57 Years
Diggin' Rocks
& Minerals

Denver Gem & Mineral Guild
Founded March 1964
1420 S. Reed Street
Lakewood, Colorado, 80232

AFMS Silver Medal Club 2016

TIPS & CHIPS

April 2020

HTTP://WWW.DENVERGEM.ORG OR
HTTP://DENVERGEM.ORG
AND NOW FACEBOOK!!!

ALL ACTIVITIES OF THE DGMG CANCELLED UNTIL FURTHER NOTICE!

But here are the notes for the program that was to be.

The Greater Alma Mining District: A Colorado Mining Legend

By Steve Veatch

The first gold strike in Park County, Colorado was on the eastern slope of the Mosquito Range in the northwest part of the county at Buckskin Gulch in 1859—the same year the "Piles Peak or Bust" gold rush started. This remote area of mountains, streams, and forests was still part of Kansas Territory when several mining camps were established. The Greater Alma Mining District included the Alma Placers, Montgomery, Buckskin, Horseshoe, Mosquito, and the Pennsylvania subdistricts. The extremes of the landscape presented harsh conditions to those who came to mine gold, silver, and other valuable mineral deposits. People came and established frontier mining districts, built towns, and created roads and rail routes. All this activity, combined with other mining camps in the region, accelerated the settlement of the West and made major contributions to the economic growth of Colorado.

Steven Veatch tells this story with rare historical photos, stunning photography, and incredible mineral photos. This presentation is based on the work of the Lake George Gem and Mineral Club study group.

In This April 2020 ISSUE

56 years of DGMG Kudos, Celebrations, & Events

2020 DGMG Officers & Chairmen

President:: George Daggett
Vice President: Sarah Reece
Secretary: **OPEN** **PRO-TEM: Marj Becker**
Treasurer: Deb Baldwin:
Treasurer Assists: Beth Simmons
Hospitality: OPEN
Ways & Means:
Dave Sanchez, Gideon Breithaupt, Sandra Lucero
Membership: Sue Childs; **Ass't:.** Merlin Schreffler
Claims Manager: George Daggett **Ass't.** Susanne Peach
Editor: Beth Simmons: **Ass't:** Marj Becker
Historian/Librarian: Kathy Honda
Webmaster: Bob Johnson
Show Chairman: Beth Simmons
Dealer Chairman: Linda Burns
Field Trips: Committee
Grab Bags: Joe Walkowich, Joe Payne, Kathy Honda
Merchandiser: Sandra Lucero
Council Rep: Kathy Honda: **Alt.** Linda Burns
Denver Show Rep: Kathy Honda
Sunshine: Sandra Lucero
Party planning: Deb Baldwin, Marj Becker
RMFMS Rep: Kathy Honda
Outreach: Susanne Peach; Bob Johnson
Inventory manager: Linda Burns

An "Assistant" is the officer's backup in case of illness or other reason they can't do their job. Every officer needs an "Assistant"!
Join up! Say YES when asked!

Quote of the Month:

EVERY ROCK NEEDS A BOX!

Deb Baldwin's sweatshirt

April Birthdays:
Scott Bennett
Seija Curtin
Jennifer Gowins
Barb Harrison
Brian Luchtenberg
Melissa O'Malley
Edie Sherman
Jim Simonds
Sandy Walden
Karen Wenrich
Randy Wilson

April Anniversaries:
The Breithaupts
Johnnie Gilbert/Michelle Moore
The O'Malleys
The Snows

April Sunshine Spotlight

Get well wishes to Karlene Fry who had part of a lung removed at the height of the virus scare! It was malignant. She was out of the hospital and home to safety in two days! She is recouping in isolation at home. Wish her well!

CONTACT SANDRA LUCERO TO INFORM HER OF SUNSHINE REQUESTS

NOTE: NO EMAILS ON FRONT PAGE

There is a scammer somewhere who has apparently taken email addresses off the CSS newsletters that were posted online, because they had been taken off the webpage over a year ago. So I'm following suit and taking emails out of the newsletter.

We will be posting the new member rosters in our secret place on the webpage after the virus scare ends and things settle down.

THE DENVER GEM AND MINERAL GUILD—57 Years old!

Founded in 1964, the Denver Gem and Mineral Guild pursues exploration, experimentation, and education in the earth sciences; the discovery, development and preservation of minerals and mineral deposits; and the advancement, encouragement and utilization of the principles of art and craftsmanship as applied to gems and minerals.

The Guild meets on the second Friday of the month at 7:30 pm at Berthoud Hall on CSM Campus, except for June, July, August, and December. Picnics, field trips, and parties replace regular meetings those months.

Deadline for article submission for the Tips & Chips is the 20th of each month. Email photos and articles to editor Beth Simmons at cloverknoll@comcast.net. Exchange with other newsletters is invited, and reprinting of material from this newsletter with proper attribution is encouraged.

