

# MINI MINERS MONTHLY

A MONTHLY PUBLICATION FOR YOUNG MINERAL COLLECTORS  
VOL. 14 NO. 3 MARCH 2022

## All Sorts of Fun!

This month we will continue our journey through silicate minerals. OK, OK, it seems like school. But stick with it and you will learn a lot about the biggest group of minerals, the group that you probably have more specimens from than any other group in the mineral world.

## Minerals Named After Women & Men

See all the people to the left here? They are people in the world of minerals and mineral collecting that have a mineral named after them. As I (Diamond Dan) sit here writing this, I'm looking at all these faces of men. Makes me think, are there minerals named after women? There are! So when I finish writing this, I'm going to add a page or two about minerals named after women.

## Some Games and Other Fun

To keep things fun here in *Mini Miners Monthly* there are a bunch of activity pages to print and enjoy. Crossword puzzle, triboluminescence, and a couple a-mazing activities (maze, get it?!)

Oh...and did you know there are signs that prove you are a mineral collecting nut?! After you discover that you are, there is another page where you can add the signs that prove YOU are a mineral collector nut.

## Mineral Shows

Diamond Dan is heading out to a mineral show this weekend. Did you know that there are more and more mineral shows happening this spring and summer? One of the best, best, best ways to learn about minerals and build your own collection is to go to as many mineral shows as you can. Buy what you can afford. But mostly look and see the amazing specimens that are out there. Learn about the different shapes and colors of minerals. You will discover what you like best. That will help you know what you want to collect.

One thing that Diamond Dan loves best about mineral shows is the moment he discovers something he never ever saw before and it just makes him say, "WOW!" He wishes for you your own "WOW!" moment this year (or a lot of them!) **You can find a list of mineral shows near you on the "Rock & Gem" magazine website.**



# Mineral Auctions.com

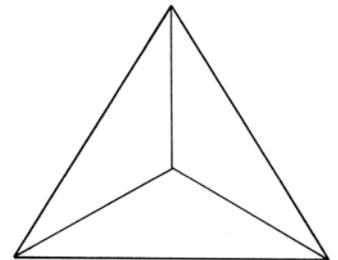
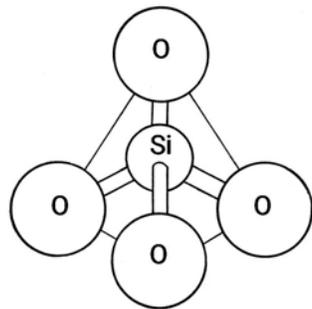


**100+ items for auction weekly starting at \$10!  
No buyer's premium, ever!**

## More Silicate Minerals

For a few months we have been learning about a big group of minerals that are called

**silicate minerals**. We took a break in December, but will now return to them, the largest group of minerals. Remember that silicate minerals are minerals that have silica molecules in their formulas. A silica molecule is made up of one silicon atom and four oxygen atoms (see the picture to the left). When put together they form a three-sided pyramid, like this picture, to the right. This pyramid has four sides (the bottom side you can't see in this picture). Because they have a total of four sides, they are called



*tetrahedra*. Get to know this word. To understand silicate minerals, you have to know how their tetrahedra connect with each other.

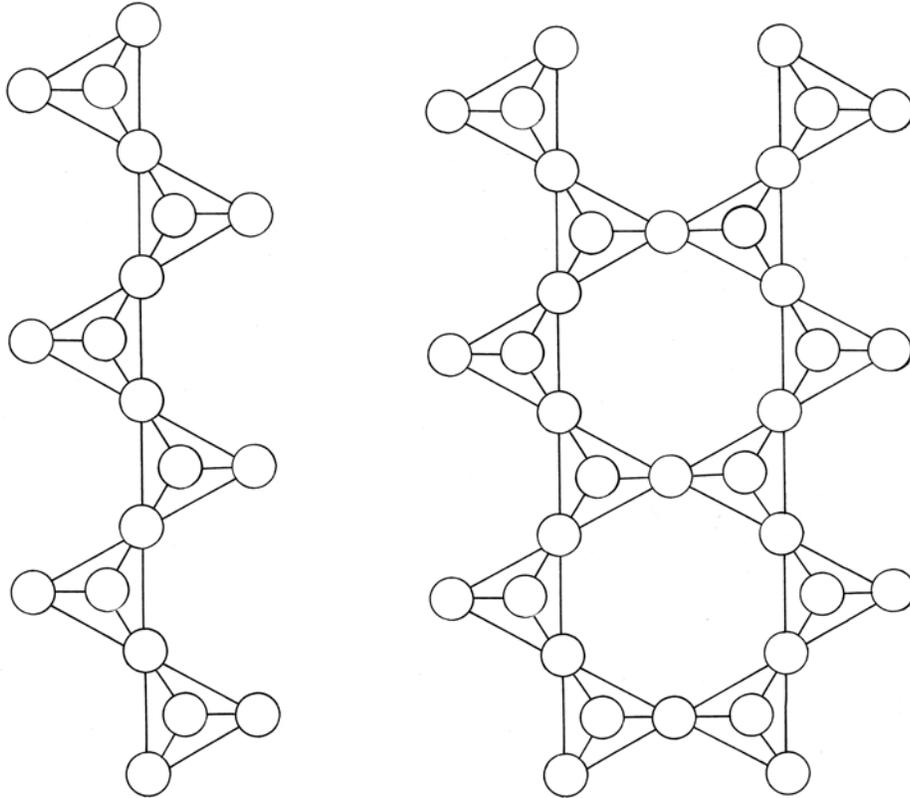
This month we're going to talk about a group of silicate minerals that are called **Inosilicates**. Back in January we discovered **cyclosilicate** minerals. They have tetrahedra (remember that a tetrahedron is like a 4-sided molecule) that attach to each other in



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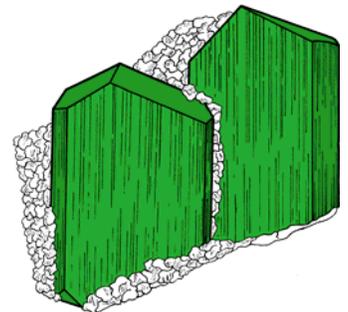
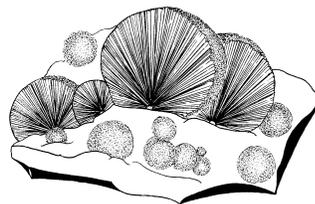
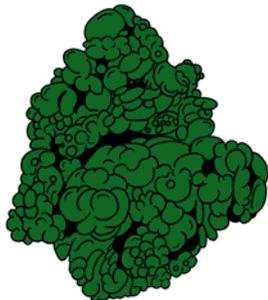
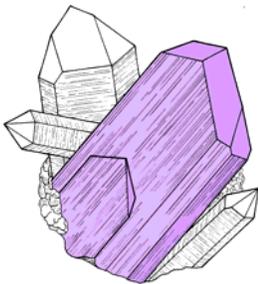
rings. Inosilicate minerals have silica tetrahedra that attach to each other in chains. Some have a single chain like the picture on the left. Some have double chains, like the picture on the right.



You can't see the silicon (Si) atoms because they are hiding behind the two oxygen atoms in the middle of each group.

The circles are oxygen atoms.

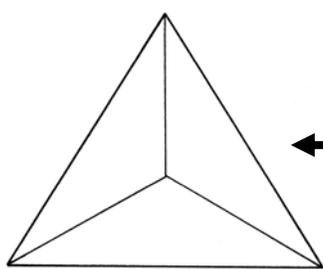
Examples of **inosilicate** minerals are neptunite, okenite, pectolite, diopside, jadeite, spodumene (kunzite and hiddenite), serandite, shattuckite, actinolite, hornblende, tremolite, astrophyllite, babingtonite, prehnite, and dozens more.



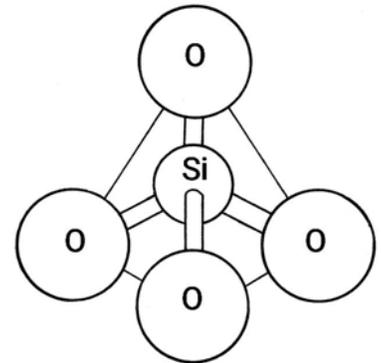
## Inosilicate Minerals: The Simple Version

There is a group of minerals called *silicate minerals*.

