

MAPLEWOOD ROCK AND GEM CLUB

2021
APRIL



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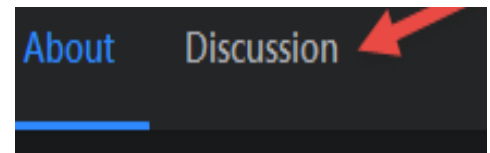
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General meeting: April 19

We hope you will join us at our April meeting which will be Monday, the 19th at 7 pm. Members will receive a Zoom link in an email. If you have never used Zoom, you might find [this video introduction](#) helpful. Do you have questions about the meeting? Contact our Board President, Sandra: ask.sandra@yahoo.com

Online auction

Watch for the online auction on our [Facebook page](#). To participate, log into your Facebook account, go to our Facebook Events page and click on the event, "MRGC Silent Auction". Just below the title you will see a small menu like the one here. Click Discussion. To bid on an item comment with a dollar amount.

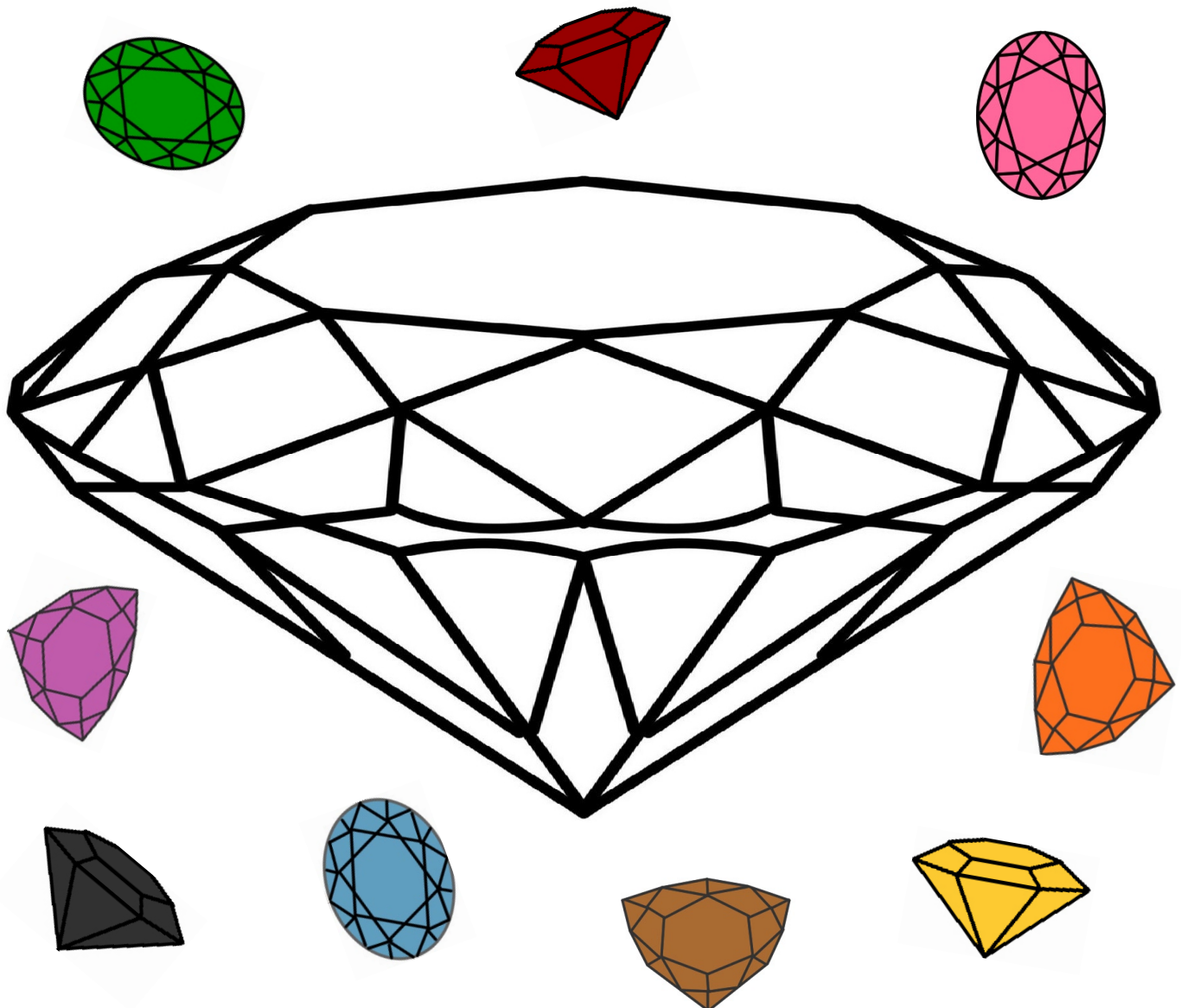


Here is a photo of bloodstone which is one of the rocks being sold in our online auction. Most bloodstone is from India, but it is also found in the Pacific Northwest, Nevada, Madagascar, and a few other places. The auction ends at 10 pm on the evening of our meeting, April 19.

Juniors' Page - Fancy Diamonds

The birthstone for April is a diamond. These gems are cut into shapes that reflect the light and make them sparkle. When diamonds have a color they are called fancy diamonds, and the color can be yellow, brown, colorless, blue, green, black, pink, orange, purple, and red.

The color people find most often is yellow, but the color we see most often in jewelry, is *colorless*! Here are some fancy diamonds surrounding a large colorless one. You may color the large diamond to make it fancy too.



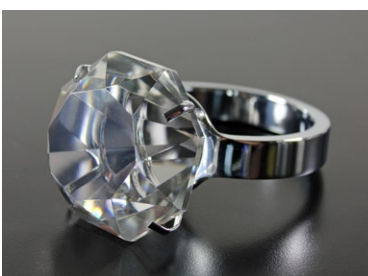
April Birthdays



[Natural diamond with a red garnet inclusion](#)

Stephen Richardson, University of Cape Town, South Africa
License: Creative Commons BY-SA 2.5

