

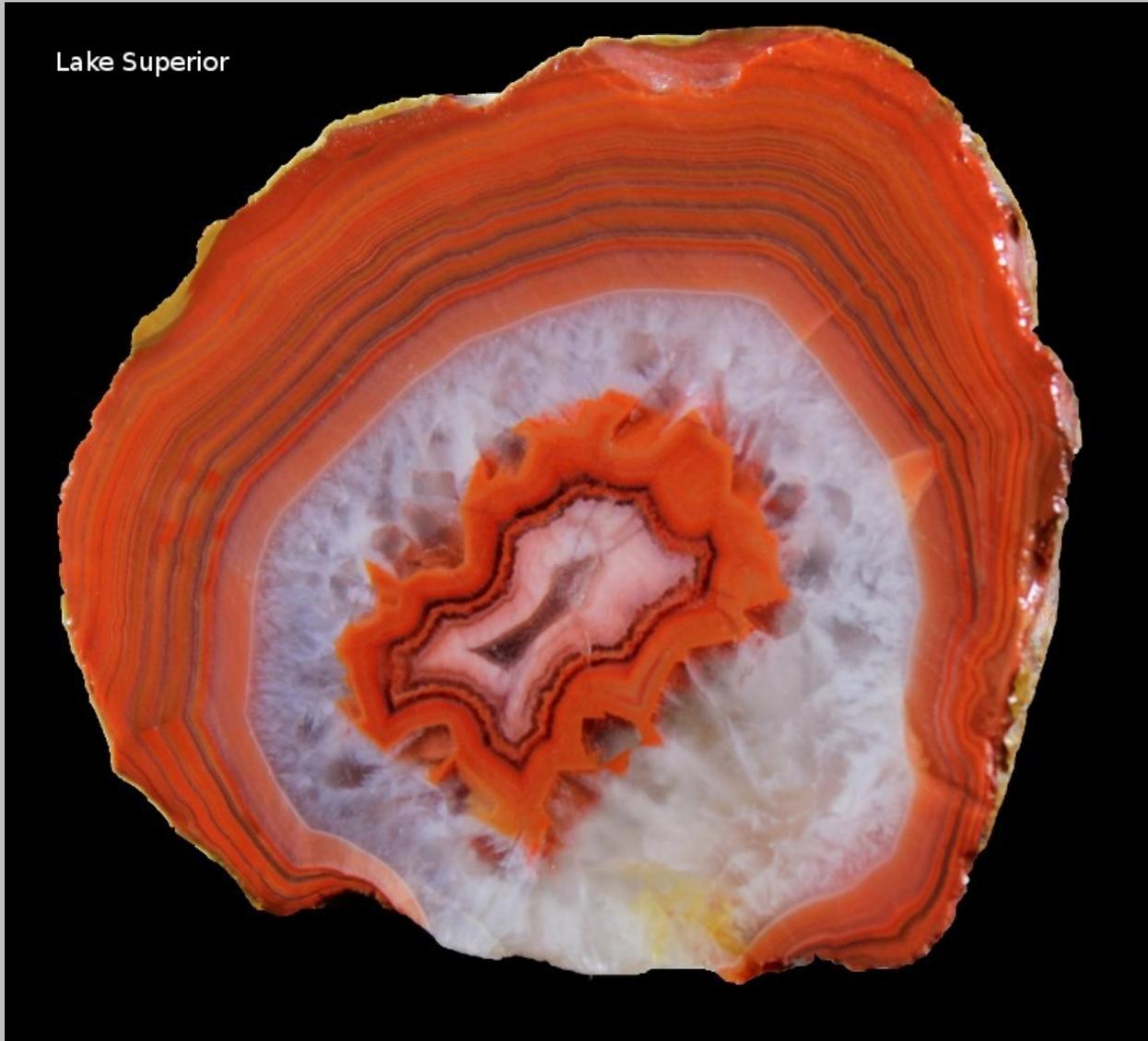
Left Over Odds and Ends

The following is a collection of left over photographs with accompanying descriptions of a variety of agates and agate features that illustrate some of the things I have tried to explain in the previous pages. You will notice right away that the illustrations are in no particular order. You will also come across some brain teasers for you agate aficionados, just to make it more interesting. I hope you enjoy these pages and they yield a better understanding of, and appreciation for, this one small part of God's great creation.



This is a very pretty fortification agate showing 'shadow effect', a pressure release structure, and a drusy quartz center.

