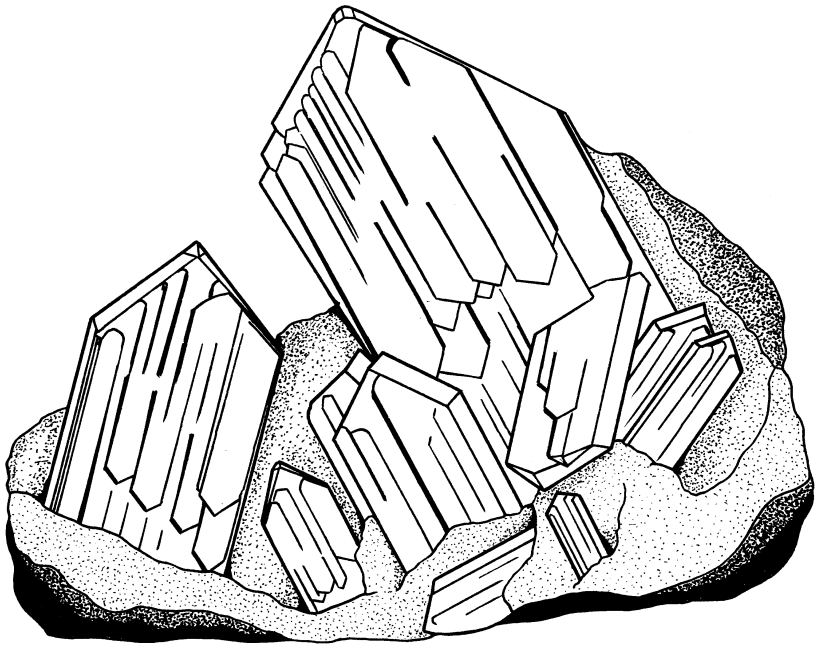
Mini Miners Monthly

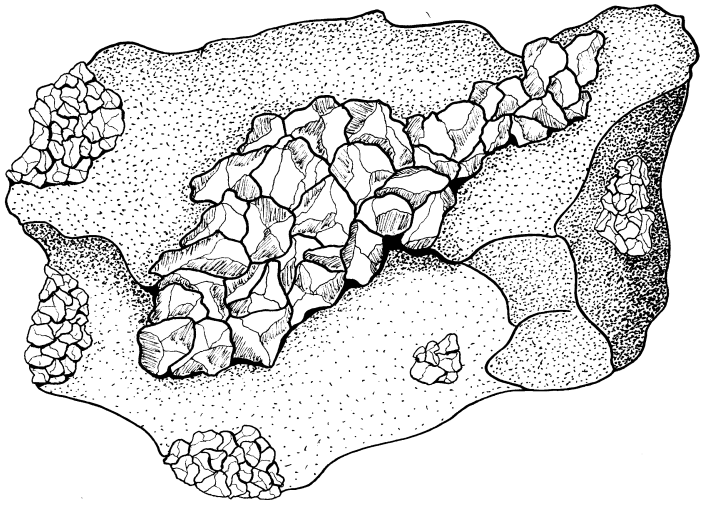
Vol. 8 No. 3 **A Monthly Publication for Young Mineral Collectors** March 2014

TIME FOR SOME FUN STUFF

It has been a while since we gave you a bunch of fun activities to do. So, this issue of *Mini Miners Monthly* has a bunch of fun stuff for you! There is a crossword puzzle, word search, and 22 questions about mineral names and where they came from. There is also a link to a website that has dozens of mineral and earth science-related projects. And, as always, Emma (our contributing editor) has written another interesting article for your enjoyment.

That's it for this month. Here are a couple extra mineral drawings to color. They are all green, in honor of St. Patrick's Day (March 17) and "The Emerald Isle" (Ireland!) Top Left: Malachite pseudomorph after azurite. Bottom Left: Peridot on Basalt. Below: Malachite.





Interview with Jennifer Beaudry about Dynamic Earth
By Emma Fajcz

Figure 1: Emma and Beth Fajcz entering the main entrance of Dynamic Earth in Sudbury, Ontario, Canada.

In Sudbury, Ontario, Canada, there is a unique science center called Dynamic Earth that educates visitors about mining, geology, and minerals. My family and I have visited this science center a few times on our trips to Canada. I interviewed Jennifer Beaudry, a staff scientist at Dynamic Earth's affiliate science center, Science North, about Dynamic Earth.

1. **What makes Dynamic Earth a unique science centre to visit for children?**
   Dynamic Earth is the 8th largest Science Center in Canada and the 2nd science center in Sudbury, Ontario. It is an attraction of Science North; however, what makes it special is that we specialise in Earth Science and Mining. No other Science Center specializes in a specific discipline of science: instead they concentrate on most or all scientific disciplines.

2. **Why would a rock hound want to visit Dynamic Earth?**
   Anyone that has an interest in earth science, rock hounds looking for different minerals, and even people that have never heard of the field are all welcome at Dynamic Earth. Our "Rockhound" trading center promotes the love of geology. Visitors are encouraged to bring in their wonderful finds to learn more about them and to trade them for rockhound points. Every time visitors trade in

Figure 2: Part of the Rockhound Lab at Dynamic Earth.

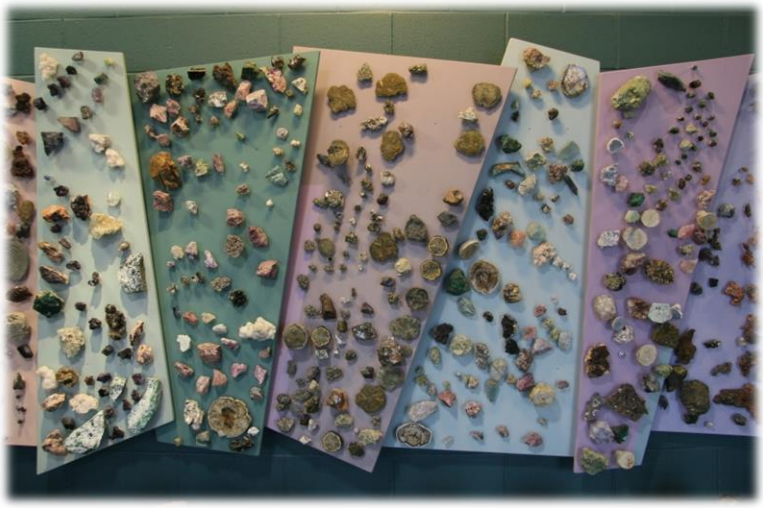


Figure 3: Part of the mineral wall.

new rocks or minerals the points are added to their account. If they find something that they would like from our collection than they can use their points to purchase the sample.