Silicate minerals have molecules that are made up of one silicon atom (Si) and four oxygen atoms (O).



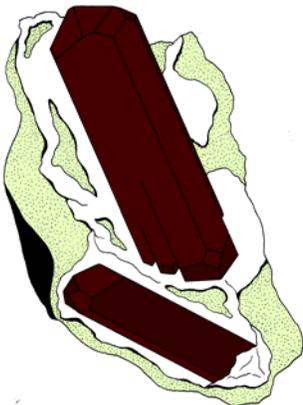
The atoms connect together in a 4-sided shape. →



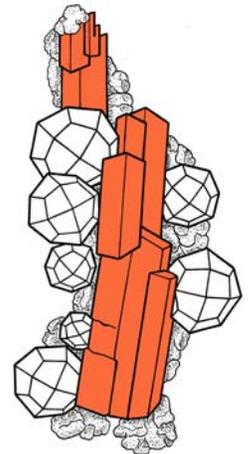
← This 4-sided shape is called a tetrahedron. The tetrahedron is the picture to the left. You can see three sides because you are looking down on it. The fourth side is underneath.

In inosilicate minerals, a number of tetrahedra attach to each other in chains. Some are single chains. Some are double chains.

There are more than 100 inosilicate minerals. But most are rare and are not found as specimens. Many are the minerals that make up rocks (rock-forming minerals) and, again, are important in geology but don't make for attractive mineral specimens. On the other hand, some of the best-known and most popular minerals (and gemstones) are inosilicates. Some of the best known inosilicate specimen minerals are...



neptunite (left), okenite, pectolite, diopside, jadeite, spodumene (kunzite and hiddenite), serandite (right), shattuckite, actinolite, hornblende, tremolite, astrophyllite, babingtonite.



## Mineral of the Month

# Hornblende

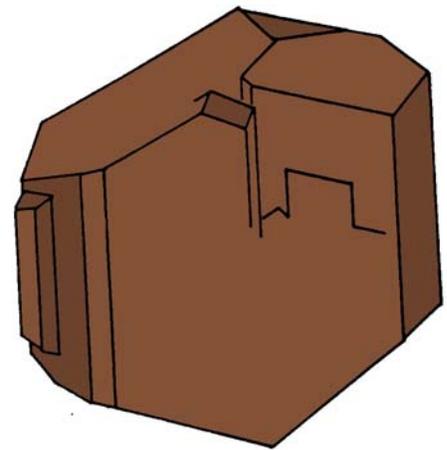
The name “hornblende” is an old German name that many years ago was used for any dark minerals that form as crystals and occur with ore minerals. “Blende” means “deceiver” because it is found with ore minerals, but is not an ore mineral itself. “Horn” may refer to the shape of some specimens that may have looked like horns (or at least the miners thought they did many years ago).

Hornblende is one of a group of very important rock-forming minerals in igneous and metamorphic rocks that is called the **amphibole group**. Amphibole minerals contain iron, magnesium and aluminum. They break (cleave) in two directions and when they break, they form an angle that is very specific: 56 degrees and 124 degrees (that together add up to 180 degrees).

Hornblende, like most amphibole minerals, is dark - usually very dark brown to black or very dark green.

For those of us who love and collect mineral specimens, hornblende is found in nice crystals. They are not the prettiest crystals in the mineral world, but they are well-formed and very interesting.

Hornblende doesn't have any uses, except as a specimen for mineral collectors. There is a rock type called “amphibolite” that includes a lot of hornblende. This rock is crushed up and used in road construction and can be cut and polished for use in buildings.



**Color:** Brown, Green, Black **Luster:** Vitreous to dull;  
**Hardness:** 5-6; **Specific Gravity:** 2.9; **Streak:** Gray-white;  
**Cleavage:** at 56 and 124 degrees  
**Crystal System:** Monoclinic;  
**Chemical Formula:**  $\text{Ca}_2(\text{Mg,Fe,Al})_5(\text{Al,Si})_8\text{O}_{22}(\text{OH})_2$



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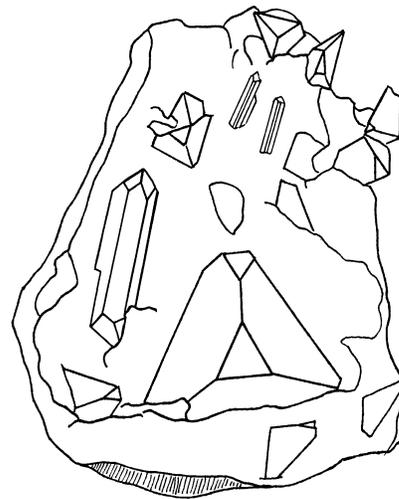
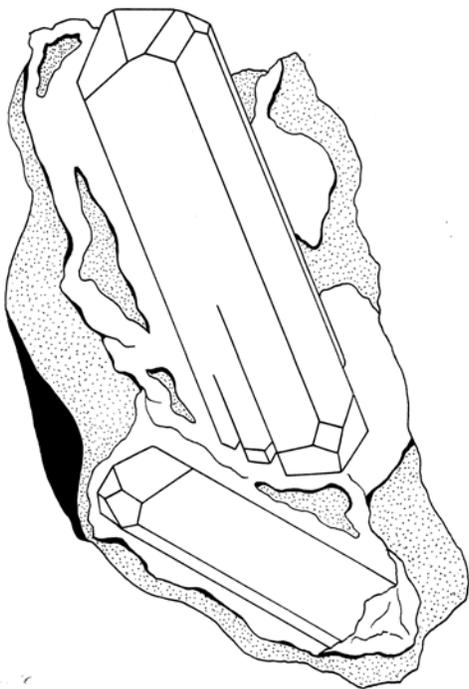
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## Neptunite

Neptunite is a rare mineral. It's most famous occurrence is with the beautiful blue benitoite crystals in San Benito County, California. The benitoite and neptunite are found together in massive, bright white natrolite. The neptunite looks black. But if you put an edge of a broken crystal up to the light, you will see that it is actually deep red. The light will pass through very thin pieces of neptunite and show its real color.

The name, neptunite, has an interesting history. Neptunite is often found with the mineral, aegerine. Aegerine is named after the Scandinavian sea god, Aegir. So, neptunite was named after the Roman sea god, Neptune.

The best neptunite crystals are found near the San Benito River, in San Benito Co., California. They are found elsewhere, like the Kola Peninsula in Russia and Mont Saint Hilaire in Quebec, Canada, but the crystals from these localities are not as nice as the ones found in California.



**Color:** Deep red to black

**Luster:** Vitreous; **Hardness:** 5-6; **Specific Gravity:** 3.3;

**Streak:** Dark Brown; **Fracture:** Conchoidal (shell-like);

**Crystal System:** Monoclinic; **Chemical Formula:**

$\text{KNa}_2\text{Li}(\text{Mn}, \text{Fe}^{2+})_2\text{Ti}_2\text{Si}_8\text{O}_{24}$



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## Jadeite

Jadeite is a mineral that is part of a group of minerals called the pyroxene minerals. It is very hard and very heavy. It can occur in many different colors, but it is mostly found in shades of green and white. All jadeite is formed where the edges of two continents or plates push together and one is pushed under the other (geologists call this a *subduction zone*). Jadeite, then, is a metamorphic rock that forms at very high pressures and relatively low temperatures.

High-quality jadeite is the most valuable form of jade. It can be carved into any form to make decorative items. It also can be polished to a very glassy, shiny polish. There is evidence that jade has been used and prized by humans for thousands of years.

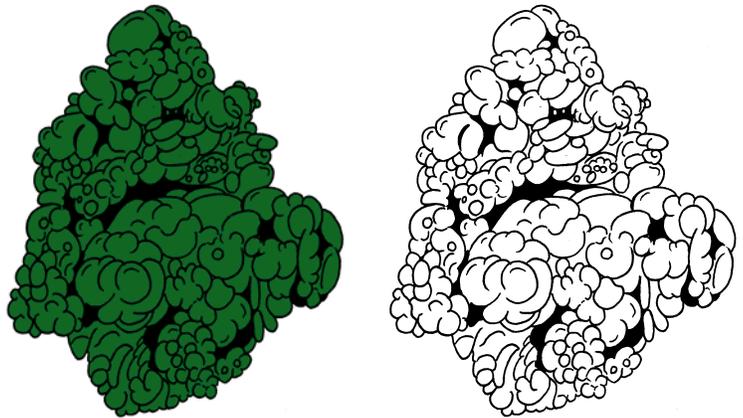
Jadeite was used by Stone Age people to make tools for daily work (hammers, grinding stones, axes, etc.) and weapons (like clubs and spear heads). Chinese culture has made beautiful jade carvings, small to very large, for thousands of years.

