

MINI MINERS MONTHLY

Vol. 3 No. 8

Gems & Minerals From Canada

August 2009

Greetings, Mini Miners,

This month we are doing something a little different. This issue is devoted to some of the wonderful minerals that are found in the beautiful country of Canada. You will find specimen drawings to color and a lot of interesting information on these minerals. Enjoy!

Starting in September, we will be featuring an article by a smart and enthusiastic young mineral collector named Kyle Zeller. We look forward to his contributions to *Mini Miners Monthly*.

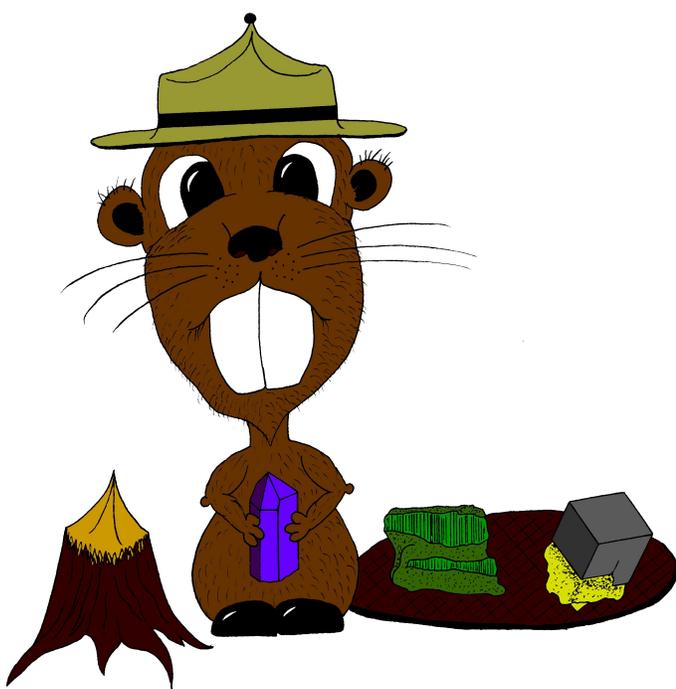
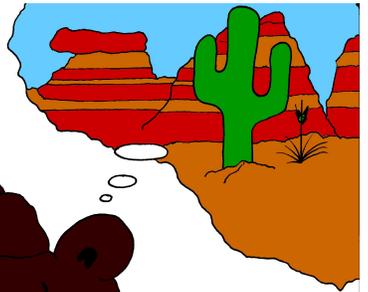
Would YOU like to write an article for *Mini Miners*? Submit your articles to us

through email (diamonddan@rochester.rr.com). It is our plan to include as many of your articles as possible.

When you look at the awesome pictures of minerals in magazines like *Mineralogical Record* and *Rocks & Minerals*, did you ever wish you could have something that nice (and expensive) in your own collection? Many young collectors can't afford the more expensive specimens. Diamond Dan is going to try something with you that has never

happened before (at least we don't think it has ever happened). Diamond Dan is going to loan one of his best specimens to one of our Mini Miners. He or she can keep it and enjoy it for a month, and then it has to be mailed on to another Mini Miner. No one will get to keep it, but a lot of young collectors will get to enjoy it for a while. It's like borrowing a book from the library. There is more information inside on how you can get on the list to borrow a fine mineral specimen.

Next Month: Minerals from Australia



Gems & Minerals of Canada

Use this map of Canada to know where the minerals in this issue of *Mini Miners Monthly* are found. You can also use it as you look at the Canadian minerals you see at shows or in mineral books.

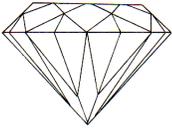


According to the United States Geological Survey (USGS) a “gem” is “any mineral or organic material (like pearl and petrified wood) used for personal adornment, display, or object of art because it possesses beauty, rarity, and durability. Of the 2,700 mineral species, only about 100 possess all these attributes.”

In this *Mini Miners Monthly* you will know which minerals are considered gems because the gem drawing you see here will be next to the mineral’s name.



We had so much great material about gems and minerals from Canada that we ran out of space in this issue! You can find a number of activity pages on the website that you can download, print out and enjoy including the usual word search, a crossword puzzle and a “Mineral Trivia” page to see what you learned about minerals from Canada. Go to http://www.diamonddanpublications.net/index_files/page0001.html and look for the link.