Lake Superior

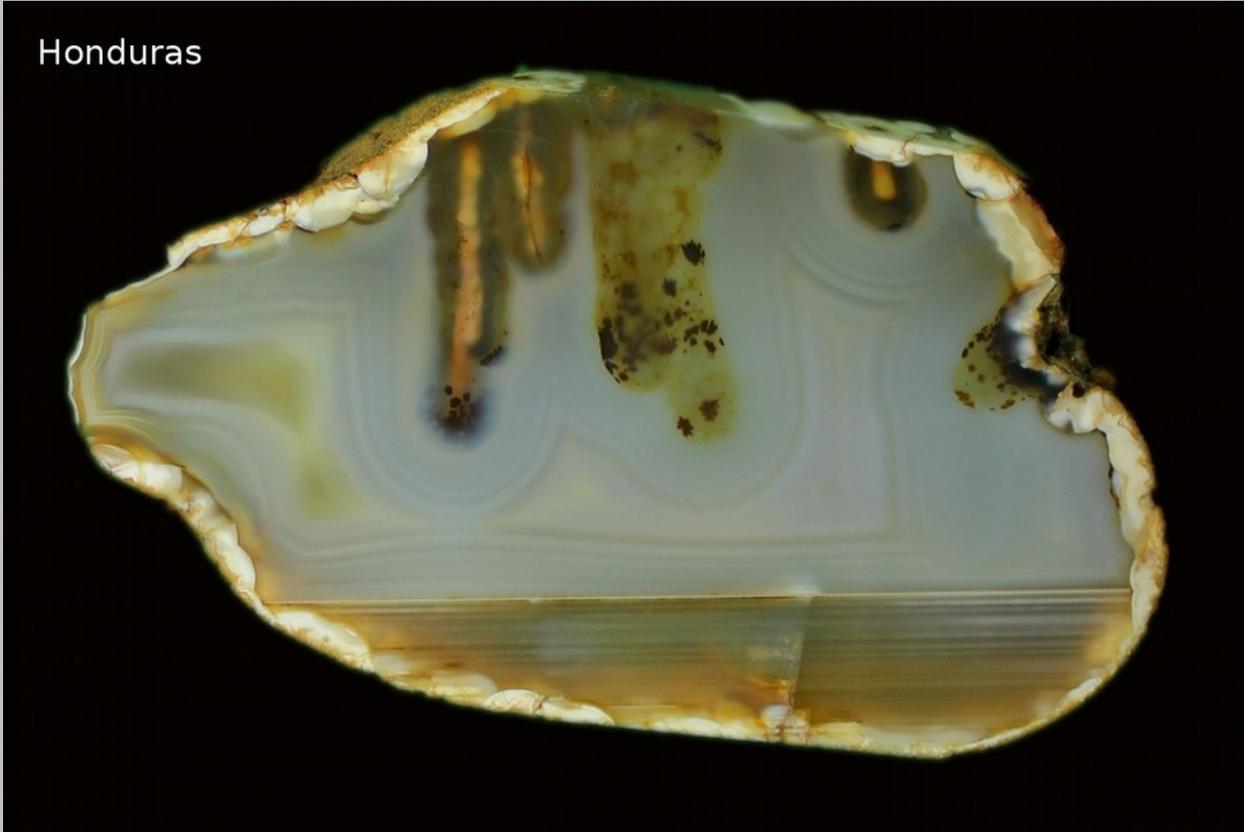


Here we have a Lake Superior 'floater'; that is, an agate with banding on the outside with a quartz filling, and a banded center 'floating' in the quartz. The floating center even has a quartz center itself. It appears to be nodular and probably of volcanic origin but the origin of most Lakers is unknown. The term "laker" is used by duffers like myself to cover the multitude of agate types coming out of the Great Lakes and upper Midwest.



This is a cabochon cut from a piece of Montana Dryhead agate. It is a sedimentary agate usually found, almost like thunder eggs, in a matrix of dark, silicified limestone. Bright orange banding is characteristic of these agates. This one has a drusy pocket partially overlain with gypsum(?) crystals.