The first diamond engagement ring was presented by Archduke Maximillian of Austria to his betrothed, Mary of Burgandy in 1477. Nobility in Europe gradually adopted the idea, and the practice became more commonplace among the masses when De Beers launched a marketing campaign "A Diamond is Forever" in 1947.



Diamond ring
[Jeffrey Beall](#), License: BY-SA

If your birthday is in April, Happy Birthday! Your birthstone is one of the most popular gems: diamond. Although colorless diamonds are the most popular for jewelry, yellow diamonds are more commonly found.

Diamond basics

Category: mineral

Formula: C

Crystal system: cubic

Crystal class: hexoctahedral

Crystal habit: octahedral

[3D interactive model](#)

Mohs: 10

Cleavage: perfect in 4 directions

Fracture: irregular/uneven

Color: commonly yellow, brown, gray, colorless

Diaphaneity: opaque

Luster: adamantine

Streak: colorless

Specific gravity: 3.52

Optical properties: isotropic

Refractive index: 2.418 (at 500 nm)

Dispersion: 0.044

Field trips

Many of us are eager to get out there and resume rockhounding. The Washington State Mineral Council is our main source of information on field trips, and they have not yet published a list of 2021 excursions.

We will publish the trips, once we learn the schedule, so watch future issues of this newsletter.

Or, you can periodically check the Washington State Mineral Council's website. On the [home page](#) click *Field Trips for 2021* in the left navigation menu.



Rock shows

Please contact the club before going to the show to be sure it has not been cancelled due to our changing pandemic restrictions.

April 24 and 25th

The West Seattle Rock Club has a show scheduled for April 24 and 25th from 10 am to 5 pm. The show is at

Alki Masonic Temple
4736 40th Ave SW
Seattle, WA

May 22nd and 23rd

The Hatrockhounds Gem & Mineral Society is hosting a show on May 22nd and 23rd from 10 am to 5 pm. The show is at

Eastern Oregon Trade & Event Center
1705 East Airport Road
Hermiston, OR

Word of the Month

Critical angle

The critical angle is the angle at which all light is reflected off a gem facet rather than passing through.