The name “jade” is thought to be from the phrase *piedra de yjada* which means *stone of the side*, because it was believed to be a remedy for kidney problems.

### Special Fact

The other mineral that is called “jade” is **nephrite**. Just like jadeite, nephrite has been used since the days of the earliest humans to make tools for daily living as well as weapons for hunting.

Like jadeite, nephrite can be carved and polished to make jewelry and ornamental carvings. They are both beautiful and very valuable.



**Color:** White, Sapphire-blue, colorless, rarely pink;  
**Luster:** Vitreous; **Hardness:** 6 - 6.5;  
**Specific Gravity:** 3.65; **Streak:** None; **Cleavage:** None  
**Crystal System:** Hexagonal;  
**Chemical Formula:** BaTi(Si<sub>3</sub>O<sub>9</sub>)



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## Spodumene

The name “spodumene” comes from the Greek word *spodoumenos* which means *something reduced to ashes*, because the color of common spodumene is ashy gray-white. Gem varieties of spodumene are very popular with mineral collectors - and gemologists!

One of the largest mineral crystals ever discovered was a spodumene crystal in South Dakota in the Etta Pegmatite Mine. One spodumene crystal removed from the mine was 47 feet long and 3 feet wide.

Spodumene is an important mineral. It is an important source of the element, lithium (Li). It is also used to make ceramics, it is used in cellular phones, and is used in some medicines.

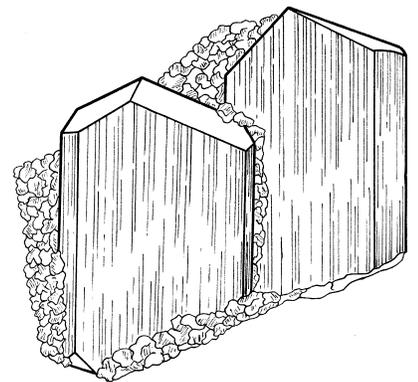
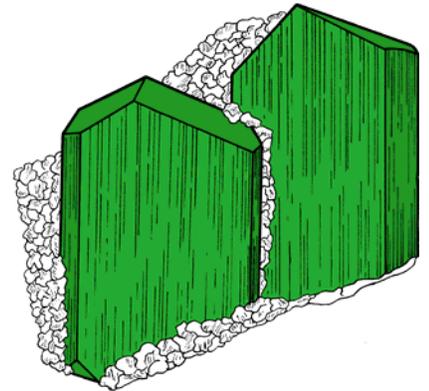
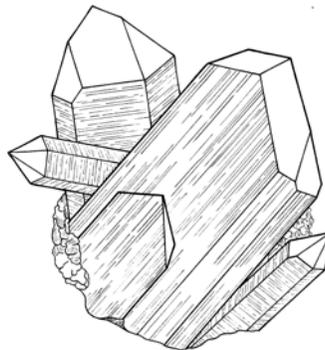
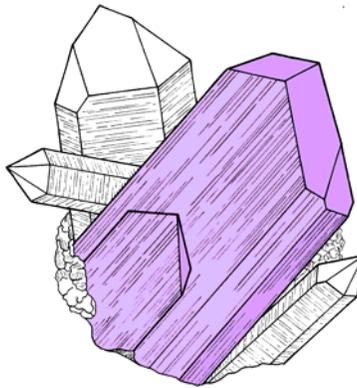
**Color:** white, gray-white, green, lavender; **Luster:** Vitreous;  
**Hardness:** 6 1/2 - 7; **Specific Gravity:** 3.03–3.23;  
**Streak:** Colorless; **Cleavage:** Perfect in two directions;  
**Crystal System:** Monoclinic;  
**Chemical Formula:**  $\text{LiAl}(\text{SiO}_3)_2$

### Gem-Quality Spodumene

Spodumene can be found in gem-quality crystals.

The pink to light purple variety of spodumene is called **kunzite**. High-quality crystals have a strong pink to light purple color and are as clear as glass.

The light to dark green variety of spodumene is called **hiddenite**.



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## Serandite

According to the mineral website, MinDat.org, serandite was named “after J.M. Serand, lighthouse keeper of the Island of Rouma, Guinea, who assisted collecting the mineral and who coincidentally had a rosey pink complexion.”

Serandite has been found in many localities around the world, including Australia, Brazil, Canada, Italy, Namibia, Russia and the United States, to name a few. However, some of the best serandite crystals (and the most popular for mineral collectors) are the specimens from Mount St. Hilaire, Quebec, Canada. The specimen below is from this locality.

Serandite does not have any important uses, except that its beautiful crystals are a great addition to any mineral collection!

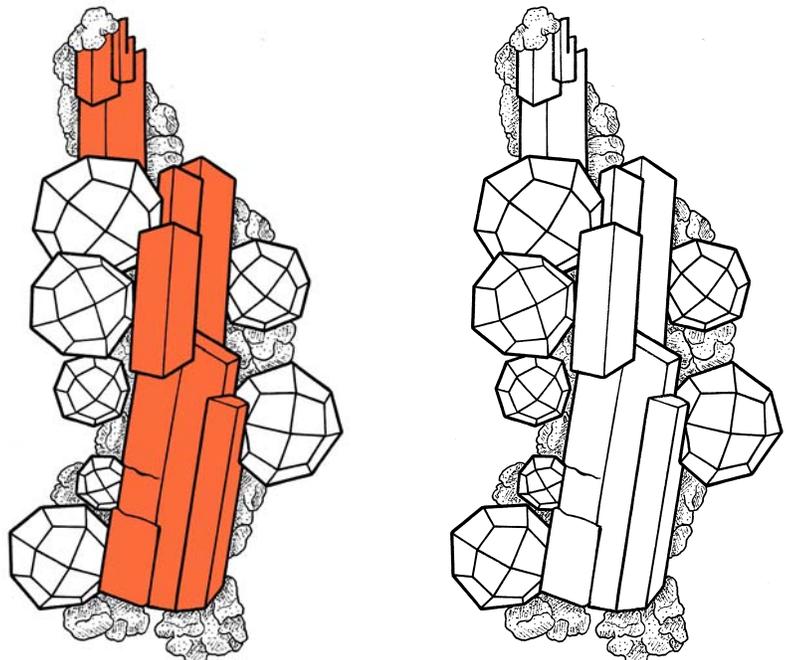
**Color:** Salmon-pink to orange; **Luster:** Vitreous;  
**Hardness:** 5 - 5.5; **Specific Gravity:** 3.4; **Streak:** White;  
**Cleavage:** Perfect in two directions;  
**Crystal System:** Triclinic;  
**Chemical Formula:**  $\text{NaMn}^{2+}_2\text{Si}_3\text{O}_8(\text{OH})$

### Some Chemistry

Serandite and pectolite belong to the same series of minerals. On one end of the group is pectolite which has sodium and calcium in its crystals. On the other end is serandite which has calcium and manganese in its crystals.

This is what mineralogists call a “solid solutions series.” It means that most minerals in this group or series have a chemistry that is a mix - they have manganese and sodium in their crystals.

Sounds confusing, but it’s not once you learn the words.



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## Shattuckite

Shattuckite was named after the Shattuck mine in Bisbee, Arizona, where it was first discovered. It was discovered in 1915. It is a copper mineral - its blue color gives that away. It is fairly rare because it is a copper silicate mineral (most copper minerals are carbonate minerals like azurite and malachite, or oxide minerals like cuprite). It usually forms as masses or small, needle-like crystals growing together.

