

**CABOCHONS**

A **cabochon** or **cabachon**, from the Middle French *caboché* (head), is a gemstone which has been shaped and polished as opposed to faceted. The resulting form is usually a convex top with a flat bottom. Cutting *en cabochon* is usually applied to opaque gems, while faceting is usually applied to transparent stones. Hardness is also taken into account as softer gemstones with a hardness lower than 7 on the Mohs hardness scale are easily scratched, mainly by silicon dioxide in dust and grit. This would quickly make translucent gems unattractive—instead they are polished as cabochons, making the scratches less evident.

In the case of asteriated stones such as star sapphires and chatoyant stones such as cat's eye chrysoberyl, a domed cabochon cut is used to show the star or eye, which would not be visible in a faceted cut.

The usual shape for cutting cabochons is an ellipse. This is because the eye is less sensitive to small asymmetries in an ellipse, as opposed to a uniformly round shape, such as a circle, and because the elliptical shape, combined with the dome, is attractive. An exception is cabochons on some watches' crowns, which are round.

The procedure is to cut a slab of the rough rock, then to stencil a shape from a template. The slab is then trimmed to near the marked line using a diamond blade saw—called a trim saw—and sometimes followed by "nibbling" to the line. The purpose of nibbling is to speed the shaping of the material when using silicon carbide grinding wheels. Most lapidary workshops and production facilities have moved away from silicon carbide to diamond grinding wheels or flat lap disks.

Once the piece is trimmed and nibbled, it is usually mounted on a handle to assist manipulation. This procedure is called "dopping"; it is normally done by adhering the stone with wax onto a length of wooden dowel called a "dop stick". The piece is then ground to the template line, the back edges may be beveled, and finally the top is sanded and polished to a uniform dome.

From: Wikipedia, <http://en.wikipedia.org/wiki/Cabochon>



Australian Black Opal, 10.7 carats.

HERKIMER

By Charles Calkins

While on vacation in New York, I visited Herkimer on April 30th to look for Herkimer "diamonds"—quartz crystals found in small vugs in dolostone (magnesian limestone) in Herkimer County and nearby areas. The crystals have 18 facets (6 sides) and two terminations. They can be found individually, or in small groups, and crystals range in size from microscopic to an inch or so in length.

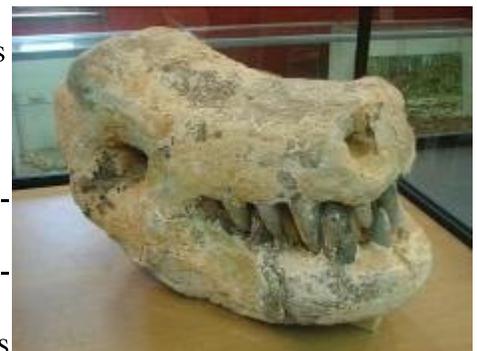
Two commercial collecting locations, the Herkimer Diamond Mines and KOA Campgrounds (N43.12878



W74.97647), **Figure 1, gift shop at Herkimer Diamond Mines.**

of Diamonds Mine and Campground (N43.13224 W74.97349), are within a stone's throw of each other on State Route 28 in Herkimer. I first stopped at the Herkimer Diamond Mines as it seemed to be the better publicized. At the main building, one pays \$10 for a wristband that acts as an all-day pass to the collecting area. The lower floor of the building is a large gift shop (Figure 1).

The bins on the right contain various raw minerals for sale by weight, while the glass cases on the left house more refined items, such as cut stones and jewelry. The second floor has a viewing area for a short movie which provides collecting tips, as well as a mineral museum. The museum hosts finds from the area, as **Figure 2, "Randy," from Madagascar.** well as special acquisitions, such as "Randy" (Figure 2), a majun-





gatholus skull found on Madagascar.

Two collecting areas are available at the Herkimer Diamond Mines, a short walk from the main building. Each looks like a quarry, providing access to a rock face (Figure 3). Although power tools are not allowed, one can collect as much material as desired by manual means –



Figure 3 quarry area at Herkimer.

whatever one finds, one can keep, with no charge beyond the initial entry fee. Unfortunately, the areas were extremely picked-over, and had not been refreshed by the property owners – I did not find a single “diamond” more than a millimeter or so in length. While hammering away at the rock face, I overheard a rock hound tell another that he had been coming for twenty-five years, and this was the worst he had seen – the other rock hound agreed. Apparently I was not the only one disappointed by the lack of quartz finds.