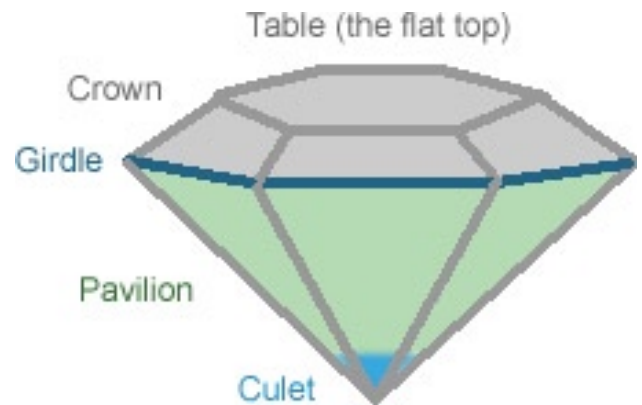
When light hits at an angle less than the critical angle most light passes through, but some light is reflected.

Light passing out of a gem through a facet (into a less dense material) is bent away from the normal line, whereas light entering a gem (into a more dense material) bends toward the normal line. The normal line is perpendicular to the surface of the facet.

Anatomy of a Diamond

Understanding the parts of a cut diamond can help us see how the facets are the key to bringing out the sparkle and fire of the gemstone. The image at the right seeks to illustrate the terminology.

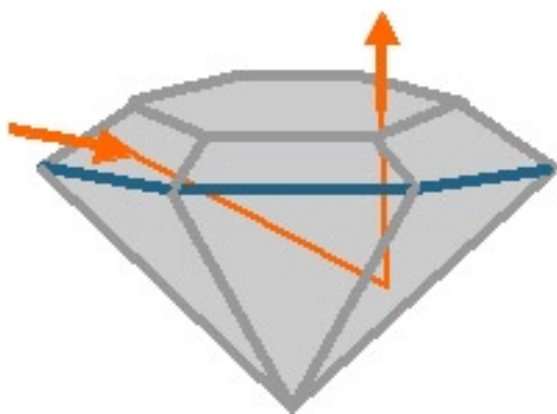
- Table - the flat top
- Crown - the area above the girdle
- Girdle - the widest perimeter
- Pavilion - below the girdle
- Culet - where the pavilion facets meet



Light moving through a gem

When the light hits a facet it can be reflected off the surface or pass through. In the illustration below a ray of light (orange path)

1. enters the front left crown facet
2. is refracted (bent) and travels down through the gem to the back right pavilion facet
3. is reflected and travels up through the table



When light travels from air through a facet to the interior of a gem, the path through which the light must progress becomes more dense, and that causes the light to slow down and refract (bend). The refractive index (RI) is a measure of how much the light is bent for a particular speed (color) of light.

When light reflects off a facet, the angle of reflection equals the angle of incidence, which is the angle at which the light hits the surface.

Light reflects or passes through

Whether the light is refracted or reflected depends on the angle between the light ray and the facet. When the light hits the facet at less than the critical angle, most of the light passes through the facet, and when the angle is greater than the critical angle, all of the light is reflected.

The critical angle for a wavelength is calculated with this formula in which *RI* is the refractive index:

$$\text{critical angle} = \sin^{-1} (1 / \text{RI})$$

Clearly, the refractive index is an important piece of data. Because the RI is static for a particular wavelength and gem, the critical angles are also the same for all gems of the same type. Read more about the [refractive index and critical angles](#).

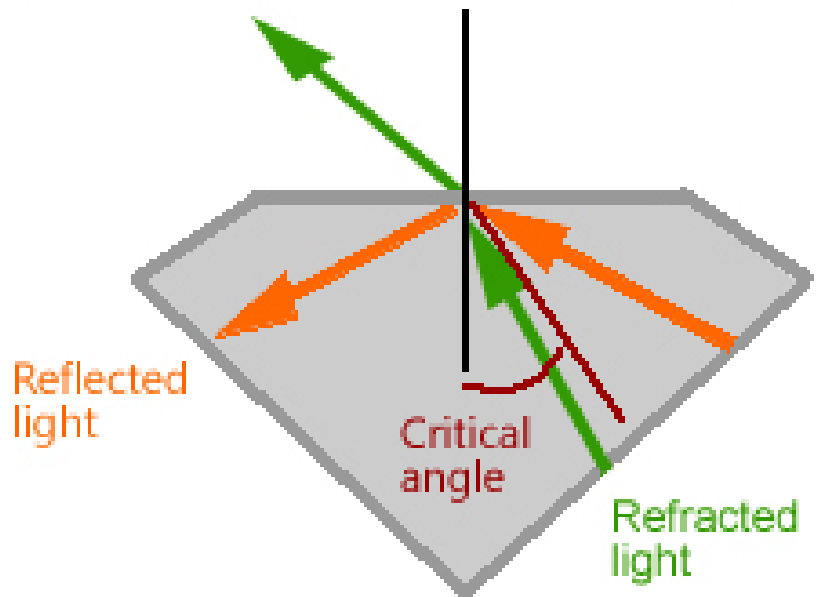
Regardless of where light enters the gem in the crown or table, it is ideally reflected off a pavilion facet and back up through the crown. A talented gemcutter will maximize the rays of light that reflect back up through the crown. The brilliance of a gem is a description of how light exits it. A novice gemcutter might inadvertently design or cut angles that refract and reflect light back out through the pavilion rendering a relatively dull stone with little brilliance and fire.