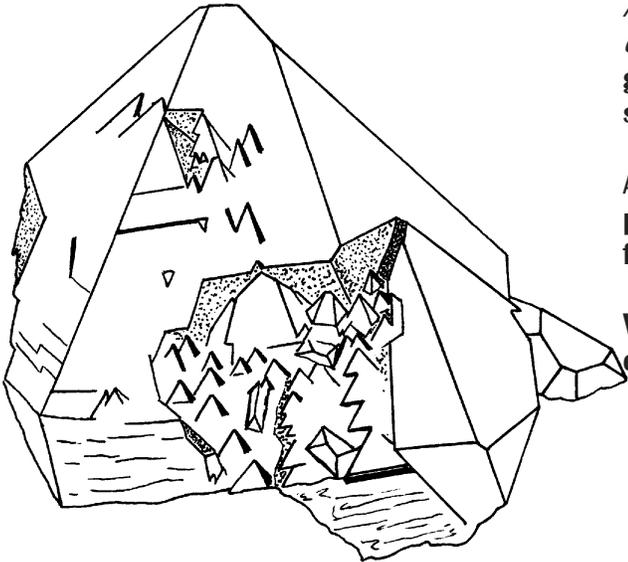


Amethyst

Amethyst is the purple gem variety of the mineral *quartz*. The ancient Egyptians used amethyst as a gemstone. Amethyst beads have been discovered in some very old graves in England.

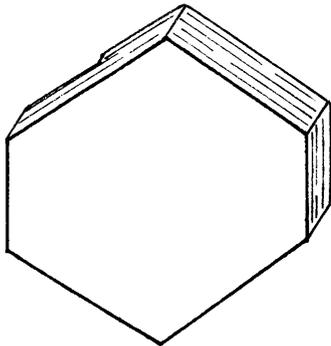
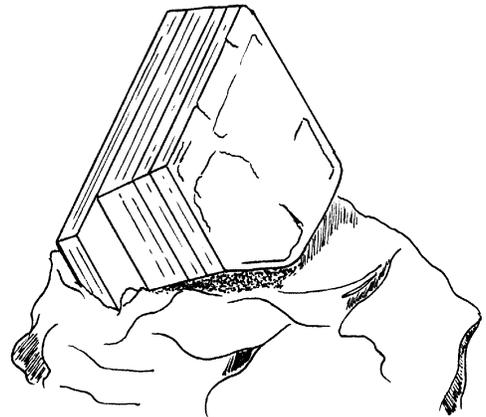
Amethyst is found all over the world. Clear, dark purple, gem-quality amethyst, however, is difficult to find.

When amethyst is heated it turns yellow. Yellow quartz is called *citrine*.



Dark purple amethyst from Thunder Bay, Ontario.

Biotite



Biotite is one variety of the mineral group called *mica*. All mica minerals break or cleave into very thin sheets. Mineralogists call this *micaceous cleavage*. All mica minerals form six-sided crystals. Biotite contains iron and so it is also called *iron mica*. The iron makes biotite black. It is soft at only 2.5 to 3 on the hardness scale.

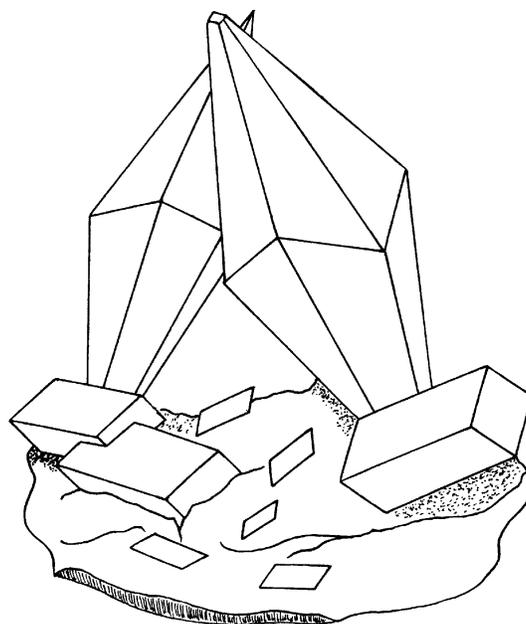
Above left: A perfect, six-sided biotite crystal.

Above: Biotite crystals from North Burgess Township, Lanark County, Ontario.