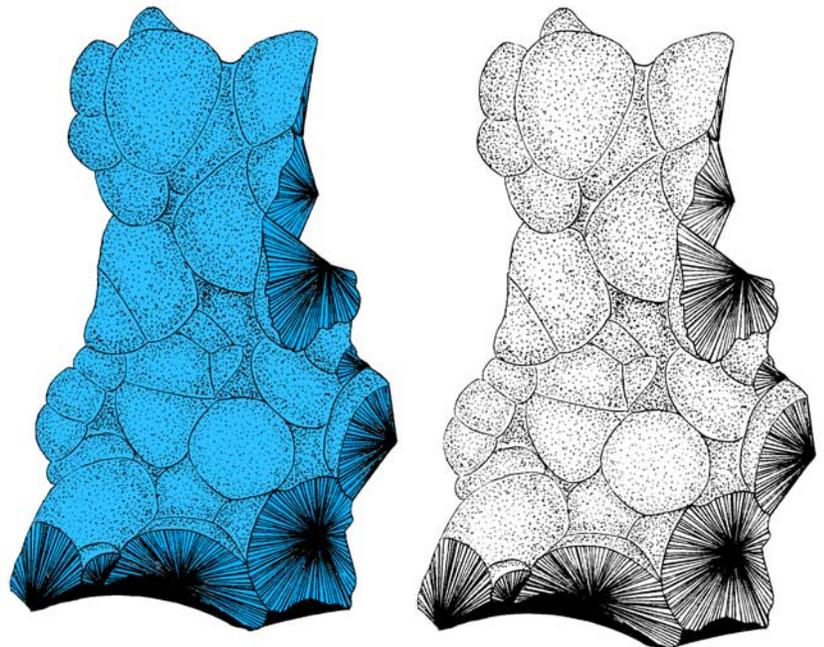
At the Shattuck mine, shattuckite occurs as a **pseudomorph** after malachite. What does this mean? “Pseudomorph” means “false form.” A mineral pseudomorph is a specimen that has the shape of one mineral but has the chemical formula of another. So, at the Shattuck mine, some of the shattuckite specimens have the form of malachite but the chemical formula of shattuckite.

**Color:** Dark and light blue; **Luster:** Dull to silky;  
**Hardness:** 3.5; **Specific Gravity:** 4.1; **Streak:** Light blue;  
**Cleavage:** Perfect in two directions;  
**Crystal System:** Orthorhombic;  
**Chemical Formula:**  $\text{Cu}_5(\text{SiO}_3)_4(\text{OH})_2$

### Here's a fun fact... Type Locality

The “type locality” of a mineral is the place where a mineral was first discovered and was later identified as being a mineral that had not been identified before.

Shattuckite is named after the Shattuck mine, where it was first discovered. the Shattuck mine was named after one of its owners, Lemuel Coover Shattuck.



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## Pectolite

Remember from the serandite page that serandite and pectolite are like mineral cousins: they have very similar chemical formulas, but not exactly the same. Serandite forms nice, large crystals. Pectolite forms as balls of needle-like crystals that grow out from a center. This is called *radial growth*.

The name “pectolite” comes from named from two Greek words: *pektos* which means *compacted* and *lithos* which means *stone*. This is because massive pectolite is very hard and very difficult to break into smaller pieces.

There is a gemstone variety of pectolite that is light blue. It is known as *larimar*, which is not a mineral variety name. It is a name used in the jewelry and gemology businesses.

**Color:** colorless, white, pink, pale blue; **Luster:** Silky;  
**Hardness:** 4.5 - 5; **Specific Gravity:** 2.9; **Streak:** White;  
**Cleavage:** Perfect in two directions;  
**Crystal System:** Triclinic;  
**Chemical Formula:**  $\text{NaCa}_2\text{Si}_3\text{O}_8(\text{OH})$

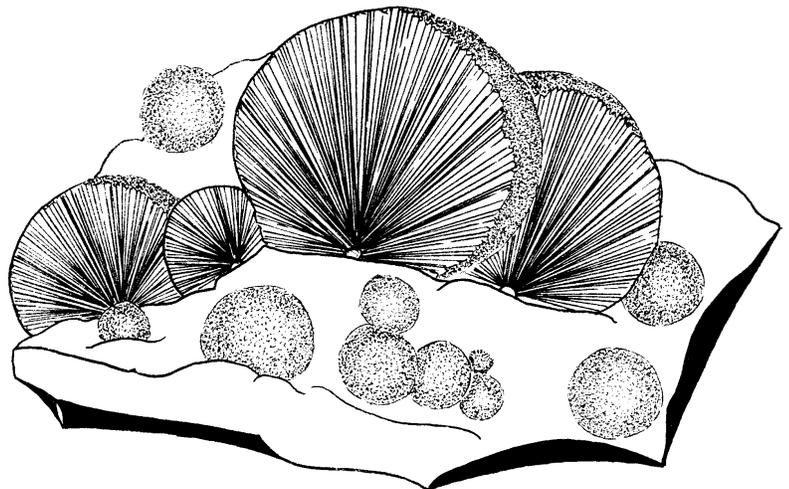
### Some Chemistry

(A repeat from the serandite page)

Serandite and pectolite belong to the same series of minerals. On one end of the group is pectolite which has sodium and calcium in its crystals. On the other end is serandite which has calcium and manganese in its crystals.

This is what mineralogists call a “solid solutions series.” It means that most minerals in this group or series have a chemistry that is a mix - they have manganese and sodium in their crystals.

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## Babingtonite



Babingtonite was named in honor of Dr. William Babington (1757-1833). He was an Irish doctor and mineralogist. He wrote books about mineralogy. He was also a member of the Geological Society of London - and its President for two years. This is his picture to the left (public domain).

Its crystals are dark black and glassy and usually small. In recent years, however, very large babingtonite crystals have been found in China. Babingtonite is the official mineral of the Commonwealth of Massachusetts.

Later in this issue you will find a list of minerals that were named after people. Use the internet to find two facts about each person.

### Magnetism

There are a few minerals that are magnetic.

Babingtonite has two different types of iron in its crystal structure. Chemists refer to them as Fe<sup>2+</sup> and Fe<sup>3+</sup>. Because of this babingtonite is magnetic. It isn't strong magnetism, but it does exist.

The mineral magnetite is very magnetic.

Pyrrhotite is also magnetic, but not strongly so.

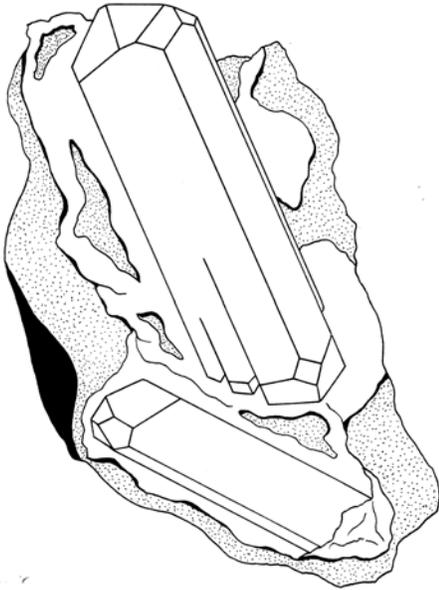
**Color:** Dark green to black; **Luster:** Vitreous;  
**Hardness:** 5.5 - 6; **Specific Gravity:** 3.3; **Streak:** black;  
**Cleavage:** Perfect in one direction, good in two;  
**Crystal System:** Triclinic;  
**Chemical Formula:** Ca<sub>2</sub>(Fe,Mn)FeSi<sub>5</sub>O<sub>14</sub>(OH)



