopah, the report is enclosed in newsletter so be sure and read it so you can go next year and have as much fun as all of those that went on the trip.

Dave Finch gave the financial report and our club is solid and growing.

18 of our pebble pups and the adults went on the fossil hunt and they then returned to Clare Breneman's house to observe the fossils under the black light. The light makes the fossils into something that can not be seen just by the naked eye so the children really enjoy seeing the items in a different prospective. Mary Beth Paladino spends many hours with the children and does presentations for schools all over town. Thank you Mary Beth for all you do for our future rock hounds.

A special acknowledgement to Patricia Grillett who mans our door and the membership table. She purchases the door prizes that we give out during the break herself and she meets and greets all our members coming to our meetings. She is the first person a new member is greeted by and the very core of friendship to all.

Silver smithing classes are held at the Senior Citizens Center where we have our meetings at 6:00 on Tuesday evenings. Frank Auerswald is the instructor and can be contacted for further information and he has a new assistant Gina Shutt. Beading classes are also held on Monday nights, inquire about these also as the classes are growing and filling up fast.

The field trip in October was to the 64th GEM-0-RAMA in Trona, California, North of Barstow on October 8th and 9th located at Searles Dry Lake. Hotels and camping were available. The hunt is a very messy one and should not be undertaken without a very good materials list from the field trip chairman. It takes 3 ½ hours to get there and it is $10.00 a car load of people. Many members have been there and say it is a very exciting trip so keep it in mind for next year. The November trip is to be announced.

Meeting adjourned at 8:30 pm.

Mule Canyon Miocene Microfossils

Alberta Hare (10th Place AFMS 1995 Adult-Advanced Article

Mule Canyon is an area in the Calico Mountains, a few miles north of Barstow in the Mojave Desert, San Bernardino County, California.

Although volcanic deposits are found in this region, they cover layers of lacustrine sediments that had built up in an ancient lake bed during the Miocene period, 15 to 18 million years ago. These sediments later faulted, tilted and folded, and are exposed in certain places in Mule Canyon.

Some of the layers contain special "nodules" or stromatolites of layered rock, built by calcium carbonate-precipitating algae or bacteria. These stromatolites are usually about ½ to 2 inches in diameter, rounded on the lower end with upper end somewhat flattened or concave.

Trapped in them are non-marine arthropods, most of them insects, from the mid-Miocene period. The fossils are three-dimensional and appear to have been preserved inside stromatolies until petrification was complete. Most are coated or surrounded by calcium carbonate and the tiny organisms inside are usually silicified.

To remove the microfossils from the stromatolites, an acid treatment is used. The nodules are put into plastic tubs, water is added to barely cover the rocks, and muriatic acid is poured in very carefully.

The solution will fizz furiously for a while, dissolving the calcium carbonate portion of the stromatolites. Do this outdoors.

When only sediment remains, pour off the solution very carefully, rinse gently with water several times until the water is clear. After draining the residue the last time the fossils, being heavier than water, will remain on the bottom when the water is poured off carefully. Let the residue dry thoroughly before examining for the fossils.

Most of these fossils are only ¼ to 7 millimeters in size, so a microscope is required to look for them. A portion of the dry residue is placed on a piece of black paper and examined under the microscope, using low power at first. The fossils are frosted white, translucent or clear.

To pick up and transfer the microfossils, use a fine sable brush, dampening the tip first before touching the fossil specimens. Place or mount them in small plastic containers on a black surface.

A California Federation of Mineralogical Societies Earth Science Seminar is held each spring at Zzyzx Soda Springs, 40 miles northeast of Barstow.

Here John E. Jenkins of the Orange Belt Mineralogical Society presents a slide lecture on these microfossils, leads a field trip to the site to collect the special nodules in which they are found, shows how to extract the fossils and helps identify them.

Eventually I acquired 210 stromatolites from the Mule Canyon area, over half of them from my trip to Zzyzx.

After obtaining a microscope, it was time to see what I could find in mine. Of these 210 specimens, one would not dissolve in muriatic acid, even when used full strength Seventy-two had no microfossils in their sediments. Two contained only a partial dragonfly nymph with leg fragments. Sixty had four or more microfossils with predaceous diving beetle larvae and/or midge pupae and half of them had other microfossil species too. The rest contained three or less.

I made drawings of various kinds of microfossils observed for my records. For microfossil identification, general books on insects helped identify some of the arthropods by Class and Order. Photographs in the articles helped me identify others. Some are still unidentified.

