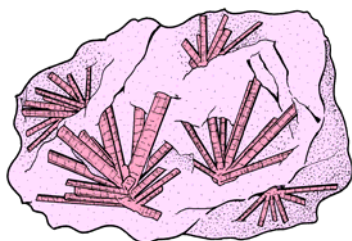


Mini Miners Monthly

A Monthly Publication for Young Mineral Collectors.

February 2015 Vol. 9 No. 5



Happy May, Mini Miners. Finally the May issue is ready for you to enjoy. It's been a while since we had some fun activities, so we've created a bunch of word searches to help you pass your mineralogical time. Some are regular "find the word" searches. A couple have "a twist." The twist is that once you have found the beginning of the word, it will go in a different direction half way through the mineral name. They really are a challenge. But Mini Miners are really smart and can always figure these things out.

Next month is June and June is the month of Fathers' Day.

In honor of Fathers' Day, we have some profiles of "Mineralogical Fathers" that you might like to know. You will meet the "Father of Modern Mineralogy," the "Father of American Mineralogy," the "Father of Crystallography," and the "Father of Modern Geology." Unfortunately the early days of mineralogy did not include many women (although today, there are many women who are significant leaders, collectors, writers and scientists in mineral collecting and the field of mineralogy.)



Our Contributing Editor, Emma Fajcz, has submitted a helpful article about mineral photography. She has included some excellent ideas to consider for the beginning mineral photographer. After you learn from Emma's article, do some more research on your own. And then practice! You can create some excellent photos of minerals in your very own collection.

Lastly, we have a little challenge for you. Do you know (without looking a mineral book) which mineral varieties go with which mineral name? OK, you can look at a book. You'll have fun doing some "mineral matching."

MINERALS NAMED AFTER PEOPLE

In this word search you will find the names of minerals that are named after people. Some of these people are famous, some are not. After you find the names, look them up on the internet and write down the full name of the person. You can even write a biography about each person.

The names go left to right, right to left, top to bottom, bottom to top and diagonally.

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

Adamite, Andradite, Babingtonite, Bertrandite, Biotite, Bornite, Brucite,
 Cleavelandite, Colemanite, Covellite, Danaite, Dolomite, Englishite, Forsterite,
 Frondelite, Humite, Kunzite, Prehnite, Sillimanite, Smithsonite, Ulexite, Wardite

Oxides!

In this word search you will find the names of minerals that are from the chemical group known as the "Oxides." Oxides have oxygen in their chemical formula.

The names go left to right, right to left, top to bottom, bottom to top and diagonally.

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

Anatase, Bauxite, Bixbyite, Brookite, Brucite, Cassiterite, Chromite, Corundum, Cuprite, Goethite, Gummite, Hematite, Ilmenite, Limonite, Magnetite, Manganite, Massicot, Pyrolusite, Rutile, Spinel, Tungstite, Uraninite, Zincite

Silicates!

In this word search you will find the names of minerals that are from the chemical group known as the "Silicates." Silicates have molecules that are made up of silicon and oxygen. The names go left to right, right to left, top to bottom, bottom to top and diagonally.

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

Albite, Almandine, Amethyst, Augite, Beryl, Citrine, Cristobalite, Dravite, Elbaite, Feldspar, Garnet, Kaolin, Lazurite, Leucite, Mica, Microcline, Opal, Orthoclase, Pyrope, Quartz, Scapolite, Schorl, Sodalite, Stilbite, Topaz, Talc, Tourmaline, Tridymite, Uvite

“Around the Corner” Word Search Puzzle

This is a challenging variation on the word search puzzle theme. The first few letters of each mineral name begin in one direction, then, in the middle of the word, the rest of the word goes off in a different direction. Hint: Find the beginning of the mineral name and follow it!

Example: Start with “SMITH” in the upper left corner then go down for the rest, “SONITE.”