Honduras

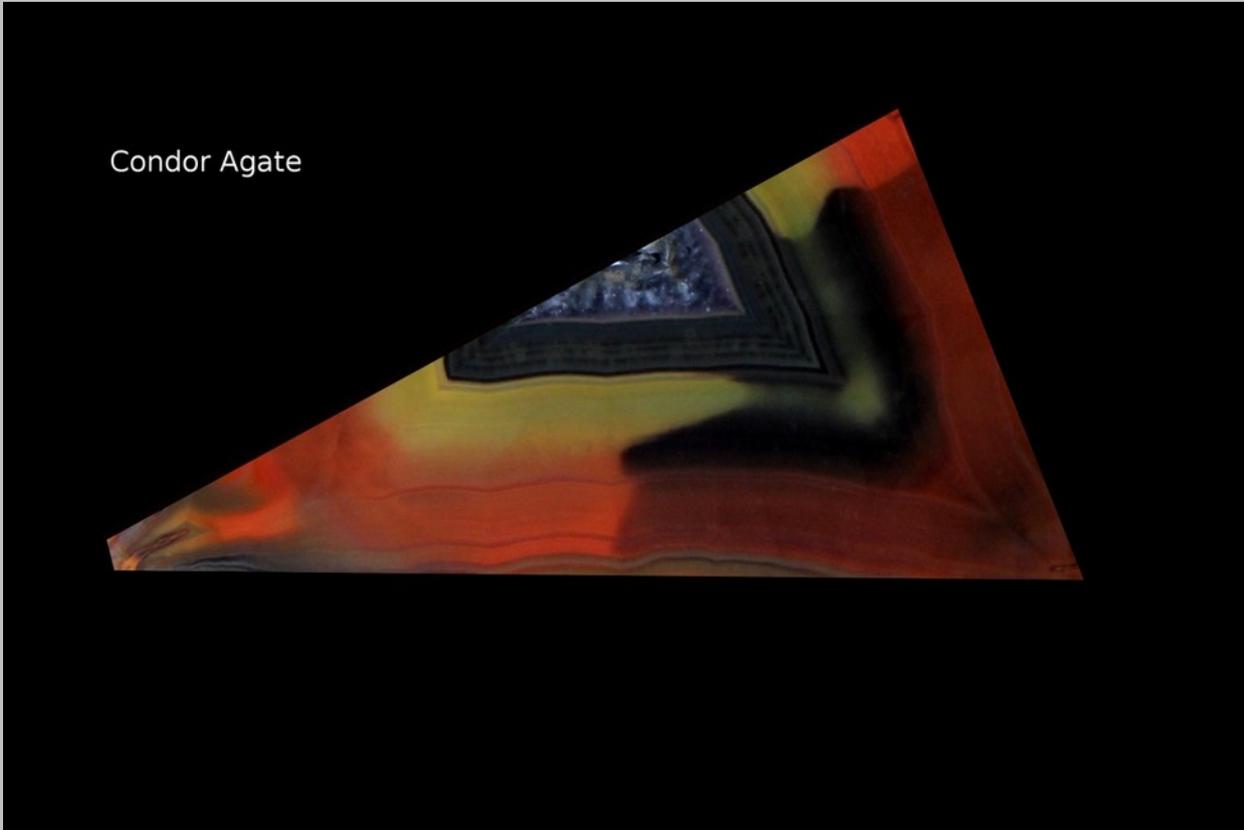


Pictured here is an unusual agate from Honduras of interest mostly as a curiosity to agate fanciers, not for its beauty. It's a nodular agate with needle-like mineral crystals, pre-dating the silica filling, protruding into it. Nearly colorless chalcedony formed around these crystals, then a 'moss' coating formed on the growing stalactites. After which, the growth of the chalcedony stalactites resumed. Now we see "moss" in an unusual three dimensional setting.



This is a colorful banded agate from Germany. The irregular shape shows that it is not a nodular agate or true thunder egg but one of the fillings of irregular voids that I refer to as 'pocket agates'. The interesting thing about this agate is how it displays chromatography – the changing of color in bands. It appears that the finely divided hematite coloring the band has migrated from the right side and concentrated on the left side, leaving a speckled white band on the right side. Water content in that part of the band probably mediated the molecular migration.

Condor Agate



Now we have a Condor agate from Argentina. This is a cropped picture that is intended to make a dramatic effect. Even in this small piece, we see several characteristics of Condor – the very bright neon like colors and very angular shape of the agate. The illusion of shadow results from what is often called “chromatography”, and that is fine for our use, however I’m not sure that would be technically correct in this case. As I understand it, the term “chromatography” is borrowed from a chemical process describing the migration of molecules. It appears to me that these in-band changes in coloration are due to a change in the oxidation state of the iron in the bands from ferric (red- oxidized) to ferrous (black-reduced).

There is also a nice little escape tube at the left end.



Here is a cropped close-up of a Brazilian agate showing a great illusion of three dimensions. Take my word for it, it is a flat sawn face. Or, better yet, take a close look at the insert. You can barely see the long drawn out pressure release structure that creates the illusion.