What kindles fire?

Sunlight is comprised of a mixture of different colors of light, and those colors are differentiated by their wavelengths. Of visible light red has the longest wave at about 740 - 625 nm and violet is the shortest at 435 - 380 nm. The longer the wave, the slower the speed: red light vibrates at 400 THz (teraHertz) and violet light vibrates at 800 THz. Generally, longer wavelengths are refracted less than shorter ones.

The refractive index differs among the colors of light, and this means that gems like diamonds can act like prisms and separate the colors of light before they are refracted out of the crown.

Normal line: 90° from the gem surface



Dispersion in gemstones

Within some gems white light is separated into its colored light components creating colored visual effects. Diamonds are known for displaying this fire. You can see a lot of dispersion in the Light of the Desert cerussite gemstone shown at the right.

White light is comprised of a mixture of light with different wavelengths, each one travelling at a different speed. All the colors of light together appear as what we call white light. In the cerussite shown here you can see red, blue, and other color dots of light shining out of the stone. White light enters the gem and because colored light travels through the gem at different speeds, the light separates into colors before being reflected out. Violet wavelengths are the fastest and red at the other end of the spectrum are the slowest.



Light of the Desert
faceted cerussite, 898 carats
Royal Ontario Museum in Toronto



[Refractometer](#)

A.KRÜSS Optronic GmbH

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Measuring the refractive index (RI)

The refractive index is constant for a chemical composition, so one diamond will have the same RI as another. Measuring the RI is one way to identify a specific gemstone. Because different wavelengths of light refract at different angles, the RI differs for various wavelengths of light.

Calculating dispersion

Gemologists use refractometers to measure the potential for dispersion in gems. They measure a gem's refractive index under red light (686.7 nm) and violet light (430.8 nm). The difference between those RIs is the gem's dispersion; the higher the number, the higher the potential for dispersion or fire. The actual fire depends on the stone's density, color, and faceting.

Daria-i-noor Pink Diamond



The Daria-i-noor (*Sea of Light*) diamond was mined centuries ago in the Kollur Mine on the South bank of the Krishna River in India. From when the mine opened in the 16th century men, women, and children worked at the mine, sometimes only being paid in food.

Women and children worked outside, and men went into the gravel-clay pits which had no timber supports and would sometimes collapse suddenly killing dozens of men.

Although the Mughal King leased the mine to others to operate, he retained ownership of all diamonds over 10 carats. At 182 metric carats this gem became a treasure of the king.

What makes a diamond pink?



Geologists do not know. The most accepted theory is that when the diamond is formed under enormous pressure, it becomes pink. Another theory is that seismic shocks shoot diamonds upward toward the earth's surface and thereby alter the molecular structure which makes them appear pink.

But, empires fall. In 1739 Nader Shah of Iran successfully invaded Northern India. Nader Shah looted the Moghal treasury taking the Daria-i-noor and other treasures, such as the Peacock Throne, back to Iran and returning power in India to the now much weaker Moghal Empire.