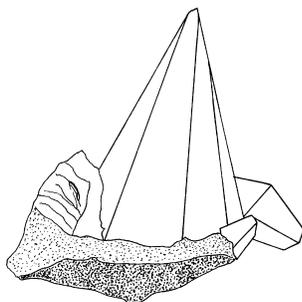
Calcite

Calcite most often forms in the sedimentary rock called *limestone*. Calcite crystals are common and can be very large. It is number 3 on the hardness scale. Its crystals are often very glassy. This is called *vitreous* or *glassy luster*. Different impurities can give calcite its color. It can be colorless when pure, or yellow, brown, red, white, black, green, blue, orange or golden yellow.

Calcite has been cut into gemstones, but it is so soft and so easily cleaved (that is, broken) that it is never worn in jewelry.



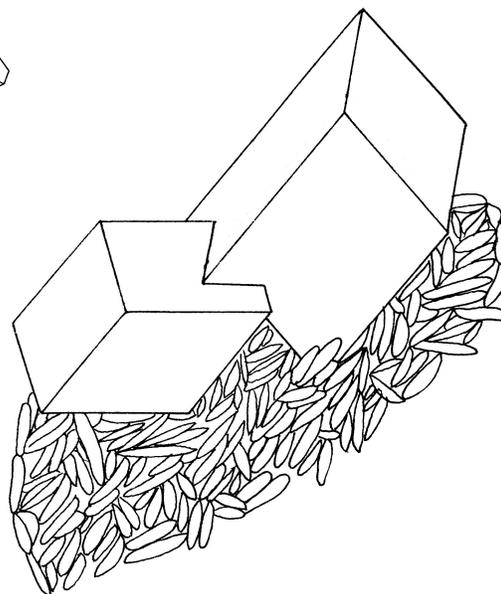
Above: Pink calcite from Hummingbird Falls, Alberta.



Left: Golden yellow calcite from Anderson Township, Ontario.



White calcite crystals with dark brown goethite spheres from the McLeod mine, Wawa, Ontario.

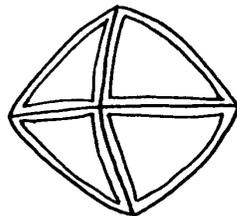


Pale yellow calcite crystals on small, white dolomite blades from Pine Point, Northwest Territories.

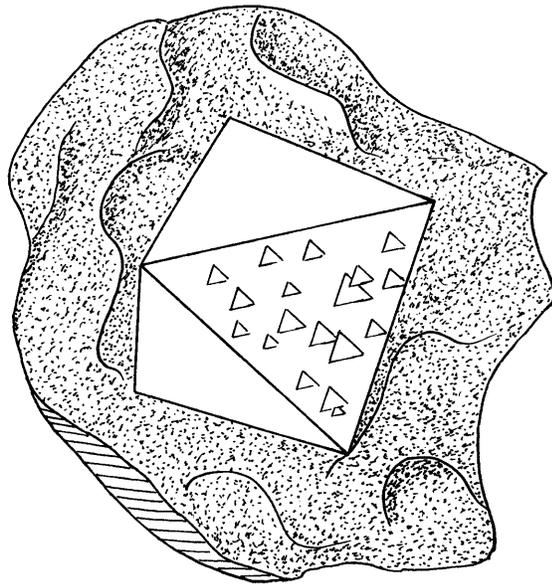
The Great Canadian Diamond Discovery

Around 1985, two geologists, Chuck E. Fipke and Dr. S. Blusson, began to search for diamonds in Canada. They used old maps and information to find a place where diamonds could be found. They looked for clues in the ground that told them they were getting close to a diamond deposit. They looked for minerals like garnet and olivine. In 1990, Mr. Fipke discovered a lake near Lac de Gras in the Northwest Territories. He studied the area and in a year they found a diamond deposit!

Diamonds are found in a special rock called a *kimberlite*. Diamonds are millions and millions of years old! Geologists have discovered that diamonds formed deep in the Earth when the continents were beginning to form. Diamonds are made of the element *carbon*. When you burn a piece of wood, the black soot that remains is carbon. They form at very, very high temperatures and pressures. For carbon to turn into a diamond, the temperature has to be around 2000 degrees Fahrenheit and the pressure has to be 800,000 pounds per square inch. Temperatures and pressures this high can only be found deep in the Earth.