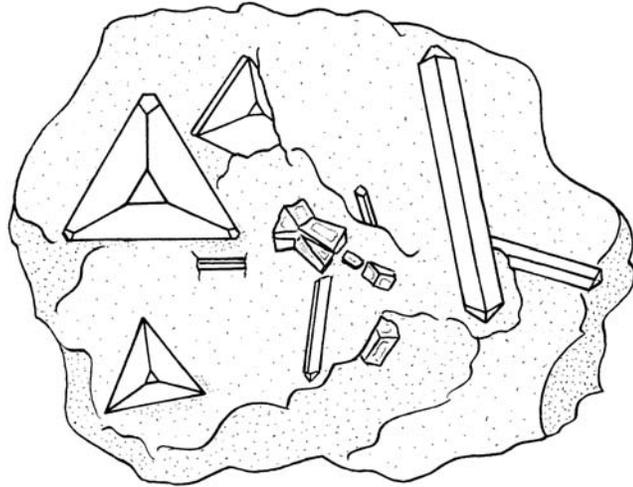
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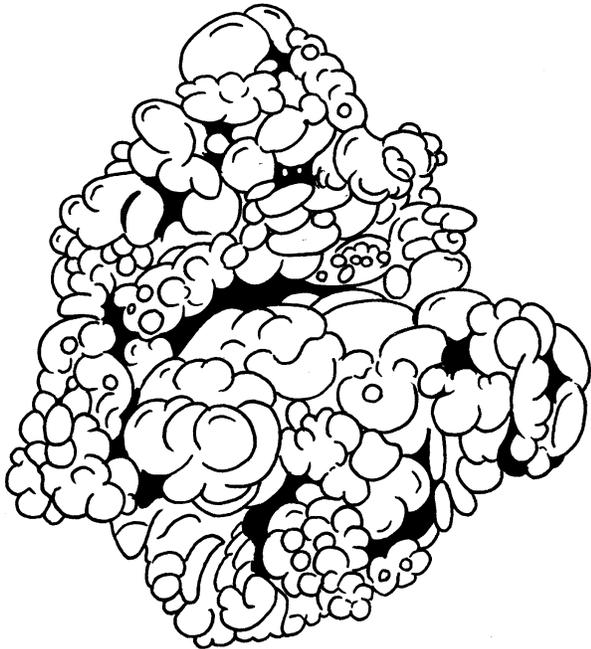
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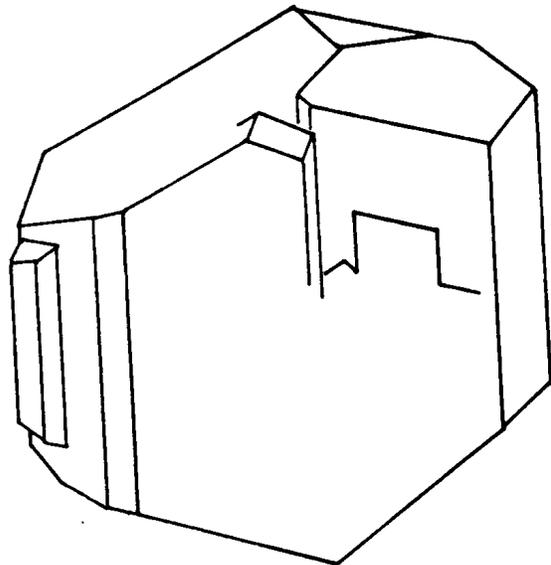
Deep red Neptunite



Light blue Benitoite with  
Deep red Neptunite



Green Jadeite

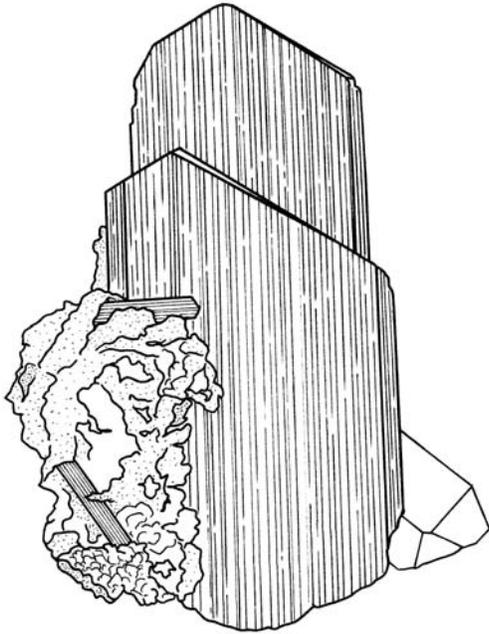


Dark brown Hornblende

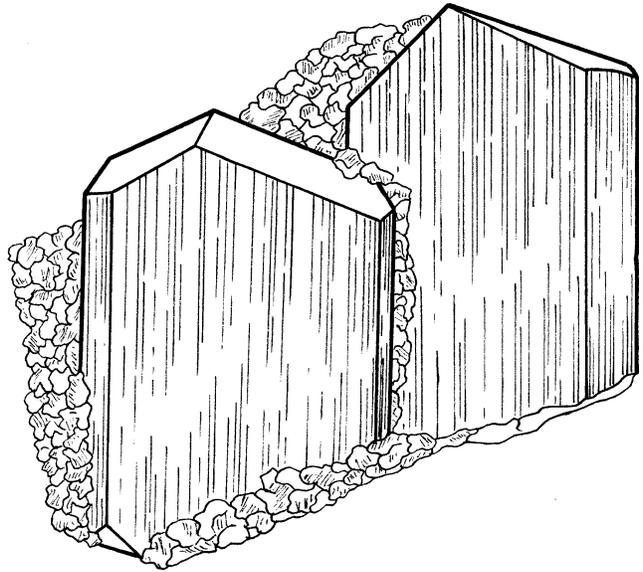
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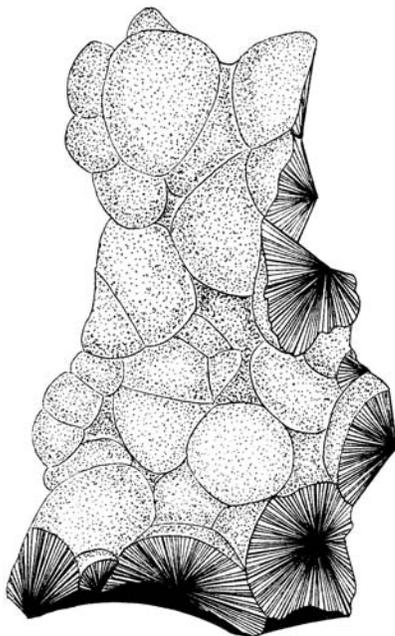
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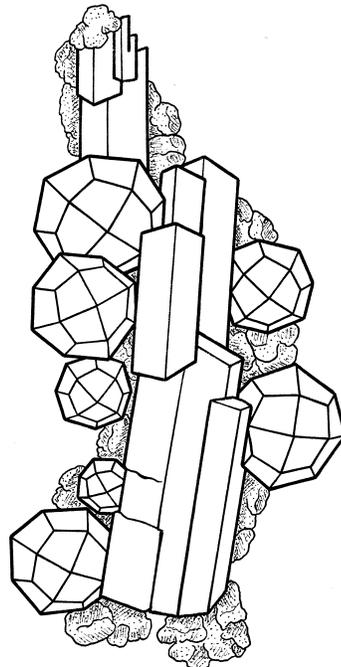
Light purple Kunzite  
(spodumene)



Grass-green Hiddenite  
(spodumene)



Powder blue Shattuckite



Orange Serandite

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## Minerals Named After People

Here are some mineral names and pictures of the people they are named after. Draw a line from the name to the picture. The solutions are at the end of this issue. How do you figure out who is who? Use the internet! On the MinDat.org website, use the search feature to search for the mineral. The history of the mineral's name is on the page that comes up. Fill in the next page.



Morganite

Kunzite

Wardite

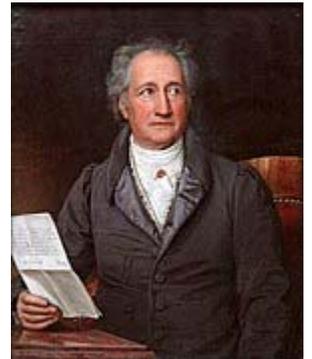
Goethite

Brucite

Smithsonite

Bornite

Danalite



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## Minerals Named After People

Morganite is named after \_\_\_\_\_.

Fact 1: \_\_\_\_\_

Fact 2: \_\_\_\_\_

Kunzite is named after \_\_\_\_\_.

Fact 1: \_\_\_\_\_

Fact 2: \_\_\_\_\_

Wardite is named after \_\_\_\_\_.

Fact 1: \_\_\_\_\_

Fact 2: \_\_\_\_\_

Goethite is named after \_\_\_\_\_.

Fact 1: \_\_\_\_\_

Fact 2: \_\_\_\_\_

Brucite is named after \_\_\_\_\_.

Fact 1: \_\_\_\_\_

Fact 2: \_\_\_\_\_

Smithsonite is named after \_\_\_\_\_.

Fact 1: \_\_\_\_\_

Fact 2: \_\_\_\_\_

Bornite is named after \_\_\_\_\_.