3. Can you explain the idea behind the mineral wall, and how the minerals are grouped on its panels?

The mineral wall is an artistic appreciation of many different minerals that are found throughout the world. Each panel represents a different group such as sulphides, silicates, carbonates, halides and other groups. There are plans to update this wall by adding tablets that help visitors better understand the different types of minerals that they are observing as well as some interesting facts about these minerals.

Figure 4: A 99.9% pure sample of the famous Sudbury nickel.

4. **What types of educational movies have played in Dynamic Earth's theatre in the past year?**

We have had our share of educational films and movies play in the Atlas Copco Theater. From the Planet Earth series "Caves and Volcanoes" to the National Geographic "Forces of Nature." Science North has also produced films such as "Gold Fever" and "Ground Rules," which is a mining oriented film. We typically try to find films that will complement the special exhibits we host for the season. For the 2014 season, we will be showing "Secret Life of Money" and "Gold Fever," as our special exhibit "In the Money" focuses on currency. This year, for the first time, we are hosting a Wild and Scenic Film Festival that focuses on geology and the environment.

5. **For many visitors, the highlight of Dynamic Earth is the mine tour. Please explain what happens on this tour.**
The tour starts with a 7-min. multimedia production that is viewed from the elevator. Once in the mine, the visitors will journey with our guides through the mine to learn about conditions and techniques used in the early 1900's then progress to the mid-century mine and see the changes that occurred in both the work conditions and equipment used. The last part of the mine is the modern mine where visitors can see what new technologies are being used in the mining sector and get a better understanding of the current underground conditions.

Figure 5: Visitors on Dynamic Earth's mine tour in June 2013.

6. **What could a visitor learn about Sudbury's geology by visiting Dynamic Earth?**
Sudbury has a very interesting geological history. 1.85 billion years ago a meteor that is believed to be about 10km in diameter hit this area, leaving behind a very large crater that we refer to as the Sudbury Basin. When visiting Dynamic Earth, visitors can understand why scientists believe Sudbury was indeed impacted by a meteor by seeing, touching and understanding specific features that are created by meteor impacts. Visitors also learn about the Canadian Shield, rock types, and how to identify minerals in their area.

Figure 6: Visitors can turn the rotating disc of mineral slides and peer into the large round opening of this microscope to see an up-close view of the selected mineral.

7. **Please share about your current rotating exhibit.**
This year it's all about Money as the "Big Nickel" celebrates

its 50th anniversary. Explore the awesome science and history of currency in our new exhibit, *In the Money*. Currency over the years has been made from stone, feathers, cotton, metals of every kind, and ultimately the special polymer material used for Canada's brand new bank notes. Visitors will be able to discover what this new material means for counterfeiting, explore a never-before-seen global coin collection, see art and artifacts from the *Ripley's Believe It or Not!®* collection, and much more.

Figure 7: Emma, Alex, and Beth Fajcz enjoy playing with the granite globe in Dynamic Earth's lobby, a favorite attraction for children.

8. **What features does Dynamic Earth have that make it child-friendly?**

There are many experiences that are child-friendly at Dynamic Earth. If you ask our younger visitors they would probably tell you that the best part is the Explora Mine, a three level, indoor play structure where children learn about mining through play. If they are more into video games this is not a problem. They can try their gaming techniques when using our industry simulator such as the Caterpillar Mine Truck and excavator. You can also try to find your very own piece of gold at the gold panning table. No matter your age, there is something for everyone at Dynamic Earth.

Figure 8: The Big Nickel, June 2013.

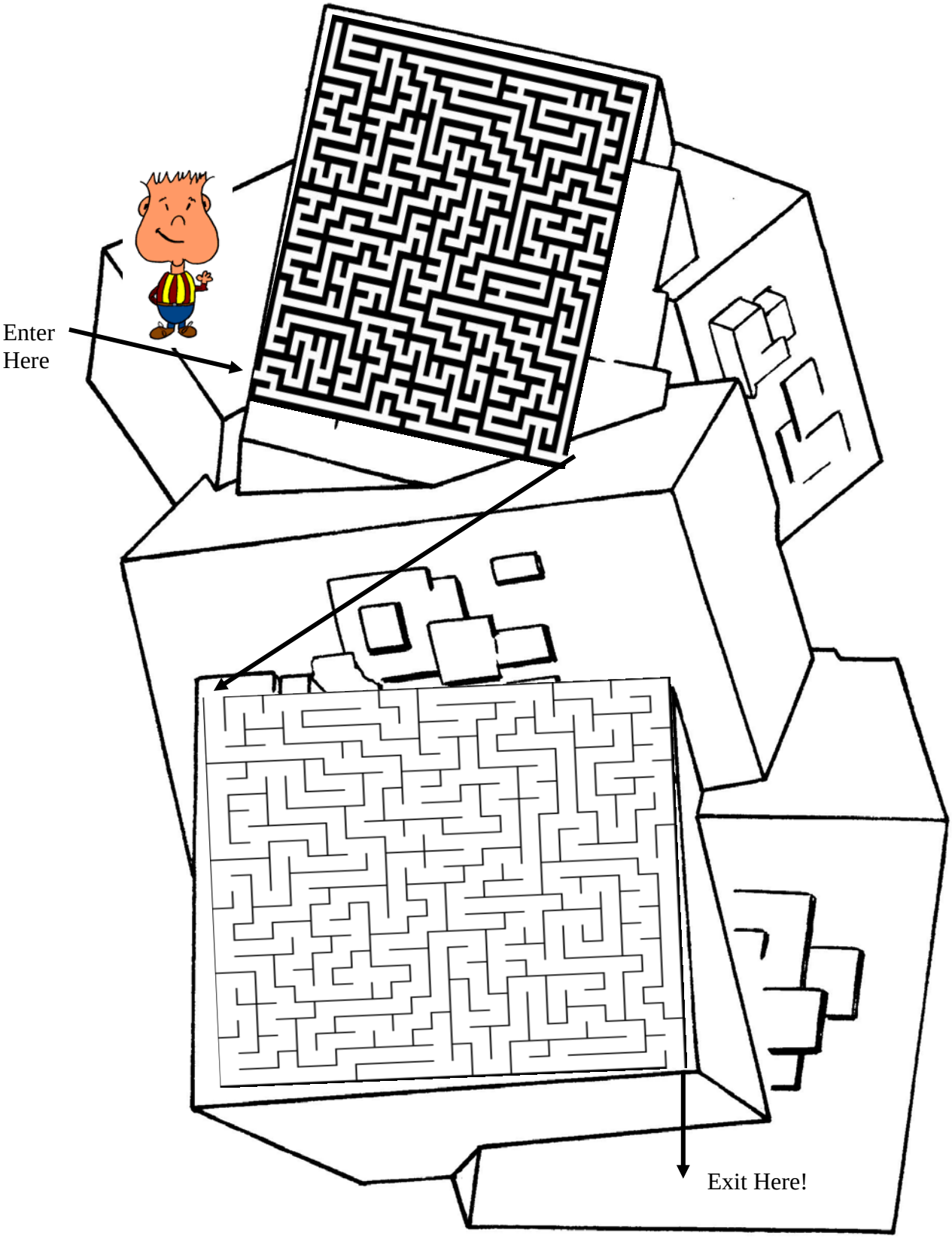
9. **How long has this science centre been in Sudbury?**