2019 DGMG CALENDAR OF EVENTS

A persistent page—watch monthly for additions! PUT THIS ON YOUR FRIDGE!!!

HOSPITALITY FOR 2020

Chairman:

STILL VACANT

2020 Calendars STILL FOR SALE!

Only about 10 copies left!

$10— stunningly beautiful!

2020 DGMG Show Report
by Beth Simmons, Show Chairman

I submitted the application to have the show at the Fairgrounds next year, but we'll see what the virus brings, in addition to the Commissioners!

ALL FUTURE DGMG GATHERINGS CANCELLED UNTIL FURTHER NOTICE!

MAYBE WE'LL GET TO GO TO SALIDA IN JULY!
JULY 10-12 2020
FIELD TRIP—SALIDA: JOHN AND DONNA RHODES
MORE DETAILS FORTHCOMING
AND HAVE OUR PICNIC IN BEAR CREEK LAKE PARK

WE'LL SEE!

PRESIDENTIAL MESSAGE

Now that we're stuck at home, we might as well make the best of it. For me, that means playing with rocks. I have an 8" flat lapidary grinder. I've been using it to shape and polish some pretty rocks, such as sow belly agate, jasper, quartz, candy stripe opal, and others. I also have a dopping station and, thanks to the tutelage of Jim Dennis, I've been trying to make primitive cabochons. Thank you, Jim. Karlene Fry taught Sandra Lucero how to use the Genie grinder at our show, so I have to try to keep up! Get and stay healthy and strong, Karlene.

Even with the joy of making pretty rocks out of plain rocks, it's trying. We're all doing our utmost best to stay home and stay away from others. This, too, will pass. People will line up at restaurants and pack movie theaters. People will go back to their offices and schools. The financial markets will shock and amaze us with upward gains. The Denver Gem & Mineral Guild will gather for field trips and meetings. In the meantime, play with your rock collection. Organize, clean, take photos, grind, polish, facet... If you have great stories, please pass them along to Beth Simmons and maybe you can help cheer up the rest of us, too. God bless us, every one.

Keep Rocking

George

Paul Kendall donation

On March 12, Paul Kendall, well-known mineral collector donated a box of 49 specimens to the Guild for our silent auction. THANK YOU PAUL!

George inventoried them; look for them at our next auction! (Whenever that might be!)

Iron meteorite	Canyon Diablo, Arizona
Horn coral	Kentucky
Hyalite opal	Saratoga, WY
Gold in skarn	Nambija, Ecuador
Calcite	New Mexico
Hematite, rutile	Bahia, Brazil
Rhocochrosite	Chinapintza, Equador
Willemite, calcite	Franklin, NJ
Ametrine	Bolivia
Galena, sphalerite	Peru
Quartz en hydro	Bolivia
Galena, fluorite	Blanchard Mine, NM
Cassiterite	Viloco Mine, Bolivia
Quartz, calcite	Zaruma, Ecuador
Creedite	Colquiri Mine, Bolivia
Molybdenite	Leadville
Quartz	Ecuador
Bournonite	Machacamarca, Bolivia
Galena	Huanzala, Peru
Vivianite	Bolivia
Pyromorphite	Zaruma, Ecuador
Quartz	Zaruma, Ecuador
Hubnerite	Pallasca, Peru
Quartz, chalcopyrite	Zaruma, Ecuador
Copper	Corque Mine, Bolivia
Quartz	Ecuador
Vivianite, pyrite	Huanuni, Bolivia
Pyrite, marcasite	San Bartolome, Ecuador
Beryl, emerald	Colombia
Halite	Bolivia
Ferberite	Chorolque, Bolivia
Tetrahedrite	Bolivia
Polished fluorite	Ganley mtn
Pyromorphite	Zaruma, Ecuador
Bertrandite	Mt. Antero, Coloradoo
Siderite, pyrite	Huanuni, Bolivia
Silver	Pitkin County, Colorado
Silver	Uchucchacua Mine, Peru
Optical calcite	Chihuahua, Mexico
Cuprite	Arizona
Pyrite	Bolivia
Proustite	Zacatecas, Mexico
Azurite	Mexico
Glass dome, base	
Wernerite	
Mineral	
Mineral	
Agate slice	
Carbide drill bit	

Two Northern Front Range Meteorite Falls: 80 Years and 10 Miles Apart

Thanks, Gerry Naugle!

Johnstown, Colorado, July 6, 1924 at approximately 4:35 pm

A baseball game was in progress and a funeral procession was just underway that afternoon. Without warning, a large bolide (meteor) fell thunderously out of the sky. An air explosion shattered the bolide and was heard for miles around. Many pieces of the bolide rained down on the area, with the largest weighing 23.5 kg (51.7 lb). This event is one of only 11 witnessed air-explosion meteorite falls and is the most massive of these falls.