Figure 4, typical host rock found.

I found other things, however. Among these were a number of rocks typified by Figure 4. Although no list of minerals extant at the site was available at the main building, one of the employees confirmed that the light-colored crystal material is dolomite. I suspected that the red crystals may be garnet, and although not certain, the employee indicated that because garnet mines in New York are upstream from this area, it was a possibility. While I found several rocks which contained white and red crystals in dolostone, I only found one specimen that did not resemble dolostone at all (Figure 5). One of the exhibits in the museum described a layer of stromatolites that had been



Figure 5. Stromatolitic dolostone.



Figure 6, Ace of Diamonds Mine.

found at the site – perhaps this is a piece.

After a quick lunch, I went on to the Ace of Diamonds mine to see if the collecting area was more productive. They are located up a steep hill marked by a “diamond” hanging from a crane (Figure 6). While the

collecting area looked similar to the one at the Herkimer Diamond Mines, I did not have an opportunity to dig because it had begun to rain. I spent time in the gift shop, however. Although smaller than at the Herkimer Diamond Mines, they also sold both raw and processed minerals, such as a 163.92 carat cut and faceted Herkimer “diamond” that was priced at \$1,900 (Figure 7). As I was not able to find any of my own, I purchased a few raw diamonds” (Figure 8), to have something to show for the trip. Note that several of these are clusters of two or more crystals, though none are more than about a half-inch in length.



Figure 7, faceted Herkimer-

Although I enjoyed the opportunity to collect, and I returned with a few nice specimens of other minerals, it was unfortunate that the object of my search, Herkimer “diamonds” themselves, were not obtainable from the rock face, but only from the gift shop.



Figure 8, “diamonds purchased at gift shop.



ANNABEL LEE MINE

By Charles Calkins



Figure 1, headframe at the Annabel Lee Mine

In the December 2008 issue of Rock Lore, I described Minerva Mine #1, a fluorspar mine in southern Illinois owned by the Ozark Mahoning Company, and what can be found in its tailings piles. At the Decatur rock show, my wife and I learned of another abandoned fluorspar mine in the same area – the Annabel Lee Mine.

According to the Illinois State Geological Society guidebook, “Guide to the Geology of Cave-in-Rock Area, Hardin County, Illinois,” the Annabel Lee, one of many mines in the Illinois-Kentucky Fluorite District, was also owned by the Ozark Mahoning Company. It was the last to open, in 1984, and the last one to close, in 1995, due to cheap import prices of fluorite from Mexico and China. The name of the mine is from the Edgar Allen Poe poem of the same name, the last poem ever written by Poe.

The mine is located on a fault trending N50° E to S50° W, with the Palestine Sandstone (Mississippian) formation on the northwest side of

the fault, and the Tradewater Formation (Pennsylvanian) on the southeast side. The mine shaft, dug to 996 feet, is on the northwest side, and the mine’s head frame is the only one still standing in Illinois (Figure 1). Mining was performed with the room-and-pillar method.

While travelling south on IL 1 from IL 13, make a right on the first road past Cadiz Rd, and park at the gate, just as the road bends to the left (N37.57720 W88.19645). Walking past the gate and up the slope



Figure 2, nice fluorite from tailings area found by Jill.

leads to the mine area. My wife and I returned with several nice specimens of fluorite from the tailings piles, such as this large crystal that my wife found (Figure 2), and smaller ones that I had collected (Figure 3). She also found a horn coral, the first fossil that we have found in fluorspar-producing areas.



Figure 3, cleavage fluorite.