Among those I found are:

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Mule Canyon Miocene Microfossils (cont.)

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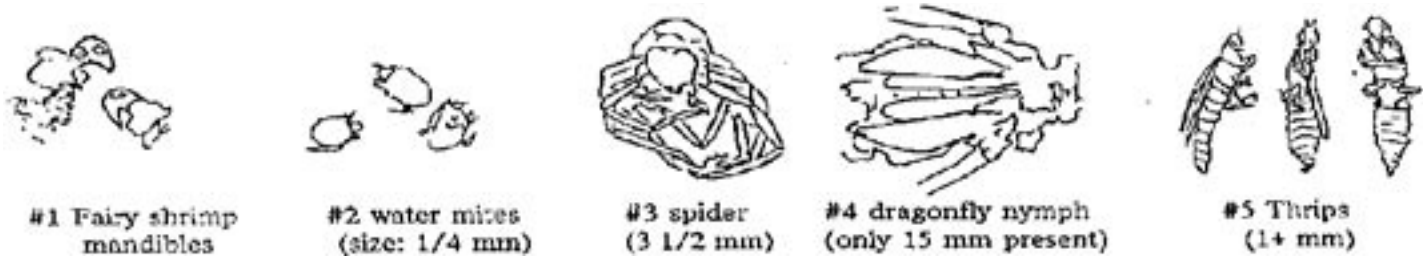

#1 Fairy shrimp mandibles | #2 water mites (size: 1/4 mm) | #3 spider (3 1/2 mm) | #4 dragonfly nymph (only 15 mm present) | #5 Thrips (1+ mm)

Class Crustacea, Order Anostraca: fairy shrimp (#1) Only mandibles, few eggs.

Class Arachnida, Order Acarina: water mites (#2) Found eight, two species?

Order Araneida: spiders (#3) Lucky to find a good one!

All the rest were in Class Insecta;

Order Odonata: dragonflies (#4) Only two partial dragonfly nymphs seen. Note undeveloped wings and fat abdomen of this stage.

Order Thysanoptera: thrips (#5) seventeen were found, some showing wings.

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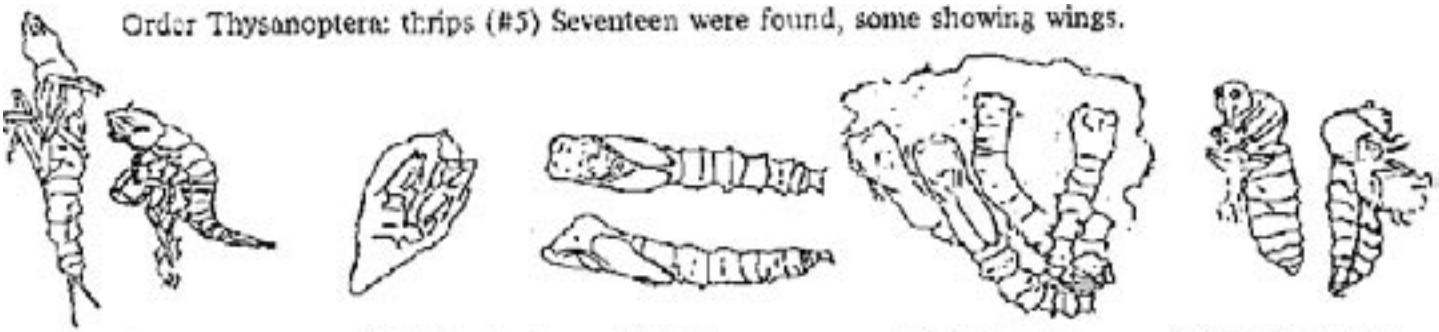

#6 Predaceous water beetle larvae (4 mm) | #7 Hister beetle (?) (7 mm) | #8 Midge pupae (4 mm) | #9 Cluster of midge pupae | #10 Adult midges (1- 1/2 - 2 mm)

Order Coeleoptera: predaceous diving beetle, larval stage specimens (#6) with about fifty almost complete specimens and many fragments seen. One possible Hister beetle observed (#7).

Order Diptera: midge or gnat, pupal stage (#8). About fifty of these found including a cluster of four together (#9), and many fragments. Twelve adult midges (#10),

It was quite an experience, finding my Miocene microfossils. I look forward to obtaining some more stromatolites some day and seeing what else I can find.

References:

John E. Jenkins, "The Reluctant Amateur Paleontologist", *Gems and Minerals,* January 1980

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