A 136-gram diogenite fragment from the Johnstown fall and 25 cent piece for comparison. Note the black glassy fusion crust. Credit: Colorado Meteorite Society/Mitterling Meteorites

The bolide exploded at an estimated height of 20,000 feet at a calculated energy level of approximately two kilotons (2,000 tons) of TNT energy equivalent, based on observed glass-breakage damage patterns found in local ground structures. These damage patterns were mapped out by Denver Museum volunteers and researchers. The total mass of the bolide was estimated at 50.3 kg (111 lb), with 27 major stones and approximately 200 smaller stones found to date. The Museum has logged the stones found at the site, adding any new stones found in that area.

Geologists classify the meteorites recovered from the Johnstown explosion as diogenite, which is one of the three types of HED (howardite-eucrite-diogenite) meteorites. Diogenites are stony meteorites composed of igneous rocks that cooled slowly, forming larger crystals. The term ‘diogenite’ refers to Diogenes of Apollonia, an ancient Greek philosopher who was the first to suggest an outer space origin for meteorites. The largest piece of Johnstown diogenite is the most massive of 300 plus recovered diogenites worldwide, and is the fifth most massive HED meteorite ever recovered.

As an HED meteorite, the original parent body of the Johnstown bolide is the asteroid Vesta. Vesta is the brightest and closest of the larger asteroids in orbit between Mars and Jupiter. Their brecciated (broken) texture, Rb-Sr isotope age of about 4.4 billion years, and cosmic exposure age of about 20 million years are certainly consistent with this scenario. NASA’s DAWN Spacecraft has further narrowed the source of this HED family of bolides to the Rheasilvia Crater on Vesta, due to nearly perfect matching of the spectroscopic survey fingerprint of that area on the asteroid and the spectral analysis of the HED material that has landed on the Earth. (Note: Rhea Silvia was the mother of Remus and Romulus in Roman mythology. Remus and Romulus founded the city of Rome.)

Diogenites — like other HED meteorites — were ejected from Vesta by an impact collision. As such, they are structurally weakened due to brecciation on an asteroid and after the impact. Because they are weak structurally, frequently only a few small, scattered stones survive the fireworks and noisy entrance of these meteors into the earth's atmosphere. They nearly always break up violently [explode] into very small pieces, due to intense deceleration as they come through our atmosphere. The Johnstown fall represented a pleasant exception to this trend, with some large fragments quickly recovered within hours and days.

Berthoud, Colorado, October 5, 2004 at 1:30 pm

Some 80 years later and 10 miles west of the Johnstown air explosion, a meteorite fall was witnessed over Berthoud. John, Megan, and Casper Whiteis had just walked out of their house when they were distracted by a whistling noise and a thump. Megan observed some dust kicked up in a horse pen about 100 feet away. A meteorite had embedded itself a few inches below the surface in a shallow crater, after traveling at an estimated 180 mph before impact.

A single stone, 120 mm (30 inches) across and weighing 960 g (2.1 lb), was recovered while still very hot. Fresh, glossy, black fusion crust covered the stone except for a small broken corner. The interior is medium gray in color. Other fragments have been found in area. This meteorite is classified as an eucrite, another HED-type meteorite from the Vesta asteroid.

Two Meteorite Falls 10 Miles Apart from the Same Asteroid

Based on their composition, the material from both meteorite falls originated from the Rheasilvia Crater on Vesta. As the result of a titanic-scale impact some 20 million years ago, debris was ejected from the asteroid, creating the crater. This debris then traveled billions upon billions of miles in an orbital path before periodically entering our atmosphere and landing approximately 10 miles and 80 years apart in north-central Colorado.

Orbital mechanics (O-M), which governs the motions of the asteroids and comets in our solar system, can explain the periodicity of the HED falls to the Earth. However, O-M cannot explain the closeness of these two events on the Colorado Front Range some 80 years apart. That aspect has to be pure random chance.

SPOTLIGHT ON APRIL'S SPONSOR:

Desert Gems

SHOP CLOSED THROUGH MARCH (at least)

Essentially a "non-essential" business (at least to most of the world, our favorite rock, mineral, and bead shop is closed until this epidemic passes. So that gives Dave and Darin some time off.

But you are going to run out of supplies in the near future, with all this time to make jewelry and "play with your rocks, no?"

OUR PROMISE TO YOU

We strive to bring you the best, widest, and most complete selection of beads, crystals, rocks, and gifts possible. Our selection is unmatched and our inventory changes daily. Our buyer travels the world to bring the best deals to you, the customer. We understand the rock community and are eager to help you in any way we can.

DENVER GEM & MINERAL SHOW MINI REPORT APRIL 2020

The Denver Gem & Mineral Show is planned for September 18 - 20, 2020 at the Denver Mart, 451 E. 58th Avenue. The theme this year is fabulous fluorite! The Show Chair is George Daggett, who can be reached at geoddaggett@hotmail.com or 303-453-9651. George is always open to talking with club members regarding the show.