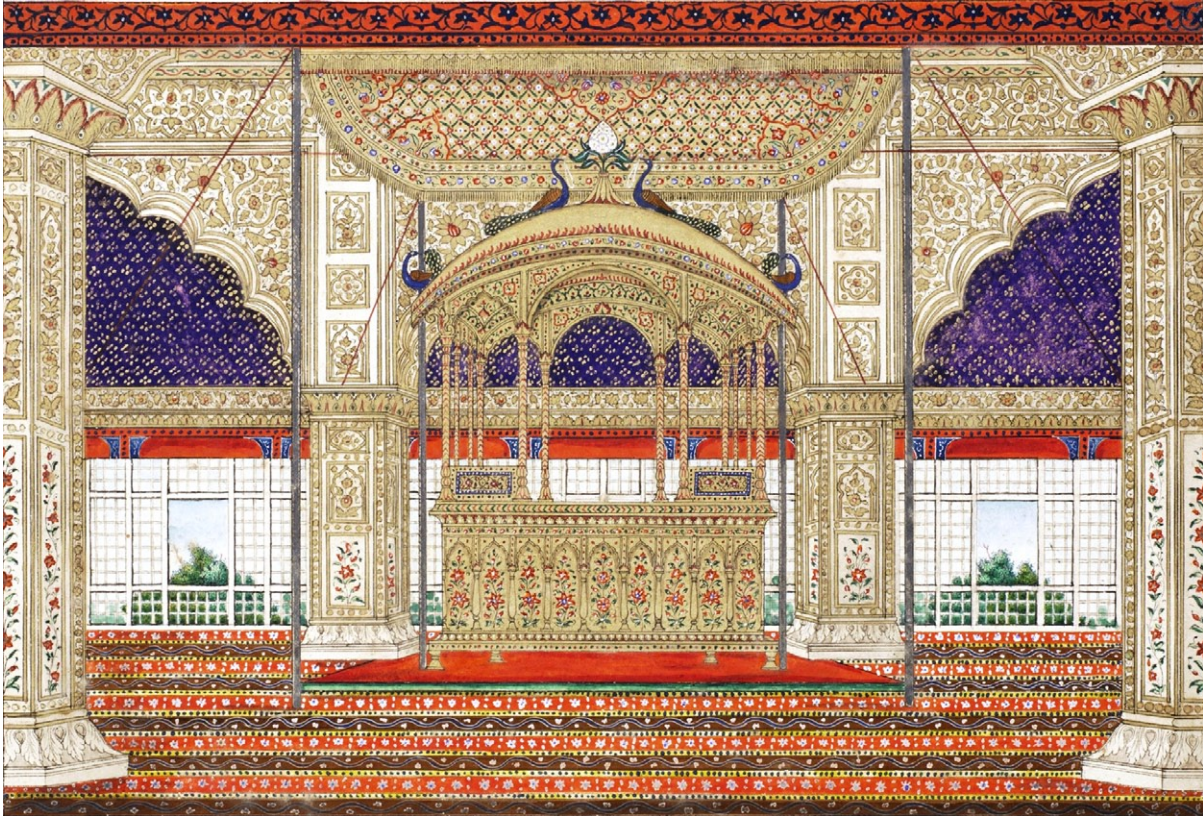
The Daria-i-noor Diamond is still in Iran as part of the national jewels of Iran, and it remains the largest known pink diamond in the world.

In 1965 Canadian researchers concluded that the pink diamond (60 carat) which is the centerpiece of the Noor-ul-Ain tiara was possibly once part of the same



diamond that is now the Daria-i-noor.

Peacock Throne



Peacock Throne - painting by Ghulam Ali Khan

In 1635 the Peacock Throne, covered in gold and jewels, was inaugurated as a jeweled throne for the Moghal King, Shah Jahan who had commissioned it in his first year as ruler to highlight his position as a just king.

Artisans spent seven years making this throne which ultimately cost twice as much as the Taj Mahal.

Stars and shooting prices

In 2002 Ben Affleck proposed to Jennifer Lopez and gave her a 6.1 carat pink diamond engagement ring. The prices on pink diamonds surged and have not lessened since then.

Of the hundreds of gems adorning the throne, one of the highlights was the Koh-i-noor (*Mountain of Light*) diamond. This gorgeous gem is 191 carats and is currently part of the British Crown Jewels.



Koh-i-noor diamond replica

Hope Diamond

Kollur Mine to Jean-Baptiste Tavernier

In 1666 a French gem merchant, Jean-Baptiste Tavernier, acquired — possibly stole — a roughly cut blue diamond which had probably been unearthed at the Kollur Mine in India. This Tavernier Blue diamond weighed about 115 carats. After bringing the stone to France, he sold it to King Louis XIV in 1668.