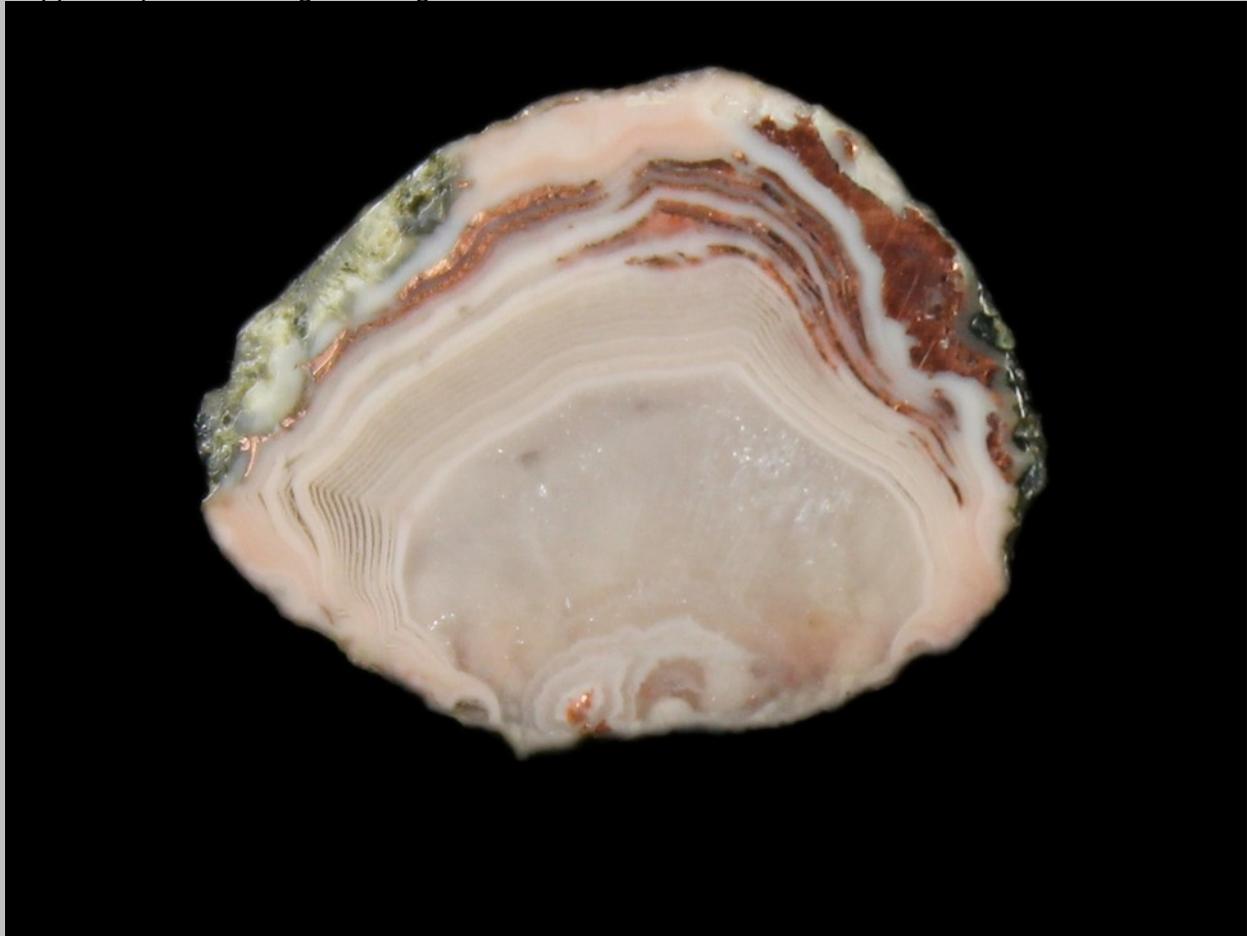
Paint Rock Agate



Another, but very different Paint Rock, with a lot going on. Again I have run into a naming quandary. This one is fractured, but I wouldn't call it brecciated; and it's not really healed. The fractures are filled with an opaque greenish material probably composed of clay and chlorite minerals and calcite. The fractures apparently served as conduits for calcium carbonate (remember Paint Rock agate forms in limestone) and both sides of the fractures bristle with aragonite or calcite crystals (they fizz in acid). Banded chalcedony fills in between the fractures and seems to live in unusually good harmony with the carbonate.

This is a real puzzler. The agate crystallized in pockets bounded by the fractures. But fractures don't propagate through voids, or liquids, or gels so what filled this cavity originally? If it was something that was dissolved away by the silica solution, why didn't it attack the carbonate crystals? I leave it to you figure out.