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

Aragonite, Autunite, Barite, Chalcopyrite, Copper, Diamond, Galena, Garnet, Gold, Graphite, Halite, Iron, Kaolin, Mercury, Mimetite, Molybdenite, Pyrrhotite, Rhodochrosite, Silver, Smithsonite, Sodalite, Sphalerite, Stilbite, Sylvite, Vanadinite, Vivianite

“Snaking” Word Search Puzzle

This is an even MORE challenging variation on the word search puzzle theme. The first few letters of each mineral name begin in one direction, then, the name goes off in a different direction, sometimes more than once! Hint: Find the beginning of the mineral name and follow it! It can snake up, down, left or right. Example: Start with “RHOD” in the upper left corner then go down for the next part, “OCH,” then to the right for “ROS,” and then down for the “ITE.”

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

Andalusite, Aquamarine, Arsenopyrite, Aurichalcite, Biotite, Chalcopyrite,
 Chromite, Cristobalite, Fluorite, Grossular, Microcline, Mimetite, Muscovite,
 Natrolite, Orthoclase, Rhodochrosite, Rutile, Scheelite, Torbernite, Tourmaline,
 Ulexite, Wulfenite

“Authors” Word Search Puzzle

Hundreds of different writers, professional and amateur, have written about minerals and mineralogy. Today we have hundreds and hundreds of mineral books that we can read and study to inform us about minerals and help us be better collectors. In this word search puzzle you will find the names of people who, over hundreds of years, have written about gems, minerals and mineralogy. After you find the names, try to find something about each person on the internet.

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

Al-Kindi, Bancroft, Berzelius, Cleaveland, Court, Desautels, ES Dana, English, Fajcz, Hauy, JD Dana, Jameson, Jones, Kirwan, Kunz, Loomis, Mohs, Pearl, Pliny, Pough, Powell, Robinson, Shaub, Shepard, Sinkankas, Sowerby, Spencer, Werner, Wilson, Zara, Zim

Father of Mineralogy

Georgius Agricola



Georgius Agricola was born on March 24, 1494 at Glauchau in Saxony (Germany). The name he was actually given when he was born was Georg Pawer. Today his last name, Pawer, would be "Bauer" in German. Pawer and Bauer mean "farmer." When Georg became an adult, he decided to keep his name, but to have it in the Latin language. So, Georg became Georgius and Pawer (Bauer) became Agricola. Most mineral collectors and other scientists know him as Georgius Agricola.

Agricola was a very smart man. His intelligence was well-known even in his younger years. By the time he was 33, he was hired as the town Doctor at Joachimsthal which was a mining and smelting area. (Smelting is the process of removing metals from ore minerals.) While there he worked to provide excellent medical care for the people. He also wanted to learn about ores and smelting and he studied these things very carefully. This learning

led to one of the most famous books in the history of mineralogy and mining.

Georgius Agricola wrote many books, some about religious subjects and some about science. He is best known for a book he wrote in 1556 titled, *De Re Metallica*. It is a book about mining and different ways of extracting metals from ores. In this book he also described how ore bodies occur underground. It really was an early book about minerals, ores, geology and chemistry.

Agricola died on November 21, 1555.



Above: Georgius Agricola

Above right: The title page of "De Re Metallica."

Left: A picture from "De Re Metallica" of miners working underground.

Father of American Mineralogy

Parker Cleaveland



Parker Cleaveland was born on January 15, 1780 in Rowley, Massachusetts. As a young man he attended Harvard University and graduated from this famous University in 1799. After graduation he taught school. He tutored young people in mathematics as well. He was eventually hired to be a Professor at Bowdoin College in Brunswick, Maine where he continued to teach mathematics and other subjects.