[Tavernier Blue](#)
replica in
cubic zirconia
Richard Wise

King Louis XIV to the US



In 1678 King Louis commissioned his court jeweller to recut the Tavernier Blue, and the resulting 67 carat diamond was called *diamant bleu de la Couronne de France* (Blue Diamond of the Crown of France). The diamond was set in gold and worn as a pendant. In 1749 King Louis XV had the diamond set in an elaborate pendant featuring the blue diamond and also a 107 carat red spinel carved as a dragon and dozens of diamonds painted red and yellow. The setting, called the Order of the Golden Fleece, is pictured at the left.

While the royals were imprisoned during the French Revolution the diamond and other treasure was stolen. Before resurfacing the gem was recut to obfuscate its origin. Unfortunately, the cut removed 20 facets from the back and made the diamond slightly lopsided. In 1839 this gem appeared in the collection of a London banking family by the name of Hope. The diamond passed through a succession of owners until 1958 when it was given to the National Museum of Natural History.

About the gem

The Hope Diamond, one of the largest of all blue diamonds, weighs 45.52 carats. In the setting the gem is surrounded by colorless diamonds. The Gemological Institute of America's Gem Trade Lab graded it as *fancy deep grayish blue*. It is such a dark indigo that it can appear almost blackish-blue.

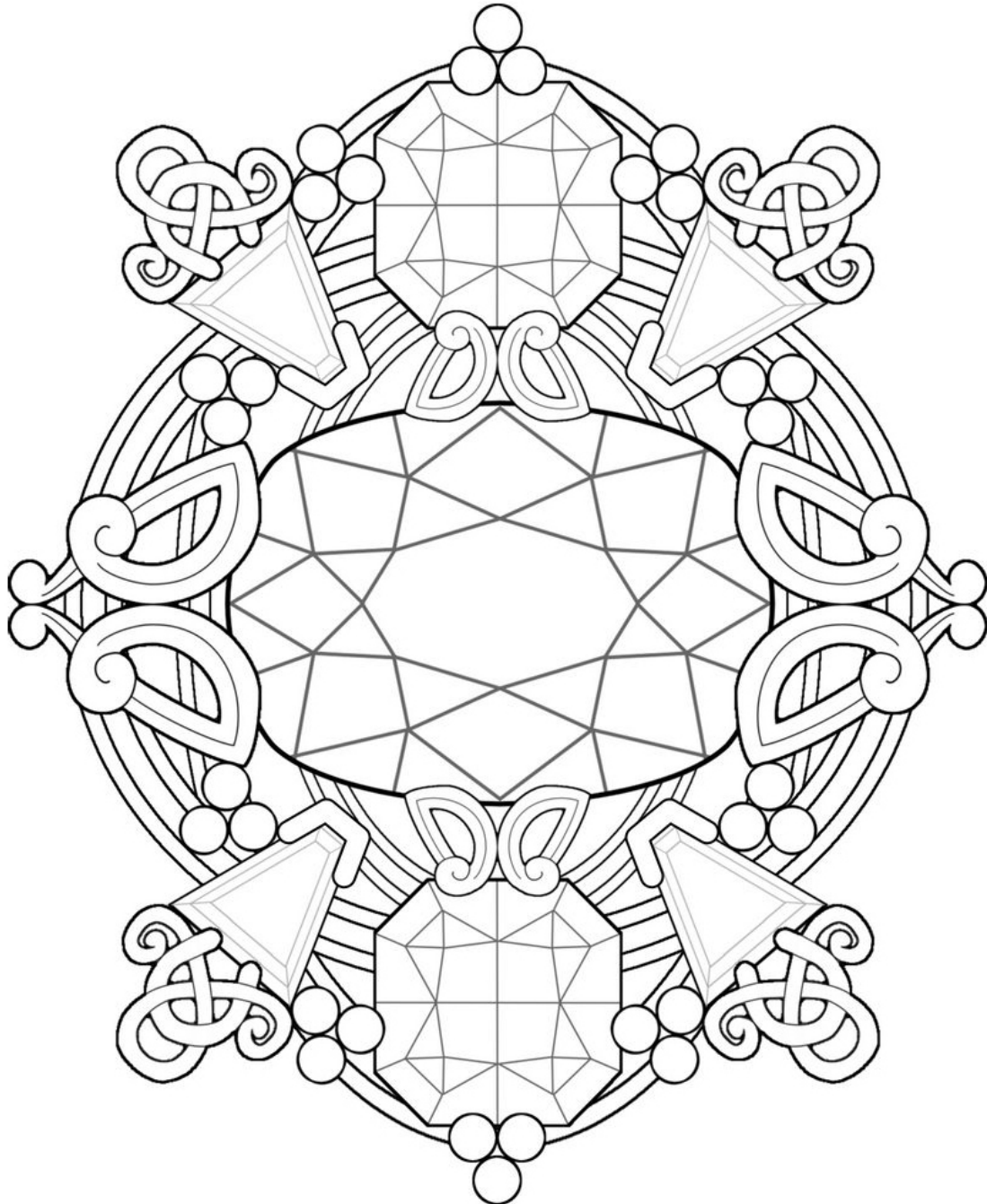
After being exposed to ultra violet light, the diamond glows a brilliant red even after the short-wave light is turned off. This eerie effect might have added to this gem's reputation for being cursed. The red glow is due to inclusions of boron and nitrogen. The diamond was tested and found to have up to 8 parts per million molecules of boron, and that is likely what makes the stone blue.