A perfect diamond crystal in
kimberlite rock.

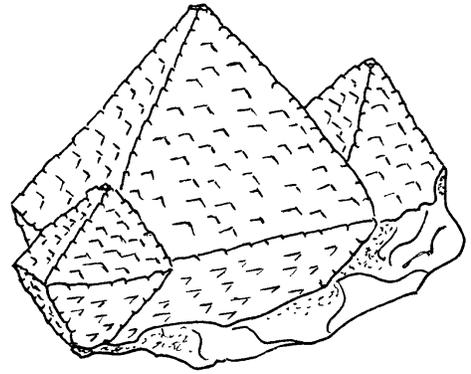


Fluorite

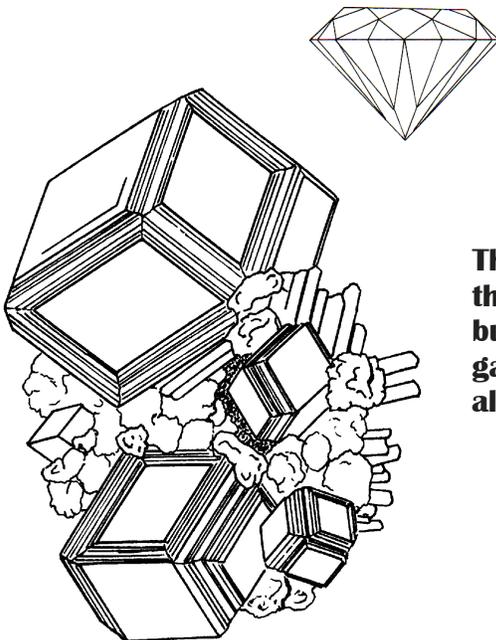
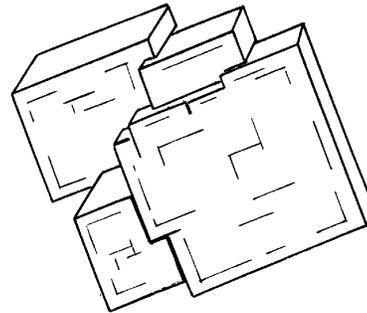
Fluorite is often found with metallic minerals. A metallic mineral is a mineral that contains a metal. For example, galena contains lead and pyrite contains iron. Fluorite can also be found with sphalerite, barite, calcite and quartz.

Fluorite is used in very special telescopes and cameras instead of glass. This is because fluorite lenses can give very clear images of objects that are very far away.

Fluorite cubes from Rosspport, Ontario. These crystals are yellow in the middle and dark purple around the edges.



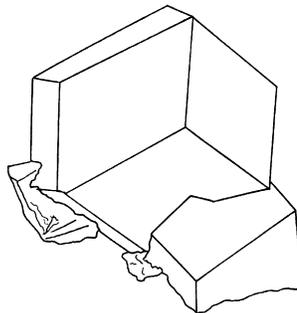
Light green fluorite octahedra from the famous Rock Candy mine, British Columbia. These large crystals are made up of hundreds of smaller crystals.



A group of orange garnet crystals from the Jeffrey mine, Asbestos, Quebec. This type of garnet is called *hessonite*.

Garnet

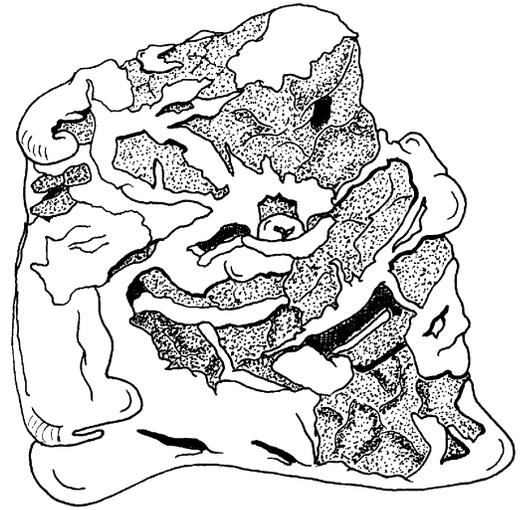
The name "Garnet" is used for a number of minerals that have chemical formulas that are very close — but not exactly the same. Each different kind of garnet has a special name, such as demantoid, almandine, and spessartine.