With the Coronavirus pandemic upon us, it is certainly hoped that the emergency situation will be over and things return to normal well before the show. September is still 5 months away. Presently most clubs are probably not meeting and most do not meet during the summer. This is unfortunate because now is the time for clubs to be signing up volunteers for the show. Please, please, please don't forget about signing up to help with the show. Volunteers are vital to putting on a successful show. There are many easy jobs: Admissions, selling and taking tickets; Exhibits, assisting exhibitors with their displays; Judging Clerks, assisting judges with recordkeeping; Hospitality, helping to serve snacks and beverages in the Hospitality suite; Security, keeping eyes and ears open for security problems; Grab Bags, Pins, Poster Sales, selling such items to show attendees; Dealer Check In, assisting with dealer check in on Thursday; Volunteer Check In, checking in volunteers throughout the show; Schools, guiding school children into the show on Friday morning; Show Set Up, skirting tables with plastic and setting up display cases on Wednesday; Show Take Down, disassembling display cases and packing away case liners on Sunday. The volunteers signup sheets are due by June 30th. Thereafter, Amber Brenzikofer is planning to initiate SignUp Genius to make volunteer sign up simple for all. Amber has reported that SignUp Genius worked amazingly well in 2019 for security volunteers. That is the plan. The show is the most exciting event all year for mineral and fossil hobbyists and we know the club members will volunteer to support the show.

Fluorite is a fabulous mineral! It is a common mineral, found in numerous worldwide locations, and has many attributes that make it desirable to mineral collectors. You may be thinking of your favorite fluorite specimen residing in your collection. Exquisite fluorite hails from such places as the County Durham, England; Hunan, China; San Luis Potosi, Mexico; Andalusia and Asturias, Spain; the Auvergne-Rhone-Alpes, France; the Illinois-Kentucky Fluorspar District; Draa-Tafilalet Region, Morocco; and Namibia. Many other locations could be added. In our own backyard, what local rockhound does not know about the lovely fluorite from the Blanchard Mine, Hansenburg Mining District, Socorro County, New Mexico? Is there fluorite in Colorado you ask? Of course, there is. In 1996 Barbara L. Muntyan, former director of the Ouray County Museum and frequent author on minerals, wrote an article about Colorado fluorite in *Rocks & Minerals*, Vol 71, No. 3. She lists such places as the Sunnyside Mine, Gladstone, San Juan County; Ransom Mine, San Juan County; Camp Bird and Thistledown Mines, Ouray County; Gertrude Mine, Ouray County; Mt. Antero, Chaffee County; Sweet Home Mine, Park County; the Pikes Peak Batholith including Park, Teller, Douglas, El Paso, and Jefferson Counties; the Climax Mine, Lake County; Yukon Mine, San Juan County, and the Idarado Mine, San Miguel County. Her article included other locations as well and pictures of colorful fluorite. For further information about Colorado fluorite, please refer to her article (which you can find in the DGMG library in the clubhouse!).

Please everyone - stay safe, healthy and optimistic about the future for the Denver Show in September!
Respectfully submitted, Judy Knoshaug, Show Secretary

Things To Do While Sheltering in Place

By Marj Becker

So, you have to stay home.
What will you do?
How will you keep your sanity?
Try this. It's a list. Try to think
Of it as suggestions. Add to the list.

Wash your hands. A LOT!

Call your friends. They're just as
Stir crazy as you are.
Learn what it's like to experience
Cabin fever!

Write e-mails.
Write real letters.
The postal service
Is still working.

Shovel the snow.
Shovel the snow, twice.
And, again.
And, again.

Play "fox and geese
Out in the yard.
The kids will probably
Have to learn how to play.

Wash your hands.

Feed the birds. Feed them, again.
Feed the squirrels. They are just
Trying to make a living.
Then, feed the birds, again.

Marvel at the Christmas cactus
Blossoms - second blooming,
This year.
Repot an indoor plant.

Read a book.
Read a magazine.
Read both.
Read!

Take your temp in the morning.

Clean out that closet. It's been waiting
For years. Have the
Cleanest house
On the block.

Cook a new meal. Dig out those
Old cans of veggies. Old meat
From the freezer. Gin up a
Brand new dish.

Take your temp in the evening.

Write a memoir. Or,
At the very least,
Write a diary of this pandemic.
Your grandkids will love it.

Play that game
You got for Christmas.
Argue about the
Rules.

Order groceries on-line.
Have them delivered.
Wash them off.
Put them away.

Wash your hands.

Bring in a "dead" twig
From a flowering bush - quince? Forsythia?
Or a bunch. Put them in a vase with water.
Have patience; watch them flower.

Play with your kids.
Home school them. You'll get to know
What your teachers get to do.
Every day.

Play with your kids and grandkids.
Build a snowman or woman.
Build a fort.
Have a snowball fight.