Science North has operated Dynamic Earth, the former Big Nickel Mine, since 1982. However, this attraction has been open since 1964 when Ted Szilva, a local businessman, created the idea of a Canadian Numismatic Museum with an underground mine. This was part of a completion that was launched by the *Sudbury Star*, a local newspaper, when they asked the citizens of Sudbury what they would like to see and do to celebrate Canada's centennial. This year on July 22nd we will be celebrating the Big Nickel's 50th Birthday.

Photo Credits: James and Brooke Fajcz

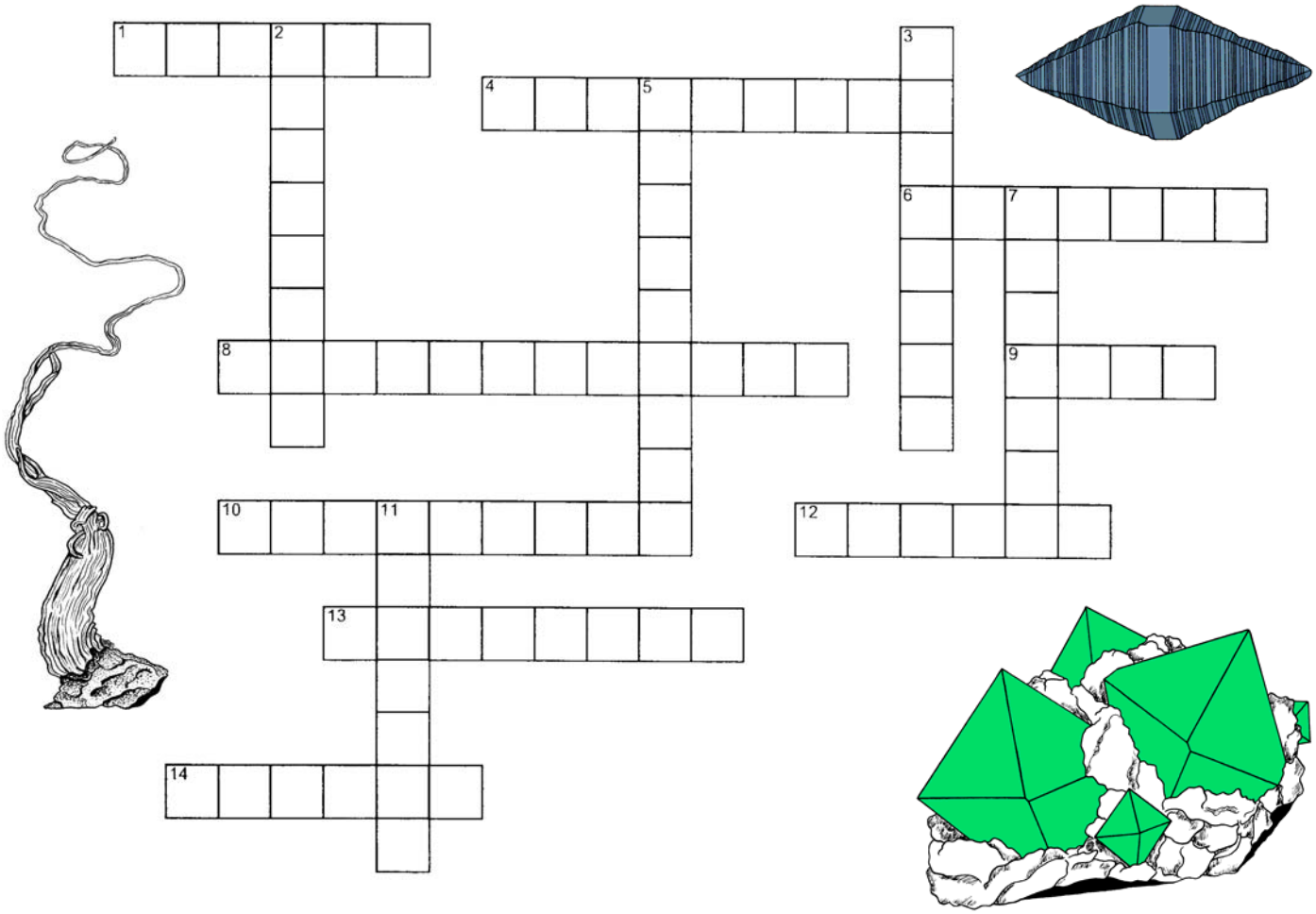
A- Mineral- Mazing

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



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 Greed 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."