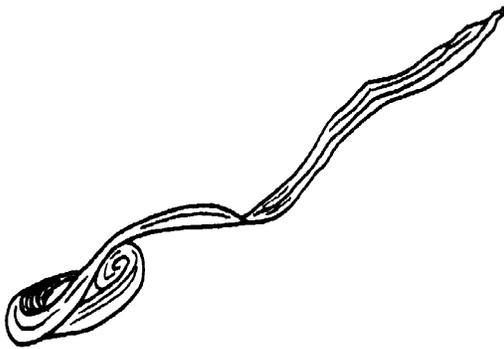
Green garnet from the Jeffrey mine, Quebec. Garnets can also be pink, colorless and red.

Gold

Gold was first discovered in Canada in the 1850's at Queen Charlotte Islands, and later in the Cariboo District. In 1896, gold was discovered in the Yukon Territories in the area called the Klondike District. Over \$3 billion worth of gold has been mined near the town of Dawson!

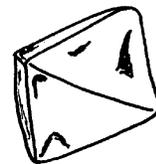
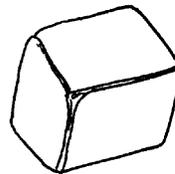


A smooth and very rounded gold nugget. The gold is covering quartz. It is from El Dorado Creek, Dawson City, Yukon Territory.



Above: Gold wire from 60 Mile Creek, Yukon Territories.

Gold is very, very soft. It is usually found as rounded nuggets. However, gold crystals have been discovered in Canada. Here are a cube and an octahedron (diamond-shaped). They are from Irish Gulch, Yukon Territories.



A wonderful and rare opportunity

Mr. Russ Behnke is a mineral dealer and collector from Meriden, Connecticut. He has field collected minerals since his childhood when he would go out collecting with his father. He has put together a beautiful book of his life in mineral collecting called *Treasured Minerals*. It has not been printed. However, you can download a *free* copy of this book as a PDF file from his website:

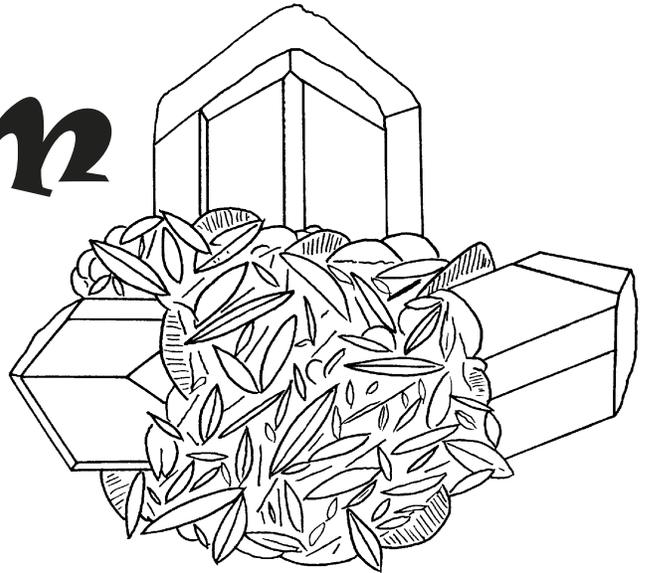
<http://www.russbehnke.com/book.html>

In his own words, "I can hope to have the book in 100,000 computers. So perhaps that is better way to go than print, and having perhaps only 1500 copies out there. Free may be the way of the future." Download this beauty, read it and enjoy it right now! Thank you, Russ.

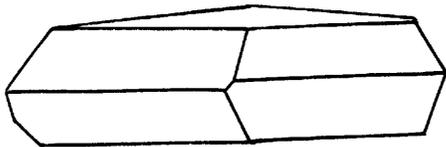
Gypsum

Fine gypsum crystals are found in Canada. Canada is also one of the world's most important sources of massive gypsum. Massive gypsum is used to make plaster and wall board for construction.

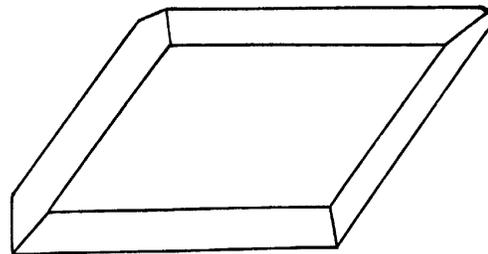
Gypsum can be colorless, white, green, yellow, golden, and tan.