Play with your collection of rocks.
Cut out this list.
Add to it. There are lots
Of things you can do.

Wash your hands.

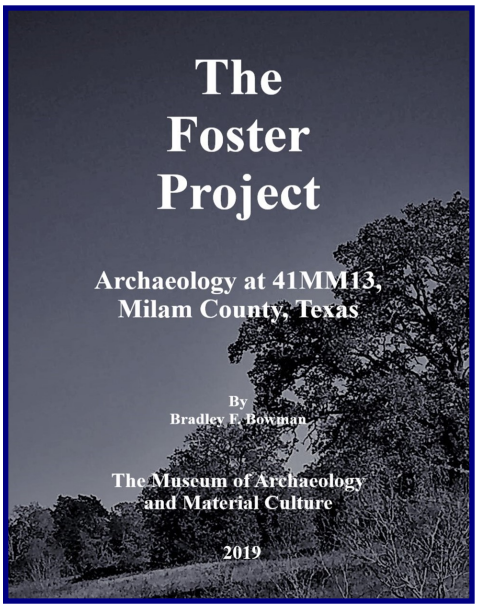
Take your temperature.

Be strong.

Be safe!

CONGRATULATIONS TO DGMG MEMBER BRAD BOWMAN

On the publication of his book about "the Foster Project", an archeological digsite in Texas that he has been working on for over 35 years! Brad came into the Guild through Karlene Fry; you may have met him at the demonstration tables over the years at both our show and the Denver show. Here, Brad shares the story and some of the illustrations with us.



Archaeological investigations at Foster, in Milam County, Texas (41MM13) conducted between 1985 and 1987 recovered data documenting a large multi-component, seasonally-occupied campsite near the Brazos and the Little Rivers' respective confluence. The Foster Project was primarily initiated with the objectives of assessing buried cultural deposits based on surface collections, to define turbation rates in sandy soil river bottom sites, and to identify artifact morphologies that are susceptible to these processes. The confluence area was chosen as little professional inquiry had previously been conducted in the area, and the site's relationship between the two river systems was theorized to provide cultural evidence of both East and Central Texas populations. Excavation and analytical procedures were devised and experimented with in an effort to separate and evaluate the many components that exist at Foster and to develop strategies that can be implemented in the evaluation of other sites in similar environments. This work produced one of the largest artifact assemblages from a controlled excavation in the Brazos drainage to date. Analysis revealed a chronology of hunter-gatherer occupations which span an estimated 8,000 ± years, evidencing temporal changes in frequency and morphological attributes of both bifacial and unifacial lithic artifacts, and provides a glimpse into aboriginal subsistence strategies. Excavations include: 116 subsurface shovel tests and 65 1 m^2 units that identified 15 features in association with diagnostic artifacts, plant, and animal remains. The remains of two individuals of Native American descent were recovered during the project, a semi-flexed adult female inhumation, and the first documented and reported single individual, multi-depositional cremation in Texas. These remains provide much needed mortuary and osteological data for the confluence area. A large collection of terrestrial gastropods recovered from column soil samples produced evidence of Holocene climactic change in the research area.

The Foster project in all respects was a labor of love. The field work conducted under my supervision was carried out by volunteers from the Department of Anthropology at Texas A&M University, and by individuals from both the professional and avocational archaeological communities. The many years that lapsed from the time of the excavations until the final publication was in part a result of my wanting to conduct all the analysis of the recovered collection. It took me many years of study to be qualified to accomplish this. In addition, time available for the writing of the manuscript was limited as I was responsible for many archaeological projects permitted by the New Mexico Office of Historic Preservation.

Figure 12. Feature 3, Area A and Area B.