[Hope Diamond](#)
by David Bjorgen
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Calming Coloring

Often we include a trivia challenge or crossword puzzle for you to enjoy. This month we are giving you a coloring page. Many people experience a calming peaceful effect by coloring intricate drawings. If you would like to give it a try, get out your colored pencils or water colors and breathe life into this illustration.



Gift from the Board

Since Covid 19 took pretty much all our club activities away from us, the Board decided to not charge 2020 members dues for 2021.

Giving back, if you can

In lieu of membership dues and if you wish to and can, please consider making a donation in the amount of your membership fee to help our club pay bills such as building upkeep. Our club is a 501(c)(3) organization, so if you itemize deductions, you might receive a tax deduction. Ask your tax expert.



Since the silent auctions and grit sales are our only sources of income right now, donations are greatly appreciated. Checks can be made out to "MRGC" if you don't want your hand to cramp from writing the entire club name, "Maplewood Rock and Gem Club". The club address is

8802 196th Street SW
Edmonds, WA 98026

Bidding on items in the silent auction is a way to give back to the club with a win-win outcome. You get a gorgeous specimen of rock or mineral and the club has a little more money for paying bills. All the items available in the silent auction were donated, so even before you bid, people have already generously supported our club.

When bidding, remember that this is a fundraiser where you might get a huge bargain or you might pay a fair price. Don't be afraid to bid up on something you like. The previous bidder, might respond in kind to your bid.

Facebook

Our [facebook page](#) has up to date information about what is happening at our club. When we have online auctions, they happen on our page.

We also have a Facebook group — [MRGC Sales and Trades](#) — which is open to members of our club.



Board meeting

Until it is safe for the Board to meet again, their meetings are on Zoom. If you have questions for the board or if you'd like to attend a meeting, please email our Board President, Sandra: ask.sandra@yahoo.com

Washington State Mineral Council

Our club, along with many other rock and gem clubs in the state, is a member of the [Washington State Mineral Council](#).

This organization helps us by

- advocating for access to public lands
- advocating for beneficial land use policies
- compiling and sharing maps and other information
- publicizing shows and field trips so members learn about and can participate in events at other clubs

Read their latest [Newsletter](#).

Connect with us

Website: <http://www.maplewoodrockclub.com/>

Facebook page: [Maplewood Rock & Gem Club](#)

Facebook group for members: [MRGC Sales and Trades](#)

Address:

8802 196th St SW
Edmonds, Washington 98026



Sister club in Australia

Our sister club in Australia is the Atherton-Tableland Mineral & Lapidary Club in Tolga, Queensland. Connect to them on Facebook:

www.facebook.com/groups/197340266987276

One hundred million years ago the eastern edge of the Australian continent extended much farther to the east. Tectonic forces broke off and submerged into the ocean the eastern section while a rising mantle caused the remaining land to lift.

Beginning 4 million years ago large basalt flows filled river valleys and formed a relatively flat landscape. Following that period the volcanoes became more gaseous spewing lava in violent eruptions. This landscape is now called the Atherton Tablelands. You can learn more on Wikipedia.



This issue

Maplewood Rock and Gem
Club News

Volume 4

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News to share? A suggestion? A correction?

Please send news ideas and images you'd like to share to the newsletter editor, Nancy Samuels at mrgc@nancysamuels.com.