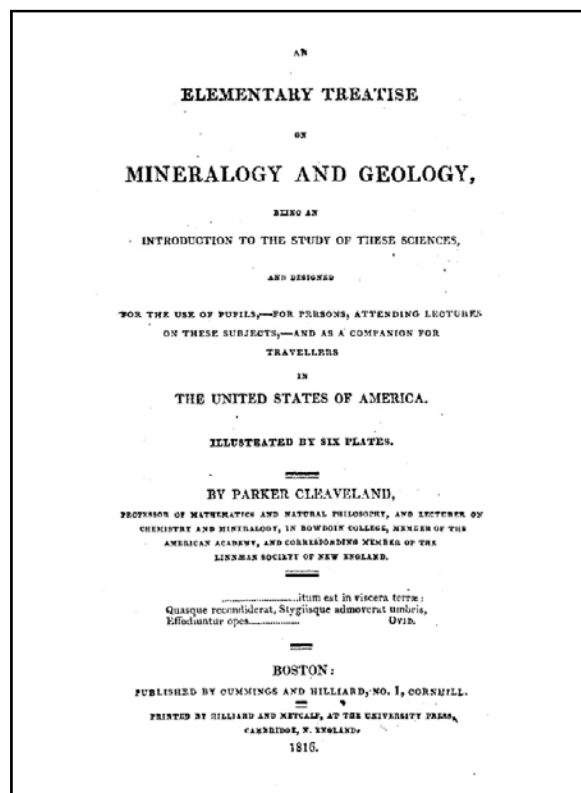
He became interested in mineralogy and geology. He read a lot about these subjects and taught himself enough that he was able to offer college-level courses at Bowdoin College in these subjects.

To make his lectures more meaningful, he went into the field to collect mineral specimens. Over the years he also traded and sought out gifts of mineral specimens for his lectures. Many important mineral collectors of his day donated specimens to Cleaveland.

Professor Cleaveland wrote and published the very first book on mineralogy in the United States. It is called, *An Elementary Treatise on Mineralogy and Geology*. It was published in Boston in 1816. This book was so important that it became the official mineralogy textbook for many colleges in the United States and Europe. Because it was so important, Cleaveland was called "The Father of American Mineralogy" by other important mineralogists of his day.

A platy variety of the mineral *albite* was named after Cleaveland. This variety is called *cleavelandite*.

Parker Cleaveland died in Maine on August 15, 1858.



Left: A specimen of Cleavelandite. Photo by Parent Géry. Used with permission.

Father of Modern Crystallography

René Just Haüy



René Just Haüy was born on February 28, 1743 in France. His first scientific interest was the study of botany (plants). But one day a "fortunate accident" changed the direction of his interests. It was an "accident" that would begin a new field of study, crystallography. One day Haüy was looking at a specimen of calcite that belonged to a friend. He dropped the specimen and it broke into many, many pieces. He was fascinated to find that the pieces were similar in shape. This led him to study crystals more closely. Over time he developed a theory of crystallization based on mathematics. In 1802 he became Professor of Mineralogy at National Museum of Natural History. He was also the

founder of the Musée de Minéralogie (Museum of Mineralogy). The mineral Hauyite was named in his honor. Haüy died on June 3, 1822.

Father of Modern Geology

James Hutton

James Hutton was born June 3, 1726 in Scotland. He grew up to love nature and natural things and he became a natural scientist, a geologist, a chemist, and he even experimented with agriculture.

He is most famous for his work about geology. Hutton was fascinated by the rock formations he saw in his native country of Scotland. He made very careful observations about the geology around him. For example, he noticed that on dry land he could find rocks that contained fossils that he knew were once ocean-living creatures. This caused him to think that something happened to turn ocean sediments into rock and to later lift that rock high above the sea level.

By studying geologic formations in the field, he concluded that the geologic processes that we can see today (like erosion and sedimentation) occurred in the same way throughout geologic history. Hutton called this the "Theory of Uniformitarianism." Though not accepted by all scientists in his day, Hutton's ideas eventually became the foundation of the field of modern geology.

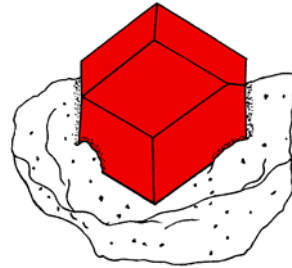
James Hutton died on March 26, 1797.



Minerals in Groups

There are a number of minerals that have many different varieties. On the left are four minerals, Garnet, Quartz, Tourmaline and Beryl. On the right is a random list of mineral varieties. Write the name of the variety on the lines next to the proper mineral name.