Area A **Area B**

Con't. next page

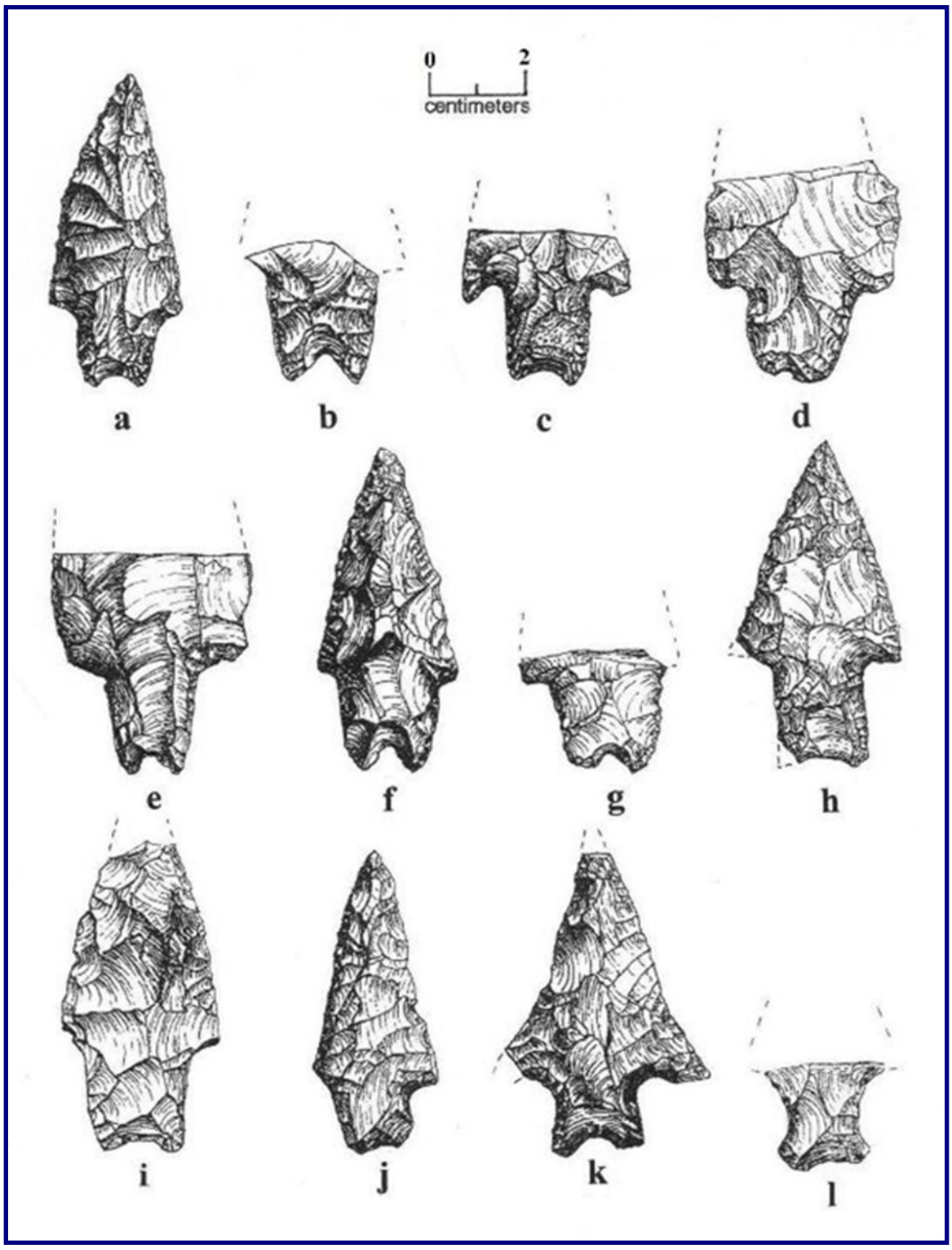
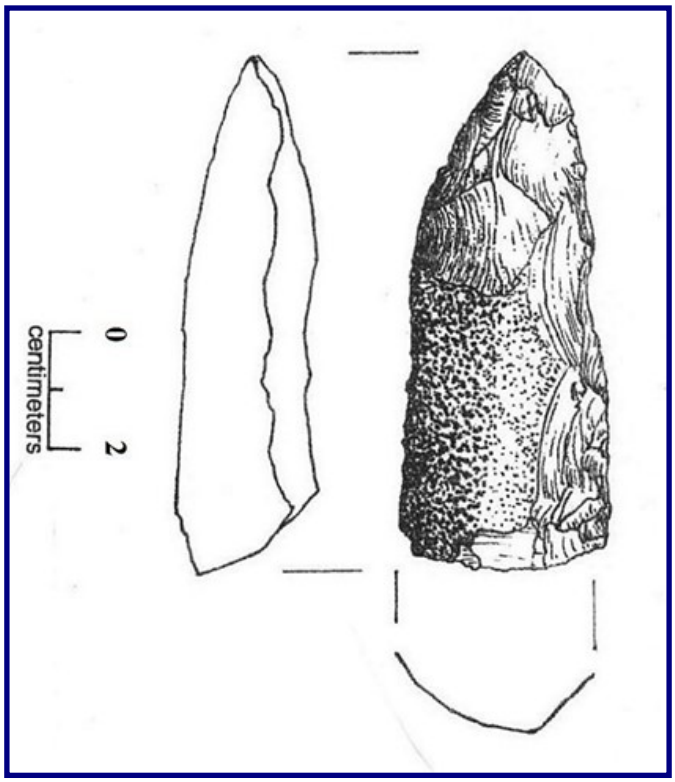


Figure 52. Dart points.
***Pedernales* (a - i) Reference numbers P50 - P58;**
***Uvalde* (j - l) Reference numbers P59 - P6 (Table 30).**

Con't. next page

Figure 55.
Guadalupe Biface.
Reference number FB8 (Table 31).