As the Annabel Lee is only a few miles from Minerva Mine #1, we returned to Minerva to see what else we could find. From the Annabel Lee, return to IL 1, and make a right to go south. Make a left on Tucker Hill Road, and stay to the right when the road forks. The Minerva mine area will be on the left (N37.54306 W88.15639), only about 6 miles north of Cave-In-Rock. At one end of the mine area, a stream borders the tailings piles, and heavy rains apparently caused the creek to overflow which helped to erode the tailings and reveal new material. For example, I re-



turned with a 36 pound crystal monster (Figure 4) from one of the wash areas. We both also found much

Figure 4, monster cleavage fragment.

calcite, sphalerite and other minerals as we had before. Although almost a four hour drive from St. Louis, these collecting areas are very productive, and make for a very rewarding day.

EARTHCACHE™ SITES

The most exciting way to learn about the Earth and its processes is to get into the outdoors and experience it first-hand. Visiting an EarthCache site is a great outdoor activity the whole family can enjoy. The Geological Society of America (GSA) administers the listing of EarthCache sites around the world.

An EarthCache site is a special place that people can visit to learn about a unique geoscience feature or aspect of our Earth. Visitors to EarthCache sites can see how our planet has been shaped by geological processes, how we manage the resources and how scientists gather evidence to learn about the Earth.

Visiting an EarthCache site is a great way to learn more about our wonderful world. It can take you to many places that you would not normally visit, and teach you about why those places are special or unique. EarthCache sites can also teach you and your family important skills such as navigation and map reading. What better way to learn than to have fun exploring on this wonderful planet we call Earth!

To visit an EarthCache site you need a few things. First you will need a Global Positional System Receiver (GPS). This is a device that reads satellite signals and then, through the use of mathematics, can calculate your position on Earth as a latitude (how far north or south of the equator), longitude (how far east or west of Greenwich, UK) and altitude (how far above sea level). GPS units come in many shapes and sizes. The most common used by geocachers is a small hand held unit that can be purchased from sports, camping, and some department stores. These can cost around US\$95 for basic models. The more you pay, the more features the GPS has. However, the most basic unit is suitable to get started. You will need to read the instructions of your GPS unit carefully and learn how to input latitude and longitude numbers into the unit so you can find a location.

You will need a log-in name at [geocaching.com](http://www.geocaching.com)

where EarthCache sites are hosted. It is FREE and only takes a few minutes. You will need to think of a unique caching name and a password.

You need a sense of adventure and a way to get there. Most people visit EarthCache sites by driving close to the site then walking to find the location. In some places, EarthCache sites are close to other transport, such as hiking trails and train stations. There are plenty of online mapping tools that can help you "see" where you need to go to discover an EarthCache site.

Once you have your GPS unit and have practiced entering latitude and longitude coordinates, just go to the EarthCache listings. Here all the EarthCache sites are listed in a table. You can sort these by country, state, name, etc. When you find one in the area you want to visit, click on its name and you will go to the page for that EarthCache site. You may have to log in to see the latitude and longitude details (use your log in name and password that you organized before).

Print out that page. It will have all the important information that you can use to find the EarthCache site. Some EarthCache sites have additional 'clues' which you need to decrypt to read! You should read all the information on this page so you know exactly what you need to do to fully experience the EarthCache site. At some sites you will also need to take digital photographs.

Enter the latitude and longitude for the EarthCache site into your GPS. Then select set your GPS to find (GOTO) that location. Your GPS will be able to tell you how far away and in what direction you have to travel to find the EarthCache site.

Your GPS should be able to place you within 20 feet of the EarthCache site. In almost all cases, this is close enough for you to learn about some amazing aspect of the Earth at that place.

When you get back to your computer, go back to the listing for that EarthCache site and click on the button to "log your visit." Here you can write comments, perhaps rate your experience, and even upload a photo that you have taken. Your statistics for EarthCache sites that you have visited, as well as other cache types, can be found on your own account pages at [geocaching.com](http://www.geocaching.com).

If you have visited three or more EarthCache sites, why not see if you are eligible to be rewarded with an EarthCache Master Pin. Visit the EarthCache Masters page for more details. You can even develop your own EarthCache site. It's not too difficult. You need to find a unique location that you can use to teach others about the wonders of our Earth. You will need to follow the EarthCache Guidelines, including getting permission land access.

From: EarthCache™ at <http://www.earthcache.org/>