Fact 1: \_\_\_\_\_

Fact 2: \_\_\_\_\_

Danalite is named after \_\_\_\_\_.

Fact 1: \_\_\_\_\_

Fact 2: \_\_\_\_\_

16



# Minerals Named After Women

Almost 100 minerals have been named after women. Some were mineral collectors. Others were scientists. Others were wives of scientists. Listed below are a number of minerals that were named after women.

Use this website (<http://www.webmineral.com/help/NameOrigin.shtml>) and discover more about the women behind these mineral names. Match these names on the left with the accurate fact about the woman after whom the mineral was named on the right.

Rosemaryite  
Lindbergite  
Sklodowskite  
Caresite  
Sophiite  
Marialite  
Mcnearite  
Rondorfite  
Olgite

Russian Mineralogist  
The discoverer of the element radium  
A distinguished mineral collector. Her husband was Eugene.  
Wife of Professor Peter Wyllie  
A Russian volcanologist and mineralogist  
A United States Geological Survey Scientist  
A mineral collector and dealer from Sudbury, Mass.  
Her full name was Maria Rosa von Rath



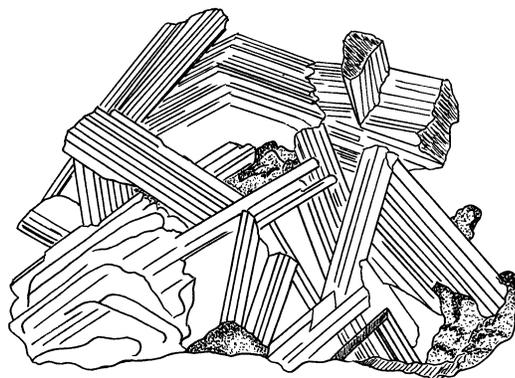
Two minerals were named after Marie Curie-Sklodowska (1867-1934), sklodowskite and curite (named after Marie and her husband, Pierre). The mineral cuprosklodowskite was originally thought to be a copper-bearing version of sklodowskite and so its name bears Marie's name.

Pierre and Marie Curie discovered the element *radium*.

*Left: Marie Curie-Sklodowska (public domain)*

The deep green mineral called *szenicsite* was discovered in Chile by Terry and Marissa Szenics. This mineral named was officially approved in 1994. The Szenics are American mineral collectors and mineral dealers. Szenicsite contains the elements copper and molybdenum. Marissa Szenics was born in 1950.

*Right: A specimen of Szenicsite.*



# DESIGN & NAME MY OWN MINERAL

## Minerals are named after...

People - example: Kunzite is named after George. F. Kunz

Places (usually a place where a mineral is discovered) - example: Benitoite is named after San Benito County, California, where it was discovered.

A physical property of the mineral - example: Barite is named from a Greek word, baros, which means "heavy" because barite specimens are heavier than other minerals of the same size.

Their chemical formula - example: Vanadinite is named after the element vanadium which is in its chemical formula.

Most mineral names end with **-ite**.

Some mineral names end with **-lite**.

Here is my drawing of my own mineral

The name of my mineral is

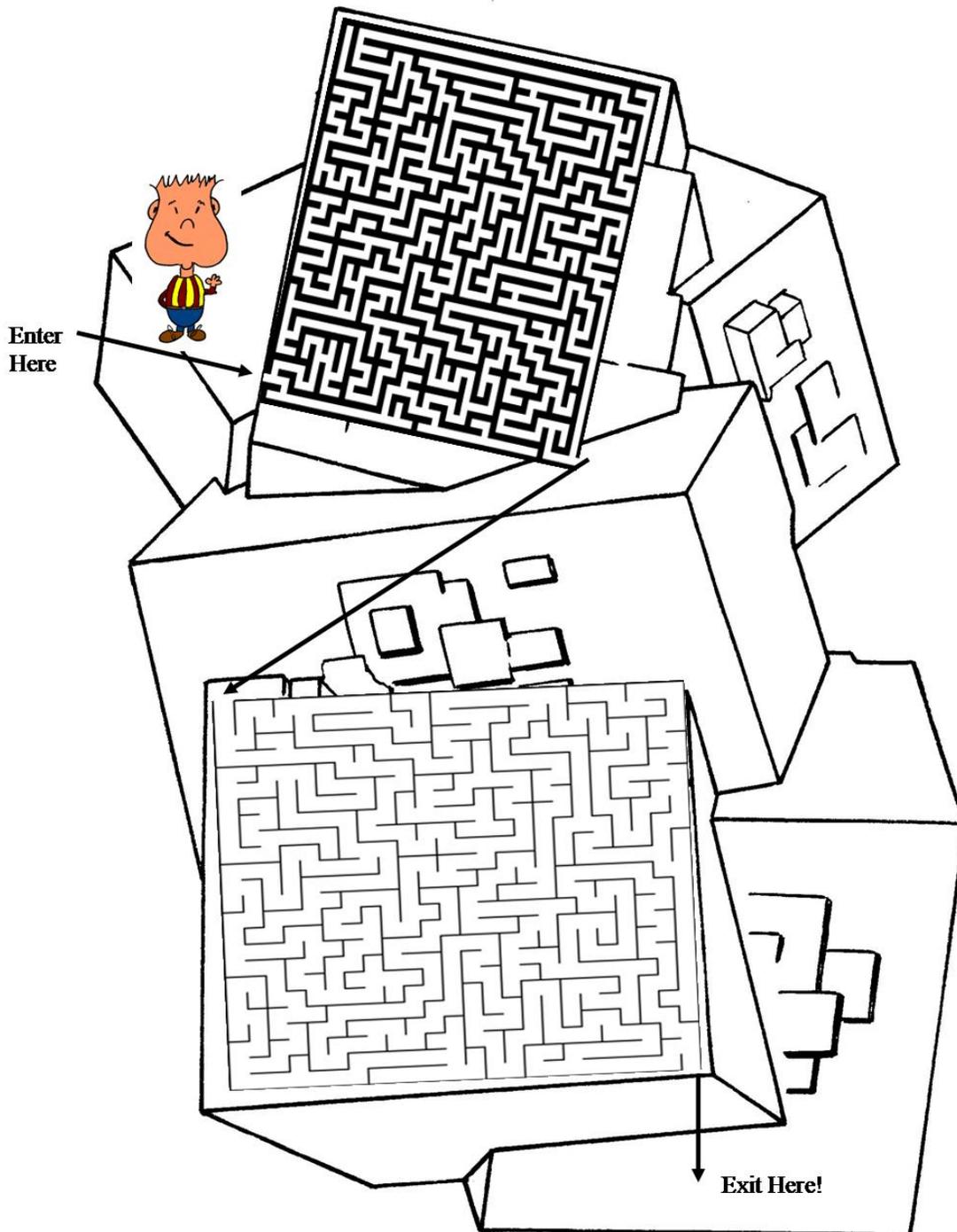
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# MINI MINERS MONTHLY

A MONTHLY PUBLICATION FOR YOUNG MINERAL COLLECTORS  
VOL. 14 NO. 3 MARCH 2022

## A-Mineral-Mazing

Can you help Mini Miner Mike find his way through the fluorite mazes?



# The Path to Mineral Treasures

Diamond Dan is searching for mineral treasure. Only one path will lead to the mineral treasure. Figure out which path to follow that actually leads to the treasure and write the name of the mineral on the line below. It's a type of quartz, but which type?

1

2

3

4

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

4 \_\_\_\_\_

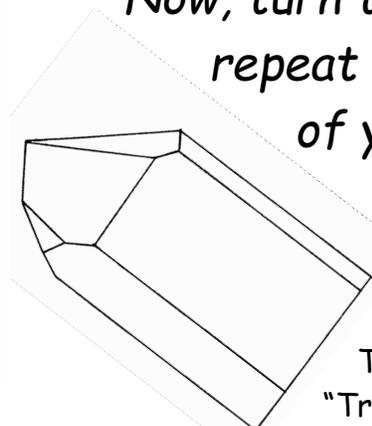
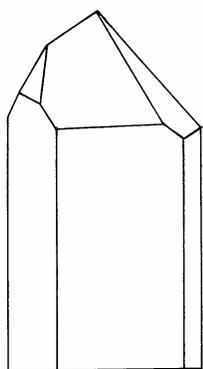


# Triboluminescence

**This activity is really, really cool - and it works!**

**What you need:** Two clear quartz crystals. You don't want to use really nice, collector-quality crystals. Get two average, "I don't care if I damage them" crystals because, well, you are going to damage them.