Above: A ball-shaped group of golden gypsum crystals from the Red River Floodway, Winnipeg, Manitoba.



A single gypsum crystal from Chain Lakes, Alberta (shown in a side view above and a top view to the right).

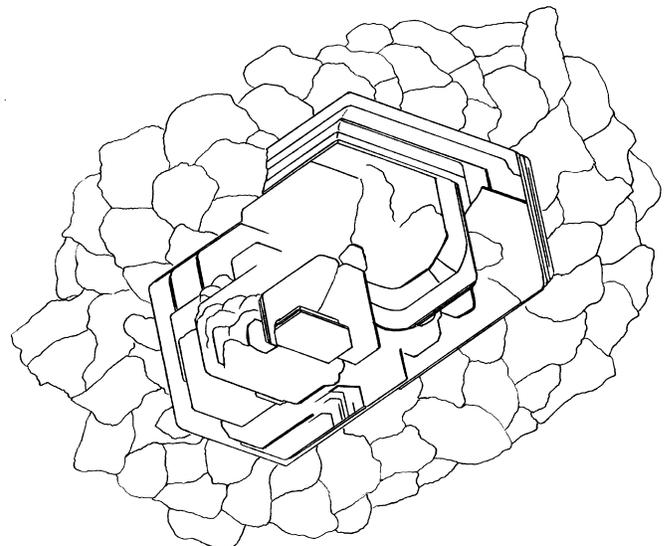


Molybdenite

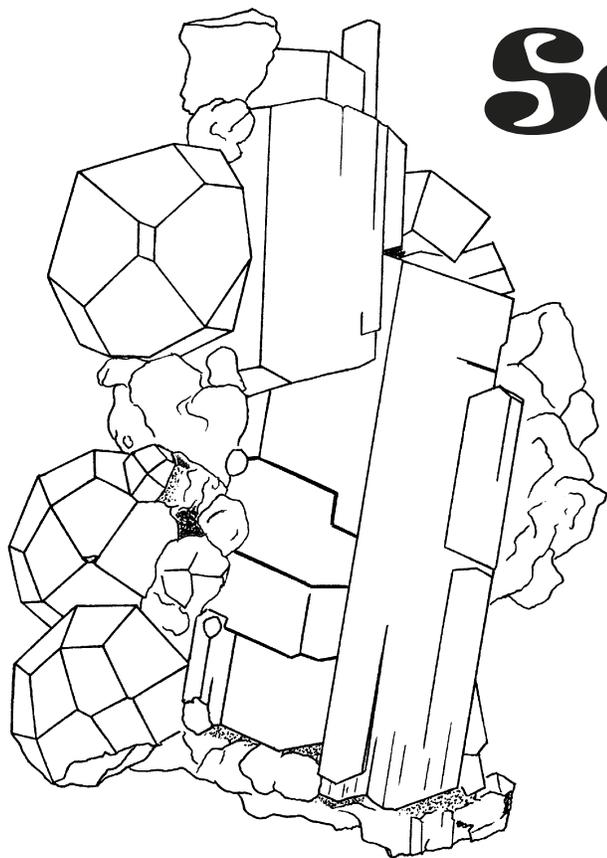
Molybdenite is the main source of the element *molybdenum*. It is silvery gray and breaks into thin sheets. Molybdenum is crushed into very small pieces and mixed with oil; this mixture is used as a lubricant in machinery and aircraft engines.

Molybdenite is so soft it will leave a mark—like a pencil—on a piece of paper.

The molybdenite crystals found in Cadillac, Malartic Township, Quebec are some of the finest in the world.



Mont Saint-Hilaire is one of the most famous mineral deposits in the world. It is in the southern region of Quebec, east of the city of Montreal. Found in this mountain are some very rare minerals, many of which are found only in Mont Saint-Hilaire. 371 different mineral species have been identified here. 50 of these are *new to mineral science!* Here are only two of those minerals.