Garnet



Elbaite

Pyrope

Morganite

Amethyst

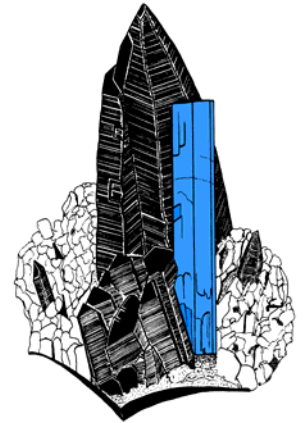
Almandine

Spessartine

Emerald

Aquamarine

Schorl



Quartz

Citrine

Milky

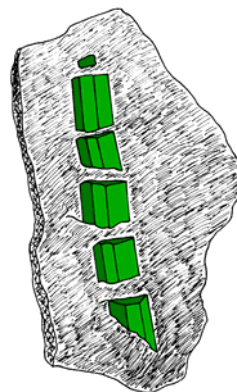
Demantoid

Dravite

Grossular

Heliodor

Tourmaline



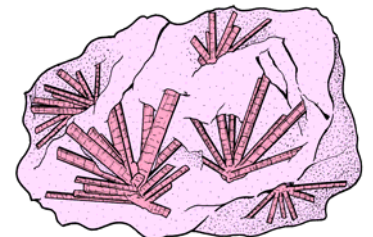
Beryl

Rubellite

Aventurine

Rose

Goshenite



MINERAL PHOTOGRAPHY

By Emma Fajcz

Have you ever wanted to print off photographs of your collection to store in an album, put on greeting cards, or show to your friends in your local mineral club? This month, I'll give you some tips on taking pictures of your mineral collection to help you get started.

First, you'll need a camera. This can be a simple point-and-shoot camera or even one of your parents' cell phones. If your family has a really good camera, you might want to use that once you have some more practice with photography and your parents' permission.

Now, it's time to go through your collection and decide which specimens you'd like to photograph. You could do it any way you like. Maybe you want to do all the green ones first or just your favorites. If you don't want to take pictures of your minerals, ask around at your mineral club to see if anyone is willing to let you photograph their minerals.



*Rainbow Treasure by Emma Fajcz, 2015.
Rainbow Hematite*



*Purple Cluster by Emma Fajcz, 2015.
Amethyst*

The weather is another important factor to consider, especially if you're taking outdoor pictures. It's usually not ideal to take pictures outside on really sunny days unless you can make the light softer, since the bright sunlight creates harsh shadows. However, you can use shadows to create interesting effects if you like. Gray, cloudy days have softer light, which is generally better for photography. Even if you are photographing indoors, go near a

window on a cloudy day for good lighting. Surprisingly, dirty windows make the light from outside softer, so try taking pictures near the window. Be sure you can't see distracting grime in your photo, though!

Another aspect to consider is the time of day. At noon, the sun is at its highest point, often creating sharp shadows. Towards the end of the day, usually between four and five o'clock, or for the last hour the sun is up, the sun's rays get a "golden" tone and are more yellow. This also happens early in the morning, not long after sunrise. Since your camera records light information to create a photograph, it's vitally important that your lighting creates the effect you desire.

You'll also have to think about what kind of surface you want to display the mineral sample on, and what background would complement the specimen the best. A fun surface to photograph on is a wooden deck, especially if the wood is cracked or discolored. The color and texture variations offer a multitude of different possibilities for backgrounds and surfaces. For example, a sample of malachite might look really striking on top of a deck that's been stained red. Try not to get distracting items like fallen leaves in your photo. Remember that the focus of the picture is on the mineral, so make it clear that the specimen is the focal point.

Here's a neat way to get a professional-looking background for a mineral photo. Take a sheet of white, eight-and-a-half by eleven inch paper that's free from marks or tears and clip it onto something a few inches off the ground. Let the paper touch the floor or ground and bend towards you to create a seamless background. You can also lay the paper down on a flat surface and pose your mineral on top of that.

Other places to position your specimens include a cement driveway or sidewalk, tree roots, an old flowerpot, or a glass-topped table. Experiment with shining a lamp or flashlight through a translucent slab of agate for another fascinating effect. Like with *Boomerang* above, experiment with sheets of white paper underneath the specimen while it's placed on a lamp.

Throughout this article, I've included three examples of mineral photography that might inspire you do some of your own this month. Maybe you can share your mineral photos with members of your mineral club by bringing printed copies of your pictures to the next club meeting or emailing them to fellow member.



*Boomerang by Emma Fajcz, 2015.
Agate*



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