Word Search: Minerals found on Mars

NASA has had scientific vehicles roaming the surface of Mars, taking pictures and testing rock and soil samples. We are learning there was probably a lot of water on Mars at some time. Geologic features and minerals with water in them have been discovered and studied. Visit NASA's website at

http://www.nasa.gov/mission_pages/mars/main/

You could spend hours looking at the videos, pictures and other great stuff about the Mars Rover expeditions.

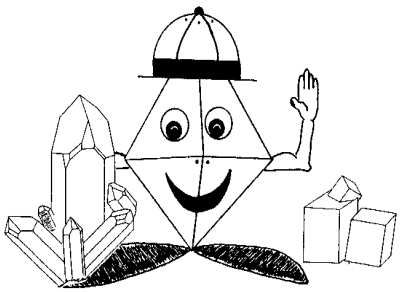
To get you in the mood, here's a word search for Minerals Found on Mars.

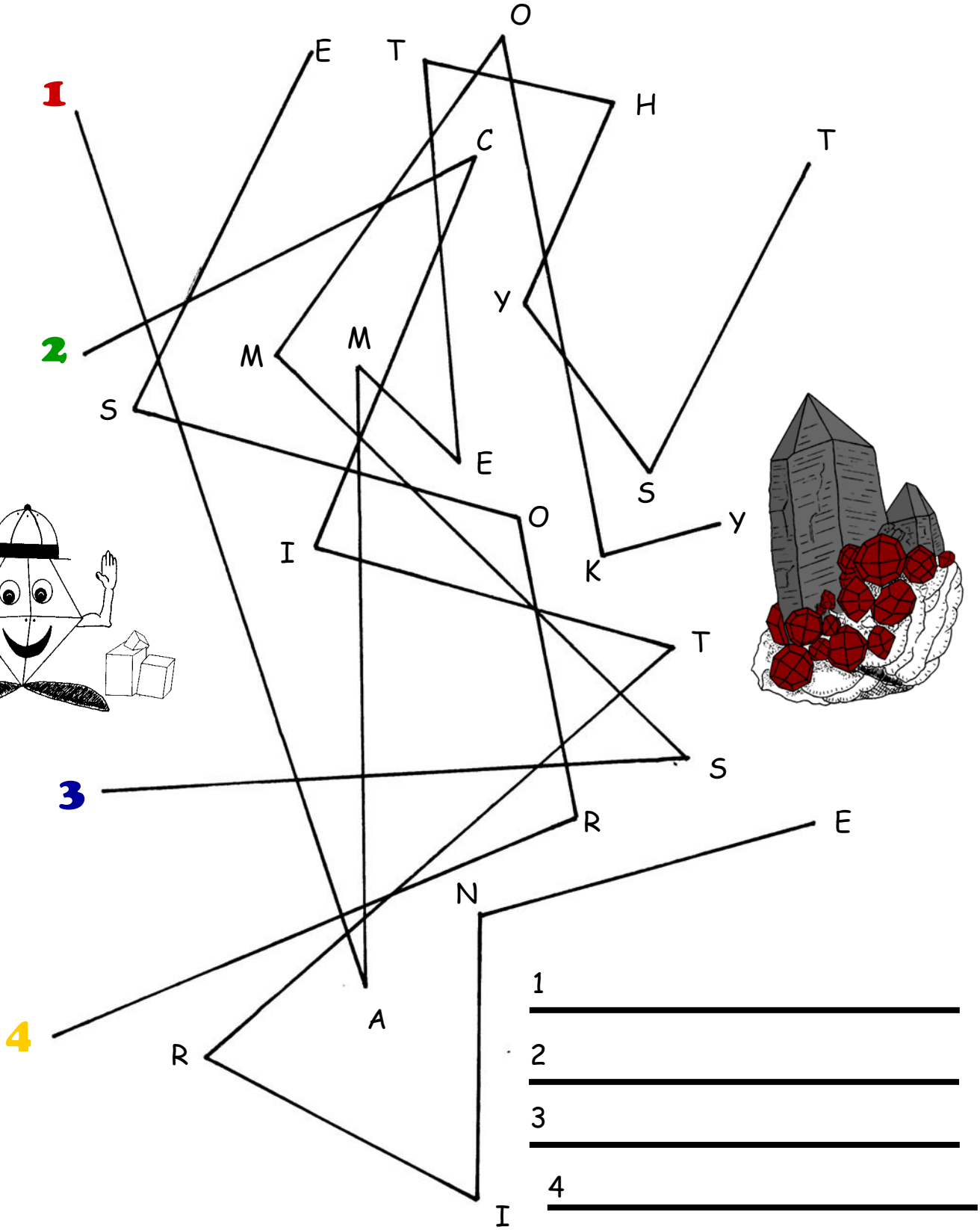
A	D	E	P	I	G	E	O	N	I	T	E	Y
O	P	O	M	G	R	A	P	S	D	L	E	F
K	G	Y	P	S	U	M	T	E	A	T	E	B
G	H	Z	R	C	M	D	A	D	P	S	I	M
F	E	I	E	O	D	A	B	O	A	U	A	A
E	M	R	T	P	X	Y	R	L	T	L	U	G
T	A	C	I	A	Z	E	C	S	I	F	G	N
I	T	O	S	L	N	O	N	Q	T	U	I	E
M	I	N	O	H	I	M	A	E	E	R	T	T
O	T	K	R	G	O	E	T	H	I	T	E	I
R	E	C	A	R	B	O	N	A	T	E	S	T
H	C	L	J	H	I	O	L	I	V	I	N	E
C	P	S	I	L	I	C	A	T	E	W	O	W

OPAL, GYPSUM, OLIVINE, FELDSPAR, PYROXENE, CARBONATES, PLAGIOCLASE, MAGNETITE, HEMATITE, GOETHITE, SILICATE, JAROSITE, SULFUR, APATITE, PIGEONITE, AUGITE, CHROMITE, ZIRCON, MARS