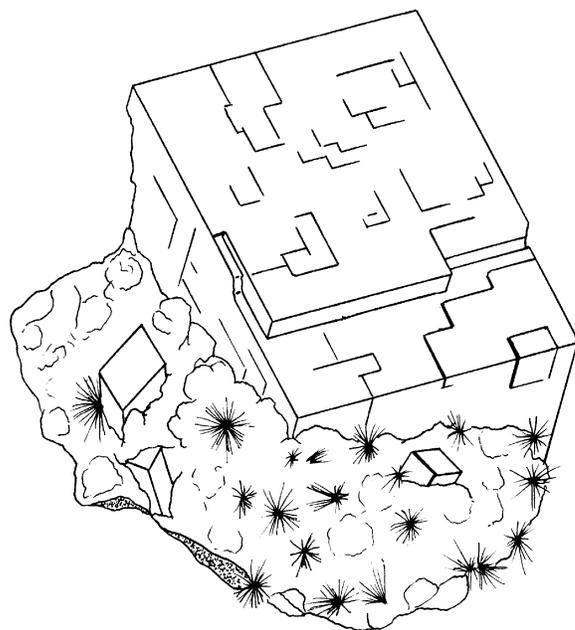
Serandite

Serandite is a rare and very beautiful mineral. Some of the very best serandite crystals have been found at the world-famous mine at Mont Saint-Hilaire, Quebec. Mont Saint-Hilaire is the source for dozens of rare and beautiful minerals, some of which are found no where else in the world.

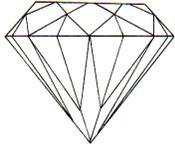
On the right side of this picture are some long, orange serandite crystals. On the left side of the specimen are white analcime crystals.

Siderite

Siderite contains iron, carbon and oxygen. It has so much iron that it is an important iron ore. Other minerals found with siderite are fluorite, galena and barite. Its crystal shape is the same as calcite. Pictured here is a large siderite crystal that is called a *rhombohedron*. Siderite can be yellow to light brown to dark brown or even black. The crystals pictured here are dark green. Siderite can also be a source of the element *manganese*.



A large, dark green siderite crystal with smaller siderite crystals on white albite. This specimen is from Mont Saint-Hilaire, Quebec.



Silver

A number of deposits of natural silver have been discovered in Canada. Silver is a soft, bright, shiny element. Silver will react with sulfur in the air and tarnish, eventually turning black. Silver conducts electricity better than any other metal, even better than copper or gold. Silver is *ductile* which means it can be pulled into long, thin wires. It is also *malleable* which means it can be pounded into very thin sheets.

Silver has been used to make coins for many centuries. Coins containing a mixture of gold and silver have been discovered that date back to 700 B.C.



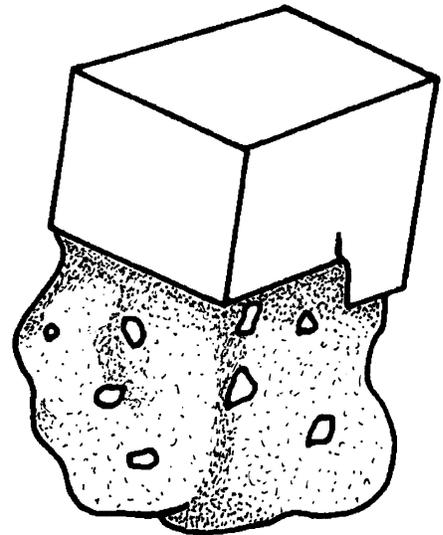
“Leaf silver” on matrix from the Hudson Bay mine, Coleman Township, Cobalt District, Ontario. “Leaf silver” is natural silver that forms in very thin sheets. Gold can also form this way.

Uraninite

Uraninite is a very important ore of the element *uranium*. Uranium is a radioactive element that is important as fuel in nuclear reactors. It is also used in nuclear weapons.

The massive form of uranium is called *pitchblende*. One of the world’s most important pitchblende deposits is at Great Bear Lake in the Northwest Territories. (It is interesting that this same location produces a lot of silver.)

Uraninite is black and very heavy. Uraninite crystals are typically small.