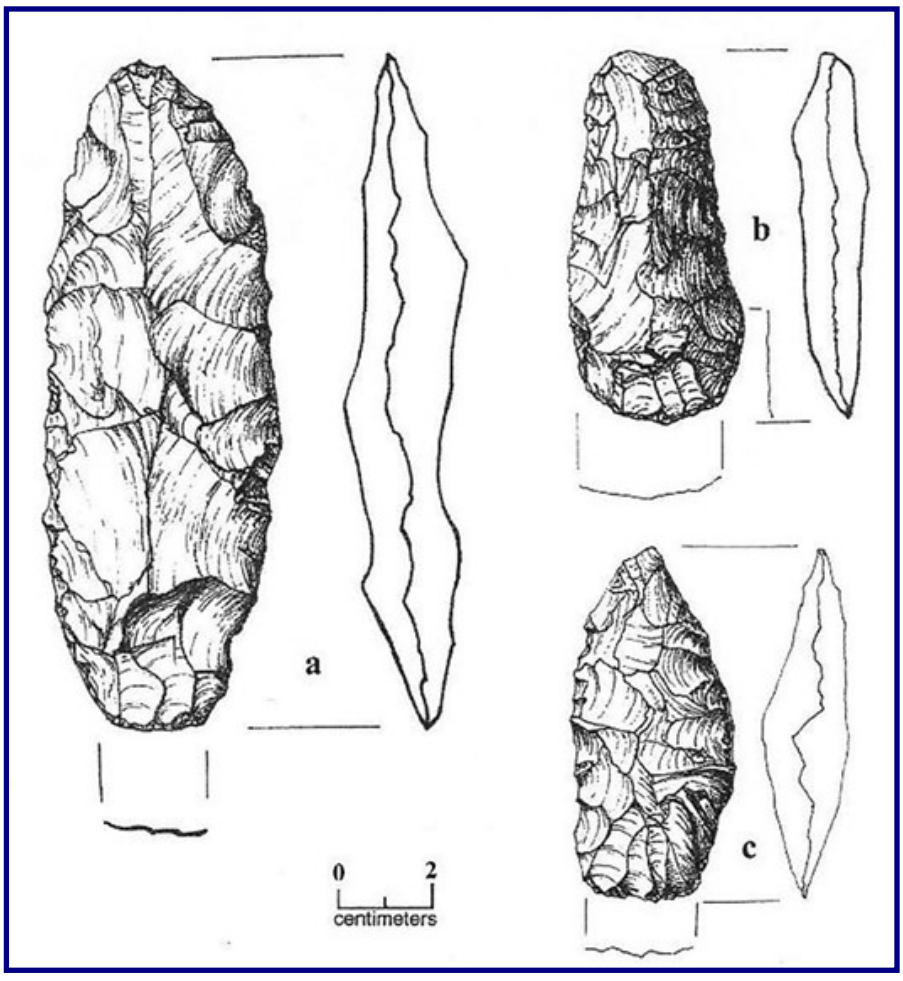


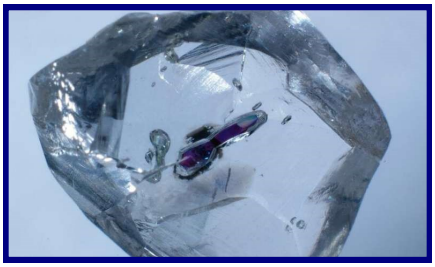
Figure 56. Untyped adzes (a) Reference number FB3; (b) reference number FB 5; (c) reference number FB 2 (Table 31).

Congrats, again, Brad, on completing this lifetime project!

DIAMONDS– many colors… and sizes…. And one? hardness by Beth Simmons

https://phys.org/news/2020-03-geologists-lost-fragment-ancient-continent.html

What mineral comes colorless, or in black? Or yellow? And is the hardest thing on the block**?** And yields clues to the origin of Earth?



Tiny inclusions in diamonds, such as this garnet, are evidence that they formed deep in the mantle

Credit: Anetta Banas/University of Alberta

Sifting through diamond exploration samples from Baffin Island, Canadian scientists have identified a new remnant of the North Atlantic craton—an ancient part of Earth's continental crust. A chance discovery by geologists poring over diamond exploration samples has led to a major scientific payoff.

Kimberlite rock samples are a mainstay of diamond exploration. Formed millions of years ago at depths of 150 to 400 kilometers, kimberlites are brought to the surface by geological and chemical forces. Sometimes, the igneous rocks carry diamonds embedded within them. "For researchers, kimberlites are subterranean rockets that pick up passengers on their way to the surface," explains University of British Columbia geologist Maya Kopylova. "The passengers are solid chunks of wall rocks that carry a wealth of details on conditions far beneath the surface of our planet over time."

But when Kopylova and colleagues began analyzing samples from a De Beers Chidliak Kimberlite Province property in southern Baffin Island, it became clear the wall rocks were very special. They bore a mineral signature that matched other portions of the North Atlantic craton—an ancient part of Earth's continental crust that stretches from Scotland to Labrador.