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 _____

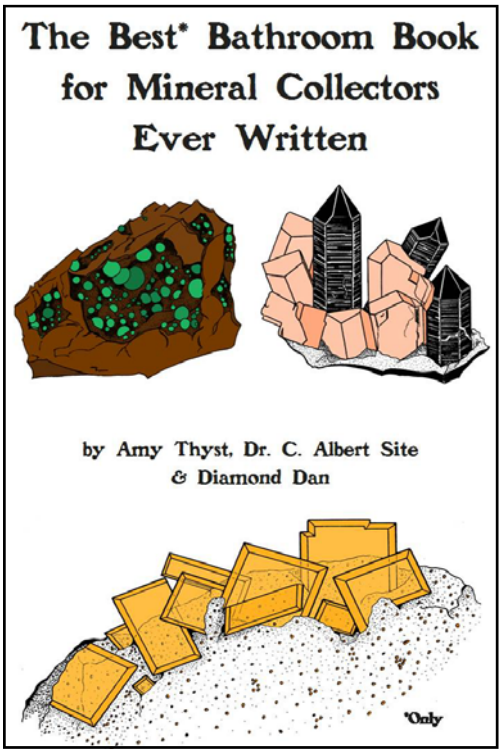
4 _____

Fun Websites to Check Out

Here are some fun websites that have a bunch of great activities about minerals, rocks and geology in general. They are all gathered together in one place! They should keep you busy for hours and hours and hours and . . . well, you get it. Get busy!

http://www.pinterest.com/nkarod/rocks-and-minerals/

Make Five, A Game About Minerals (this may inspire you to create your own game about minerals)
Volcano in a Mug (this is really cool)
Making homemade rock candy
Making edible rocks!
Rock Cycle Bracelets
Make "Treasure Rocks": Break them open and discover the "gem" hiding inside!
Plate Tectonics with an Oreo cookie.
Stone Faces (and with some creativity, you can make Crystal Faces, too!)

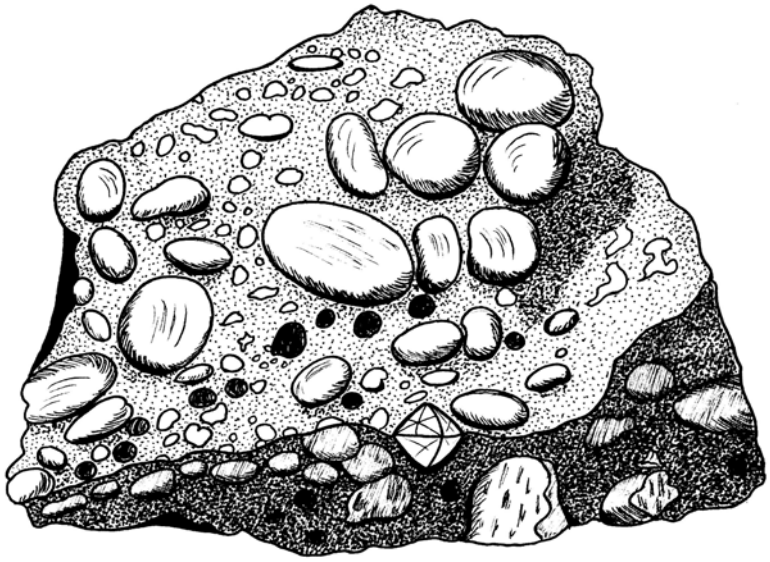


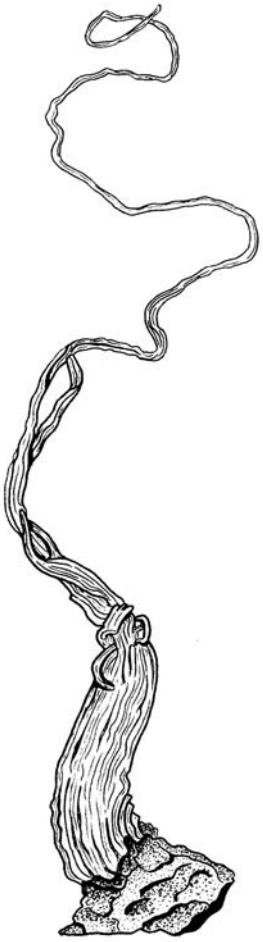
Diamond Dan's popular book is now in its *second printing*. Order yours while they last ($11.95 postage paid). Each book comes with a special gem pencil. Order now and also receive free of charge our newest book, *Diamond Dan's Mineralogical Dictionary for Mineral Collectors.* A $5 value free with your purchase.
Visit our website to place your order.

www.diamonddanpublications.net

MINERALS TO COLOR

We have a lot of really young Mini Miners who love to color mineral drawings. Here are some newer drawings for you to color. Maybe you want to copy them and then color your own drawings?!



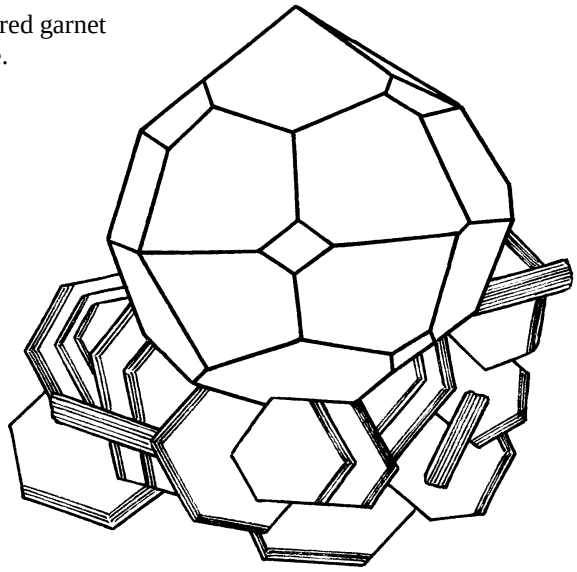


Above Left: A diamond crystal (can you find it?) in a sedimentary rock called *conglomerate*. The pebbles and matrix are various shades of brown, yellow and tan.

Above Right: Gold!

Left: Silver

Below Right: Deep red garnet on silvery muscovite.