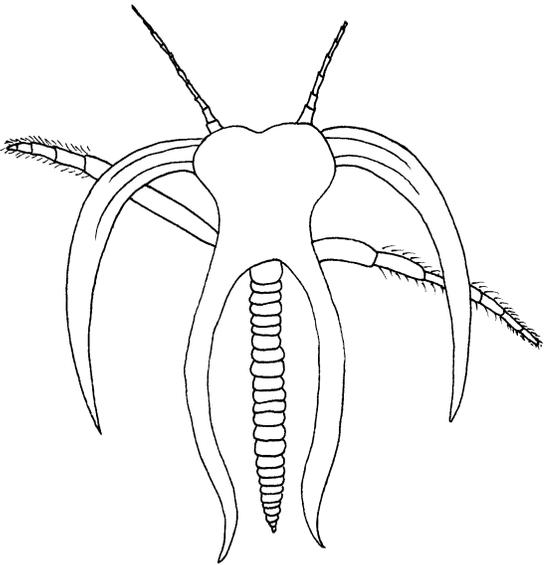
A single black uranium crystal (cube) from the Cardiff mine, Wilberforce, Ontario.

And Fossils, too! The Burgess Shale

In the Yoho National Park in the Canadian Rocky Mountains of British Columbia is one of the world's greatest fossil occurrences. Most of the fossils in the world are petrified bones and shells of ancient animals. Bones and shells are called "hard parts" because they are solid and hard. However, in a rock called the *Burgess Shale* the fossilized remains of the soft, flesh parts of ancient creatures are found!

The Burgess Shale is about 540 million years old. It was formed in the geologic time period that geologists call *The Cambrian*. It was first discovered in 1909 by Charles Walcott.

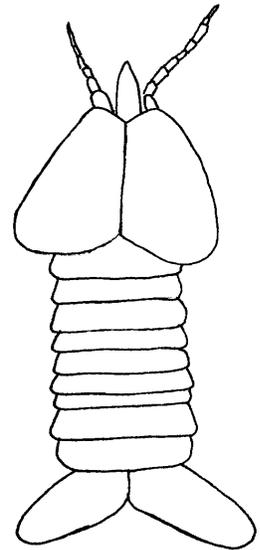
When the Burgess Shale was deposited in an ancient sea, it was near the equator. 540 million years ago, Canada was not part of North America. It was part of an ancient landmass called Laurentia that later broke apart and drifted north to its present location.



Left: *Marrella splendens*.
It is likely that this creature could swim.

Right: *Plenocaris* is thought to have been a sea creature similar in some ways to a modern lobster.

Scientists have no idea what color these creatures were when they lived. Fossils don't preserve the original color of the organism.



Mineral Library: A Brand New Idea

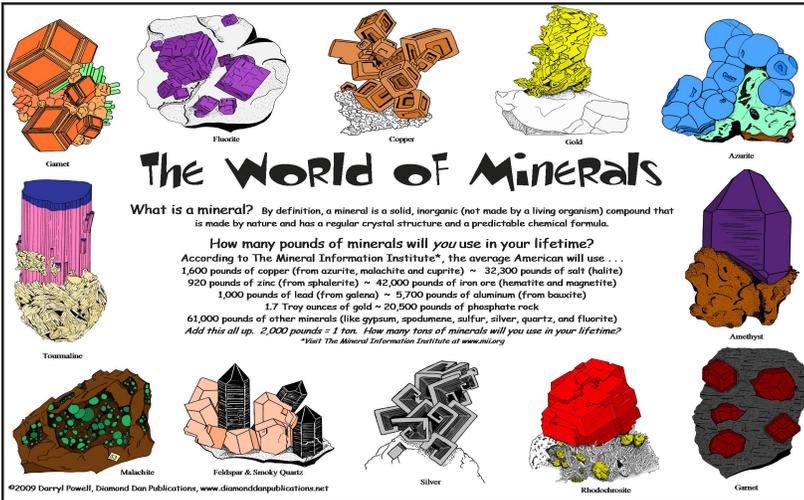
Diamond Dan is loaning a specimen of quartz crystals from Arkansas to our Mini Miners. This is how the "Mineral Library" will work: Each Mini Miner that borrows the specimen may keep it for one month. At the end of the month, he or she will receive an email from Diamond Dan with the name and address of the next person who wants to borrow the specimen. Carefully pack up the specimen and mail it to the next person. While you have it, all we ask is that you take good care of it. Take photos of the specimen. Draw a picture. Simply enjoy it. The idea is that you will be able to enjoy a higher quality specimen that you would not be able to purchase.

Would you like to borrow the quartz crystal cluster for a month? Email Diamond Dan explaining why you would like to borrow the specimen. Include your name and mailing address so you can be placed on the borrowing list. You will be contacted so you will know which month you will have the specimen. (diamonddan@rochester.rr.com)

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