**What to do:** Hold the edge or termination of one crystal on the face of the second crystal. Push the two crystals together as hard as you can. While still pushing them together, rub the first crystal across the face of the second crystal. You probably won't see anything with the lights off, so . . .



*Now, turn the lights off in your room and repeat the steps. You will see a flash of yellow light inside the second quartz crystal!*

## What is happening here?

This is a special property called "Triboluminescence." "Luminescence" means "light."

"Tribo-" means "to rub." So, this is light created by rubbing, in this case, one crystal against another. Scientists really don't know why this works. It could have something to do with the pulling apart of electrical charges that quickly reconnect.

## More Fun with Triboluminescence

You can create a flash of light with a wintergreen Life-saver™ candy. This only works for wintergreen, though. Put one in a plastic bag and squeeze it quickly with a pair of pliers. You will create a flash of light. This also works if you bite down on the candy really hard and fast with your mouth open, in the dark. But then, only your friends will see the light!

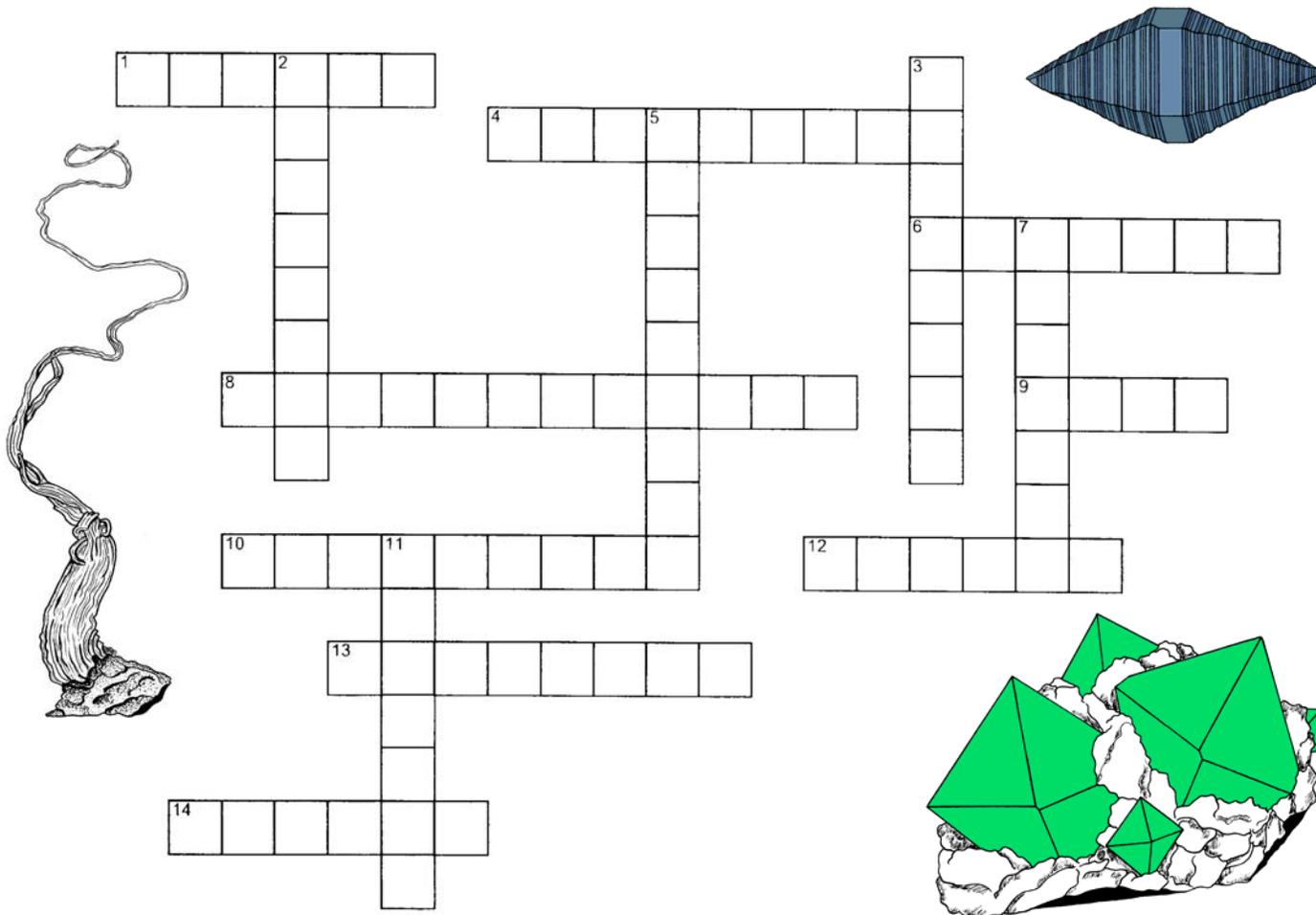


if



# What's in a Name?

Minerals are named after their special properties. Can you give the names of the minerals described in this crossword puzzle?



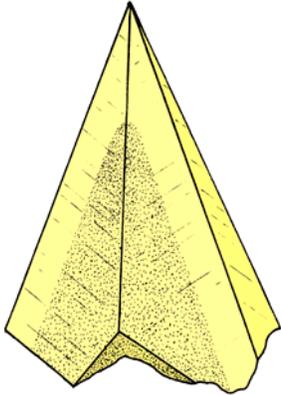
## ACROSS

1. Named after the Greek word "gypsos" which means "plaster."
4. A copper mineral named after "moloche" which is a Greek word for the Mallow plant.
6. This mineral is named from the Greek word "apatan" which means "to deceive."
8. The name of a mineral from the country of Brazil where it was first discovered.
9. A very hard red mineral named from the Latin word "rubeus" meaning "red."
10. The mineral named after Muscovy, an old name for the old country of Russia.
12. This mineral was named from the Latin word "granatum" which means "a pomegranate."
13. This mineral was named from the Latin word "fluere" which means "to flow."
14. The exact origins of this mineral's name are not really known. It may have been named from an Old Saxon phrase "querk-lufterz" which means "cross-vein ore." It is first found in German writings as "querz."

## DOWN

2. The mineral named from the Greek word "sappheiros" meaning "blue stone." This is a very hard blue mineral.
3. An iron ore mineral named after the Greek word "haimatites" which means "blood stone" because the powdered form of this mineral is always dark, blood-red.
5. This mineral was named after Aragon, a region of Spain, a famous locality.
7. A copper mineral named after its azure-blue color.
11. A very common, fairly soft mineral named after the Latin word "calx" which means "burnt lime."

# Top Signs You are a Mineral Collector



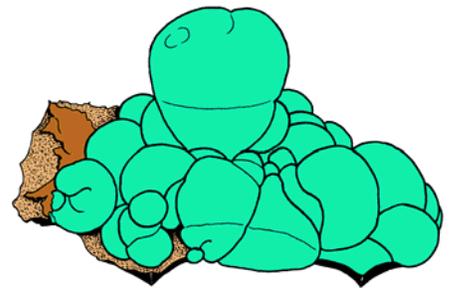
Your Yahoo password is wulfenite, your gmail password is malachite and your Facebook password is corundum.

You know the chemical formula for cavansite.

Words like "dodecahedral" and "jolly balance" actually make sense.

"Matrix" is not a movie title to you.

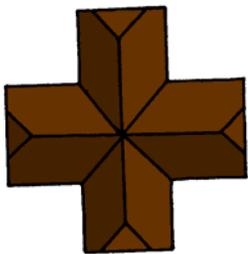
Your room is so full of specimens that you have to move your clothes in the garage.  
Your garage is so full of specimens you have to move your clothes to the shed.  
Your shed is so full of specimens . . . well, you get the idea.



You can find places like Tucson, Tsumeb and D'Alnegorsk on a world map.

You will pay \$100 for a wulfenite specimen but you won't pay \$25 for lunch.

Your vacation is a waste of time if you don't come home with at least one specimen.



Your girlfriend is named Crystal or  
Your boyfriend is named Rocky.

You hope to get amethyst, apatite, and pyrite when you go out trick-or-treating.