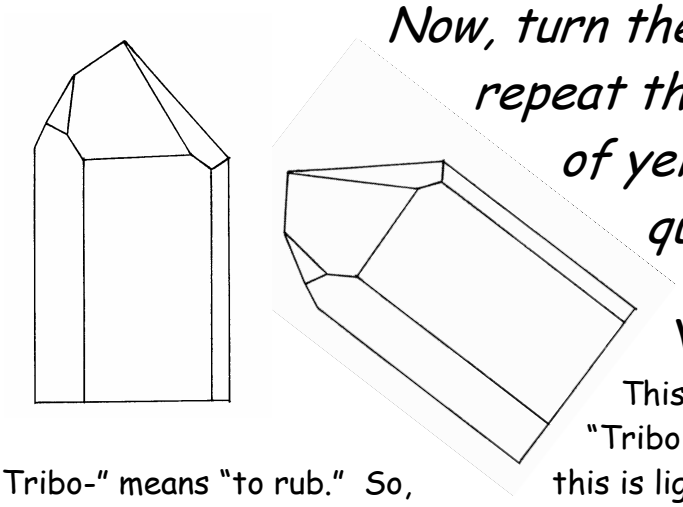


T r i b o l u m i n e s c e n c e

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 Lifesaver™ 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!

ICE SPIKES

A Great Ice Experiment from scientist Dr. Kenneth Libbrecht at the California Institute of Technology.

When water freezes, it gets bigger! Fill a plastic bottle with water and put it in your freezer. When the water is frozen solid, you will see that the bottle has split open. When the water froze, it expanded, that is, it got larger. This physical feature of ice helps create ice spikes in an ice tray.

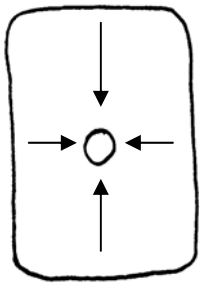
What You Need:

--Plastic Ice Tray
--Distilled Water (water from the faucet does not always work very well for this experiment)
--Freezer

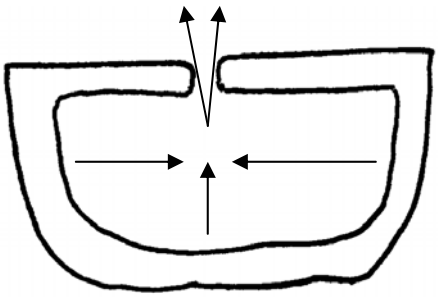
What To Do: Preparation for this experiment is very easy. Fill each section in the plastic ice tray with distilled water. Only fill each section about 2/3 full. Don't fill them to the point that they flow into each other.

Now, put the tray in your kitchen freezer. Place the tray so that there is at least two inches of space above the ice tray. When the water is frozen, you should have some ice spikes.

How Do Ice Spikes Form? Ice spikes are the result of the special feature of ice mentioned above: water expands (gets larger) when it freezes. This is what happens.



At first, the ice in the ice cube tray freezes at the edges of each section. Then, it freezes toward the center of the section. This will continue until there is a small hole in the middle of the top of the ice cube. While this is happening, the water is also freezing *below* the surface of the ice cube. Remember that water expands or gets larger as it freezes. So, as the water freezes at all the sides of the ice cube section in the tray, it pushes the unfrozen water up and out of the little hole on the top. The water that is pushed through the hole freezes in the shape of a small straw. More water is pushed through the straw and it freezes. This continues until all the water has frozen or the straw itself freezes solid. This "straw" is the ice spike!



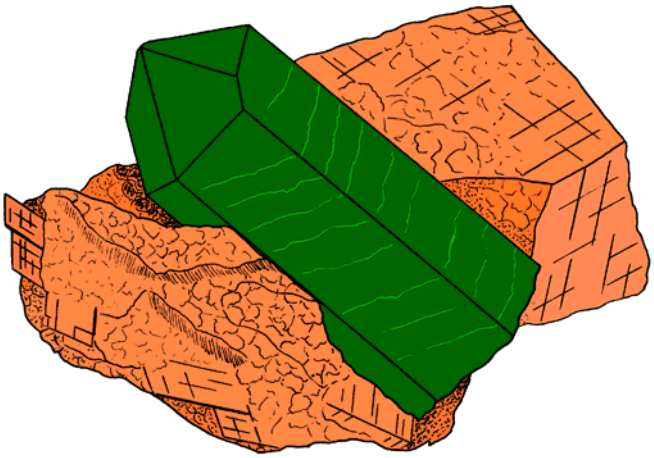
A Fractured mineral story for April 2014

Did you know?

Did you know that the mineral *apatite* was named by the famous mineralogist and rockhound, Calvin Site. The story goes that Cal (as his friends usually called him) spent a week in Mexico, hunting for crystals. One afternoon he stopped to take a nap under a tree. Now, Cal had a donkey named Burrito who was not always very helpful. It seems that Cal was so tired that he laid down under a tree to rest and, since there was no one in sight, he said to Burrito, "You just wait there for a few minutes while I take a nap." Burrito was not very smart. He was also very curious. Cal's nap was supposed to be for only 20 minutes. Two hours later Cal woke up . . . and Burrito was gone. He spent the next two days searching for Burrito. It's not that he loved Burrito all that much. The thing is that Burrito was carrying all his tools, minerals, food and water.

After four days in the Mexican sun, Cal was seeing things. He saw lakes of water that were not there. He saw plates of burritos . . . not his donkey but the Mexican food. He even saw piles of crystals. Funny thing was that the water and the food were only in his mind. The crystals were <u>real</u>! He stuffed his pockets with the crystals and stumbled on. As luck would have it, behind the next boulder he found his old friend, Burrito. With the little strength he had left, he drank three canteens full of water, started a fire and cooked up a large pot of stew.

As he finished filling his empty, grumbly tummy, he felt something poke him in his leg and then he remembered: He had a pocket full of crystals. But what to call them? They were a brand new type of mineral he had never seen before. No one had ever seen this type of mineral before.



Cal remembered how very hungry he had been for four days. A pot of stew took care of his apatite.

And so, he named the new mineral apatite, in honor of his empty, grumbly tummy.

And that's the truth!*

*Actually, it's not the truth. The mineral Apatite has nothing to do with Cal's *appetite*. APRIL FOOLS!

What's In a Name?

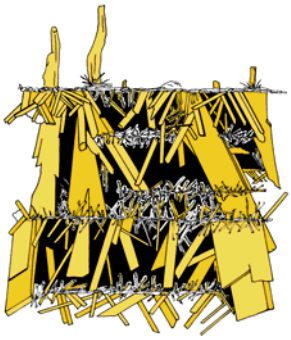
Below are a number of minerals names and three choices for the origin or meaning of the name. Do you know where these mineral names came from?