"The mineral composition of other portions of the North Atlantic craton is so unique there was no mistaking it," says Kopylova, lead author of a new paper in the Journal of Petrology that outlines the findings. "It was easy to tie the pieces together. Adjacent ancient cratons in Northern Canada—in Northern Quebec, Northern Ontario and in Nunavut—have completely different mineralogies."

Cratons are billion-year old, stable fragments of continental crust—continental nuclei that anchor and gather other continental blocks around them. Some of these nuclei are still present at the center of existing continental plates like the North American plate, but other ancient continents have split into smaller fragments and been re-arranged by a long history of plate movements.

"Finding these 'lost' pieces is like finding a missing piece of a puzzle," says Kopylova. "The scientific puzzle of the ancient Earth can't be complete without all of the pieces." The continental plate of the North Atlantic craton rifted into fragments 150 million years ago, and currently stretches from northern Scotland, through the southern part of Greenland and continues southwest into Labrador. The newly identified fragment covers the diamond bearing Chidliak kimberlite province in southern Baffin Island. It adds roughly 10 percent to the known expanse of the North Atlantic craton.

This is the first time geologists have been able to piece parts of the puzzle together at such depth—so called mantle correlation. Previous reconstructions of the size and location of Earth's plates have been based on relatively shallow rock samples in the crust, formed at depths of one to 10 kilometers. "With these samples we're able to reconstruct the shapes of ancient continents based on deeper, mantle rocks," says Kopylova. "We can now understand and map not only the uppermost skinny layer of Earth that makes up one percent of the planet's volume, but our knowledge is literally and symbolically deeper. We can put together 200-kilometer deep fragments and contrast them based on the details of the deep mineralogy."

The samples from the Chidliak Kimberlite Province in southern Baffin Island were initially provided by Peregrine Diamonds, a junior exploration company. Peregrine was acquired by the international diamond exploration company and retailer De Beers in 2018. The drill cores sample themselves are very valuable, and expensive to retrieve. "Our partner companies demonstrate a lot of goodwill by providing research samples to UBC, which enables fundamental research and the training of many grad students," says Kopylova. "In turn, UBC research provides the company with information about the deep diamondiferous mantle that is central to mapping the part of the craton with the higher changes to support a successful diamond mine."

Web Corner – Web and Computer Resources for Rockhounds

Free Online Classes – by Bob Johnson

Beautiful hand-crafted jewelry by club member Vicki Schlepp. Find free online classes about jewelry making and more on the DGMG website.

Craving fresh intellectual stimulus now that all of your regular meetings have been canceled by Covid19? Now may be the perfect time to take an online course to pursue a personal interest or improve your job performance. So check out a new class . . . for FREE! Here are some of my favorite sources that I have used for finding fresh online classes.

Open Culture http://www.openculture.com/freeonlinecourses - maintains a list of 1,500 free online courses from top universities like Stanford, Yale, MIT, Harvard and more. Courses cover the typical college topics including Archaeology, Arts, Communication, Economics, Science, Math, etc. There is a fee if you want credit for your class, but you can usually sign up for "No Certificate" or "Audit" for free.

Coursera https://www.coursera.org/ - many of the courses on the Open Culture list are offered through Coursera which offers 3,900+ courses from 190+ universities and companies.

EdX https://www.edx.org/ - many others on that list are offered through edX, which provides access to 2500+ courses from 140 top institutions.

Future Learn https://www.futurelearn.com/ - offers courses from leading institutions. Most have a free option with paid upgrades available for "certificates".

Skill Share https://www.skillshare.com/ - has thousands of classes, both paid and free, on a broad range of topics including arts and crafts (i.e. jewelry making). Once you login, use the search box to search for your topic of interest. You can then filter the results by "all", "premium" or "free".

Udemy https://www.udemy.com/ - has the world's largest selection with over 100,000 online video courses with new ones being added each month. Their classes are typically more practical with a heavy emphasis on business and computer skills but also on personal development and various "lifestyle" topics (including jewelry making). Individual courses cost up to $199, but often go on sale for as little as $9.99. They also offer nearly 6800 totally free courses. Simply login and do a search for "free courses". These courses are typically offered by teachers who have several Udemy courses available. They hope that if you like them, you will later sign up for one of their paid courses. Once you sign up for a course you will have lifetime access and can complete it at your own pace.

Schoobly https://www.schoobly.com/ - in addition to the "always free" Udemy courses, you may be able to find "coupons" that offer the opportunity to sign up for free to courses that normally cost up to $199. These coupons typically must be used within one or two days (but once you use them to sign up for the course, you have lifetime access to that course). Schoobly is one of the best sources I have found for these courses. I check it daily.

This is NOT an exhaustive list! For more suggestions check out this article from LifeHack on 25 Killer Sites for Free Online Education, and FreeOnlineCoursesForAll.com for their top 10 lists of courses under various topics including arts & crafts, hobbies, education, and more.