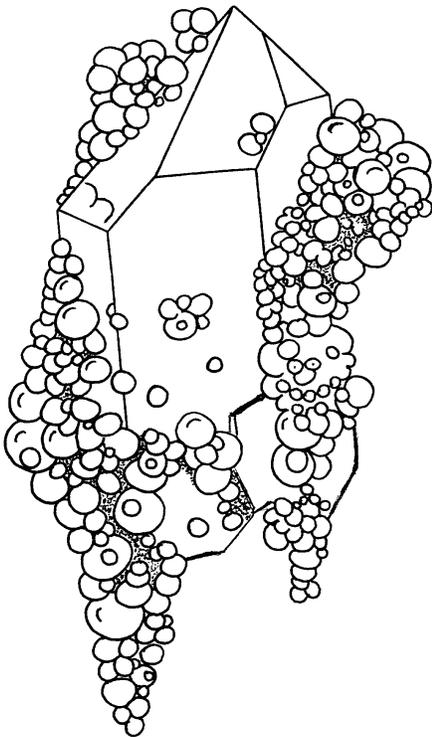
You know more than 10 mineral dealers by name . . . and they know your name, too.

You are disappointed to discover "The Phantom of the Opera" is not about crystals.

# Top 10 Signs that I am a Mineral Collector

Now it's your turn. What are the signs that you are crazy about mineral collecting?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_



## A Mineral Picture To Color

### Turgite on Quartz

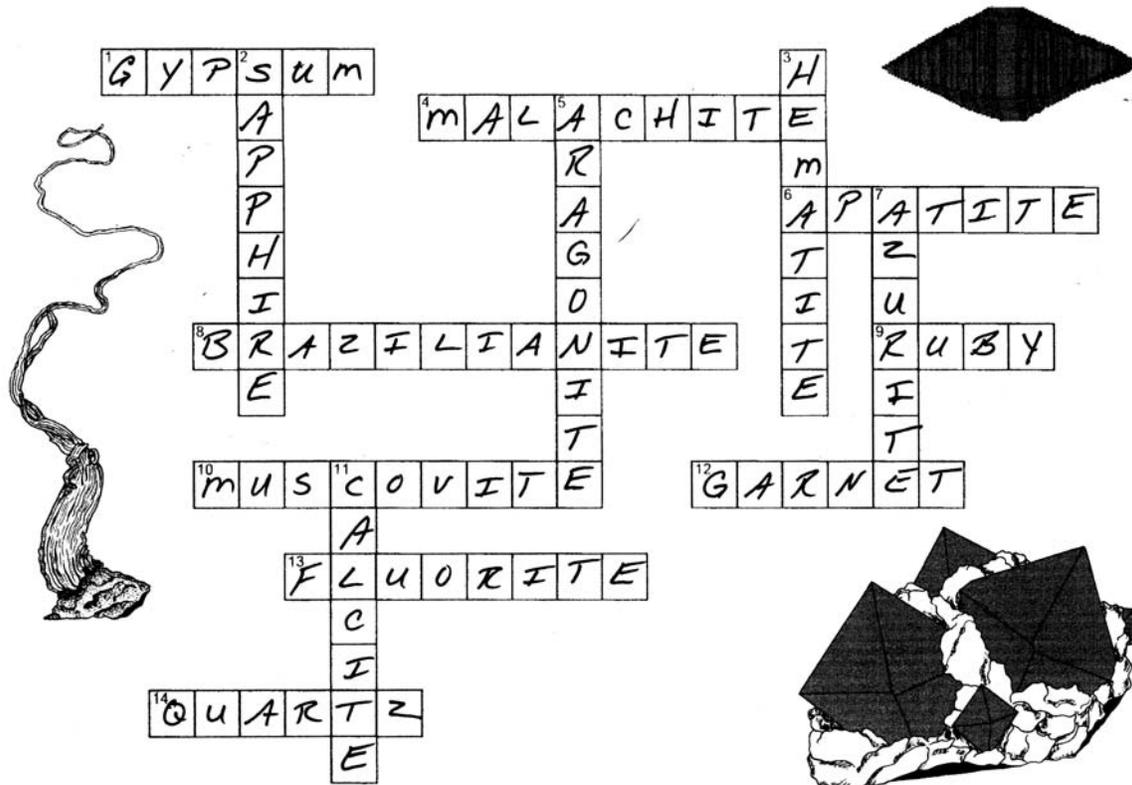
*“Turgite” is the name given to hematite or goethite that has iridescent coloring. Iridescent coloring is a mixture of blue, green, red, and purple, all mixed throughout the specimen. The color of turgite has sometimes been described as “rainbow coloring.” It is the same as the colors you see when there is a thin layer of oil on a puddle of water. Even the surface of this quartz crystal is covered with turgite. Pull out your red, purple, green and blue pencils or crayons and spread the colors all over the specimen. Have fun!*

# MINI MINERS MONTHLY

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 VOL. 14 NO. 1

JANUARY 2022

## Crossword Puzzle Solution



## Path to Mineral Treasures Solution

1. Amethyst
2. Citrine
3. Smoky
4. Rose

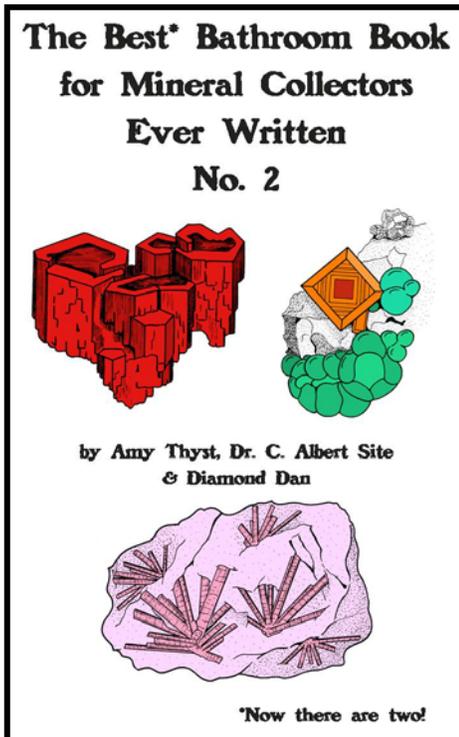
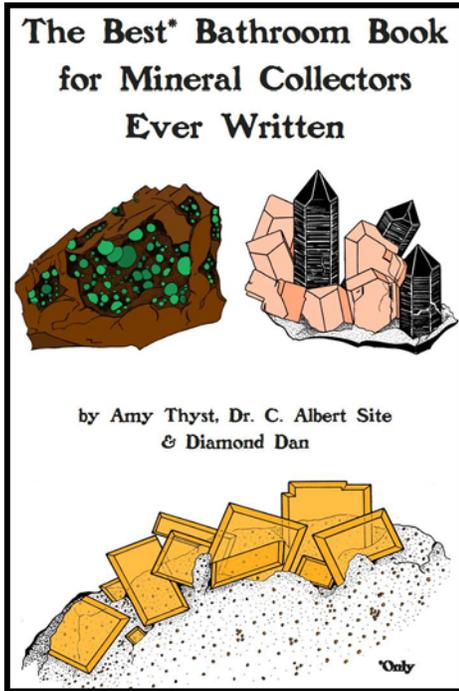
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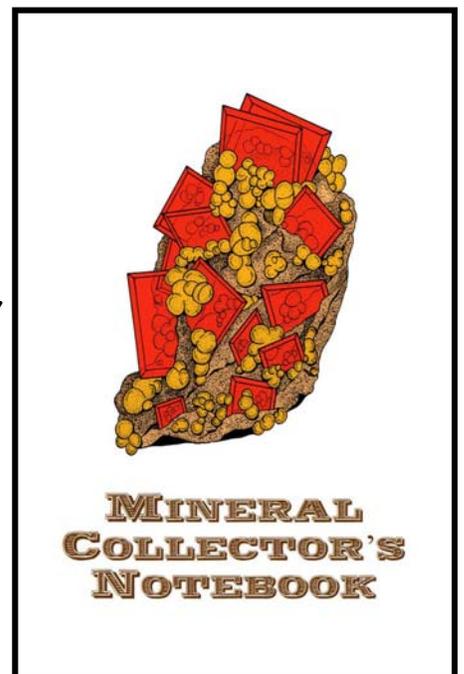


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