1. Diamond is named after

a. Diamondas, an island near Australia where large diamonds are found.
b. The Greek word *adamas* which means *invincible.*
c. Sir William Neil Diamond, a famous mineralogist from England.

2. Labradorite is named after

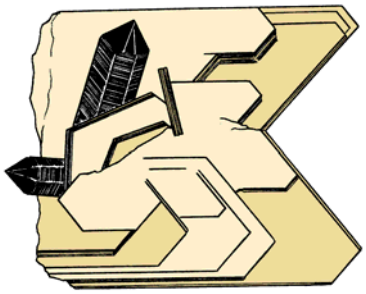
a. one of "Man's Best Friends", the Labrador Retriever.
b. the Latin word *labradorium* which means *shines with colors.*
c. Labrador, Canada where large masses of this variety of feldspar are found.



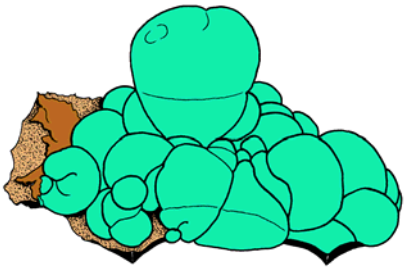
3. Gypsum is named after

a. the Greek word *gypsos* which means *plaster*.
b. the Gypsum mountain range in eastern Texas.
c. the name given to a group of European people who traveled from one place to another. They are known as Gypsies.

4. Muscovite, a variety of mica, is named after



a. Vladimir Muscovy, a famous Russian mineral collector who first discovered this mineral.
b. the old Russian phrase "muscovium flexum" which means "flexible muscovite."
c. the name for old Russia which was once known by the name Muscovy.



5. Smithsonite was named after

a. James Smithson, a British chemist and mineralogist.
b. the Smithsonian Institution, the national museum of the United States of America.
c. the English mineralogist Albert Smith, who was the son of Henry Smith.

More Mineral Names . . .

6. Dolomite was named after

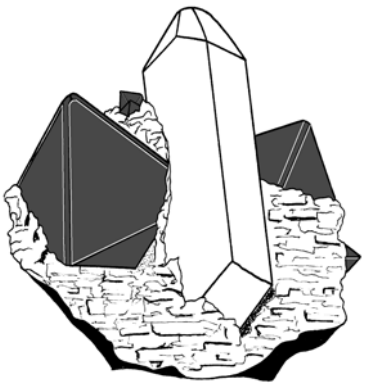
a. the Dolomite mountains in Austria.
b. the French geologist named Dieudonne Guy Sylvain Tancrede Gratett de Dolomieu.
c. the American geologist and mineral collector, Stanley Dolomy.

7. Copper was named after

a. the Greek word for the Island of Cyprus where copper was once found.
b. the buttons used on police uniforms (which is also the origin of the slang word for police, "copper" as in, "You can't catch me, copper!"
c. the Native American word *koprum* which means *red* or *red-brown*.

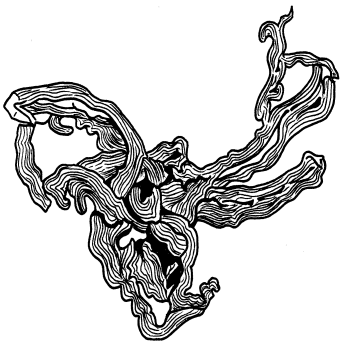
8. Adamite was named after

a. Adam, the first person mentioned in the writing called Genesis.
b. the French mineralogist Gilbert Joseph Adam.
c. the Greek word *adamas* which means *invincible*.



9. Franklinite was named after

a. Franklin, New Jersey where it is found in abundance.
b. Benjamin Franklin.
c. the Franklin Mint, a company that makes collectible coins.

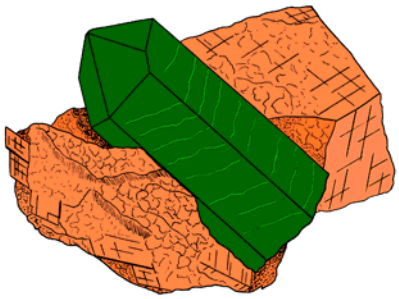


10. Silver was named after

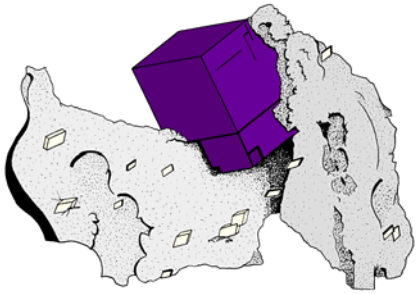
a. an ancient word that means *coins* or *money*.
b. the Old English word *seolfer*.
c. the similar word *sliver* since wire silver can look like slivers of metal.

11. Apatite was named after

a. Dr. Sigfried Apatein, an Austrian mineralogist and amateur flutist.
b. the Apatites River in southern Sicily, Italy.
c. the Greek word *apatan* which means *to deceive* because some specimens look like other minerals like aquamarine and tourmaline.



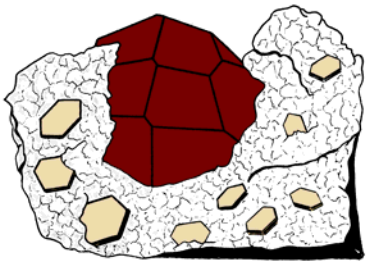
Even More Mineral Names . . .



12. Fluorite was named after

a. the Latin word *fluere* which means *flow*.
b. the Greek word *floros* which means *flower*.
c. the Spanish word *floritos* which means *flour*.

13. Garnet was named after



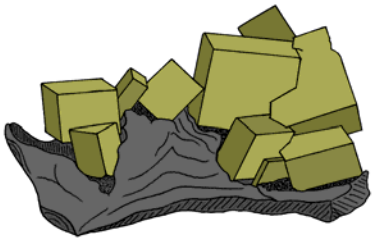
a. the Garnet Valley of northern Ireland.
b. *granite*, the igneous rock in which some varieties of garnet are found.
c. the Latin word *granatum* which means *a pomegranate* because pomegranate seeds look like bunches of small garnet crystals (or, bunches of small garnet crystals look like pomegranate seeds).

14. Brucite was named after

a. Bruce Lee, American actor, Martial arts expert, and mineral collector.
b. Archibald Bruce, the early American mineralogist.
c. Bruce Willis, another American action movie actor, and mineral collector.
d. the shark, Bruce, from "Finding Nemo" ("Hello, my name is Bruce.") He doesn't collect minerals, but he eats a lot of fish.

15. Morganite was named after

a. John P. Morgan, American banker and financial expert. Guess what? He was a mineral collector!
b. Morgan Freeman.
c. the Morgan horse.

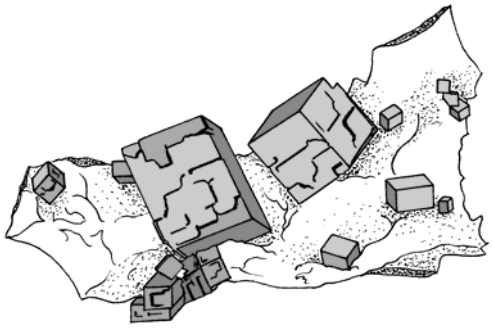


16. Pyrite was named after

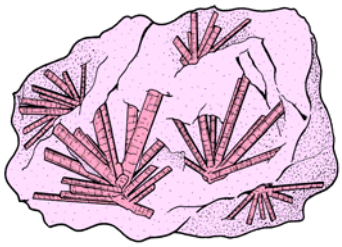
a. the Italian geologist Pyrito Benito Celentano.
b. the Mexican volcano Pyricutin.
c. the Greek word for fire, *pyr*.

17. Galena was named after

a. *galena,* the German word for *lead ore*.
b. *galena,* the Greek word for *lead ore.*
c. *galena*, the Latin word of *lead ore.*

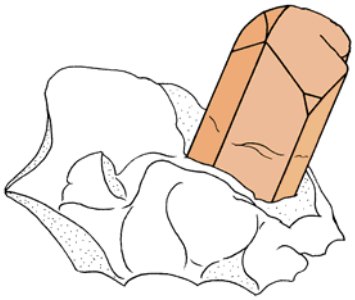


Even More Mineral Names . . .



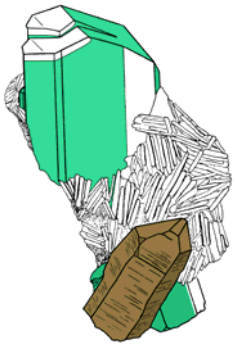
18. Tourmaline was named after

a. the Portuguese word for gemstones.
b. the Sinhalese word *toramallie* used to describe gemstones found in Sri Lanka.
c. the Russian word for green gemstones.



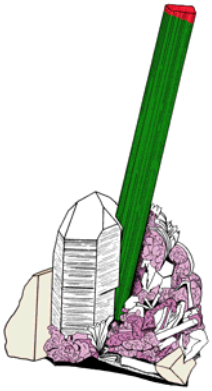
19. Topaz was named after

a. Topaz Hill, a famous mineral locality in western Utah.
b. Joaquin Topaz, the mineralogist who first studied and described topaz.
c. Topazos, an island in the Red Sea. Today it is called Zabargad. *Topazos* means *to seek.*



20. Feldspar is the name of a group of minerals. This name came from

a. the longer word *fieldspar* because early collectors often found specimens in fields.
b. the Italian geologist, Antonio Feldsparini (1780-1837).
c. an ancient name used for glassy minerals.



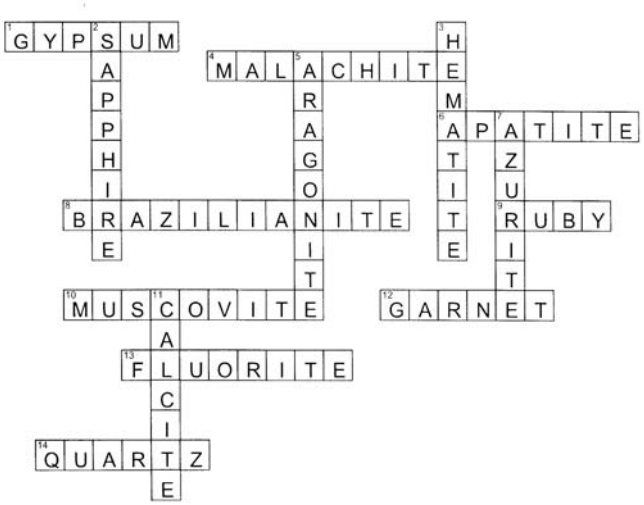
21. Elbaite was named after

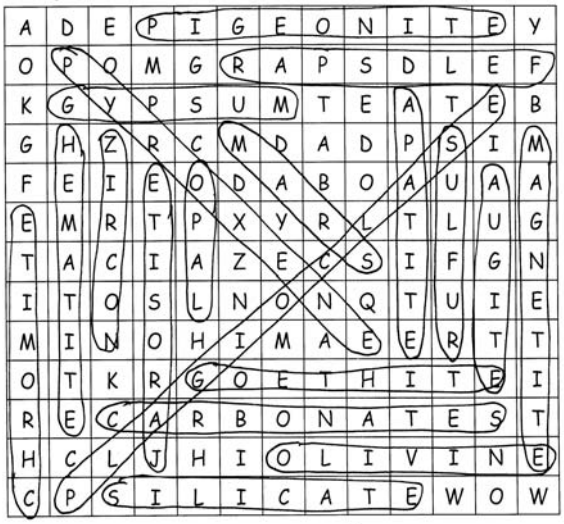
a. the mountain called Elba in Italy.
b. the island called Elba in Italy.
c. the river called Elba in Italy.

22. Cavansite was named after

a. its chemical composition. It contains calcium, vanadium and silicon.
b. the fact that it was first discovered in a small cave in India.
c. the English mineralogist, William James Cavendish.

Solutions





WHAT'S IN A NAME

1. b; 2. c; 3. a; 4. c; 5. a; 6. b; 7. a; 8. b; 9. a; 10. b; 11. c; 12. a; 13. c; 14. b; 15.a; 16. c; 17. c; 18. b; 19. c; 20. a; 21. b; 22. a.

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