Copper Replacement Agate Houghton Co., MI

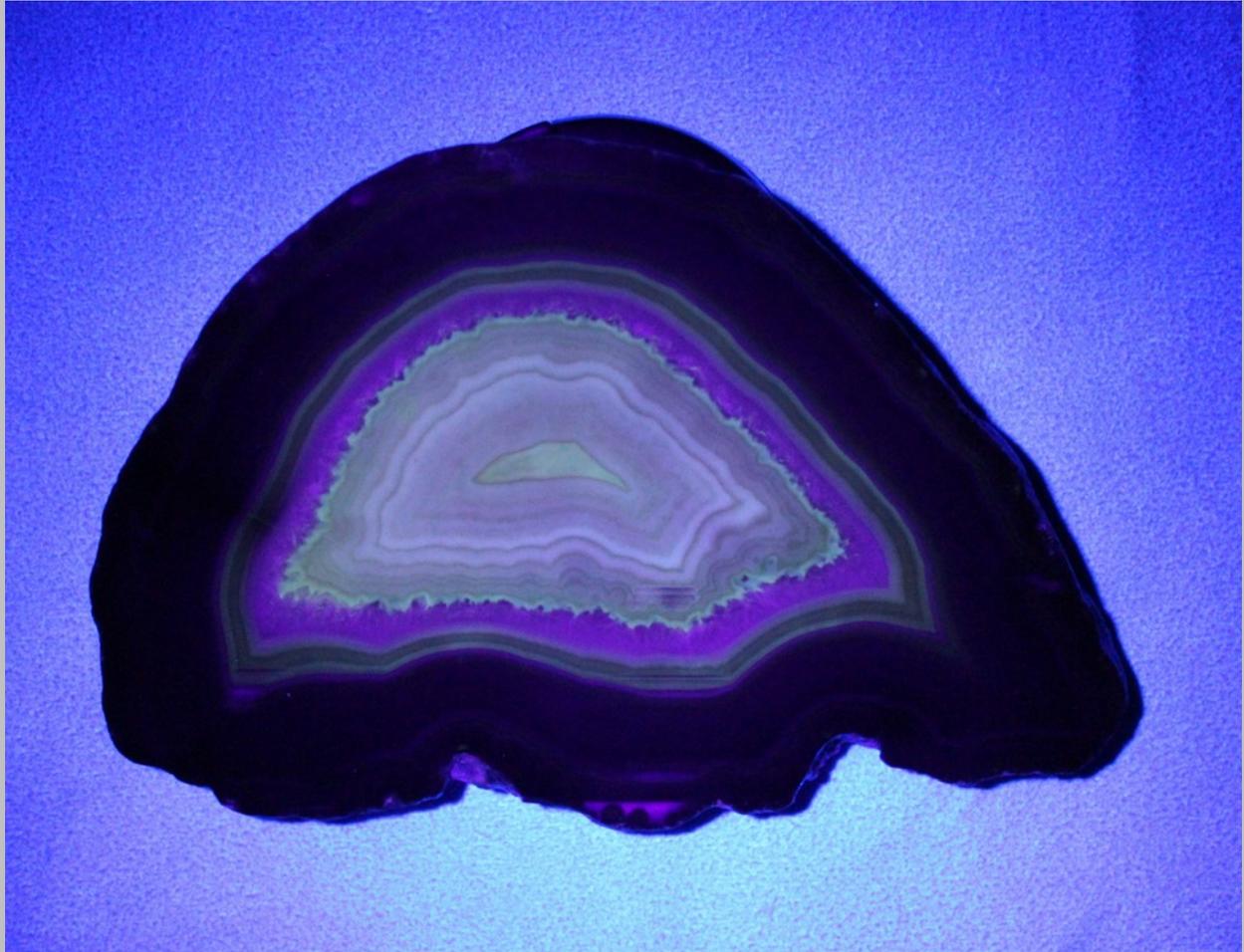


I have made much of the predatory nature of silica, moving in and dissolving away other minerals. But here we see the reverse happening – an agate formed in the Great Lakes volcanic region, later, in the copper forming period, copper replaced some of the agate.

This specimen is from the Calumet & Hecla #21 Copper Mine, Houghton Co. MI



This pretty lace agate from Java, appropriately named “Java Lace” or “Java Rainbow Lace”, reminds me so much of geologic drawings I did many years ago. Layers of rock, folds and faults, intrusive veins, unconformities, even a cavern. Do you see them?



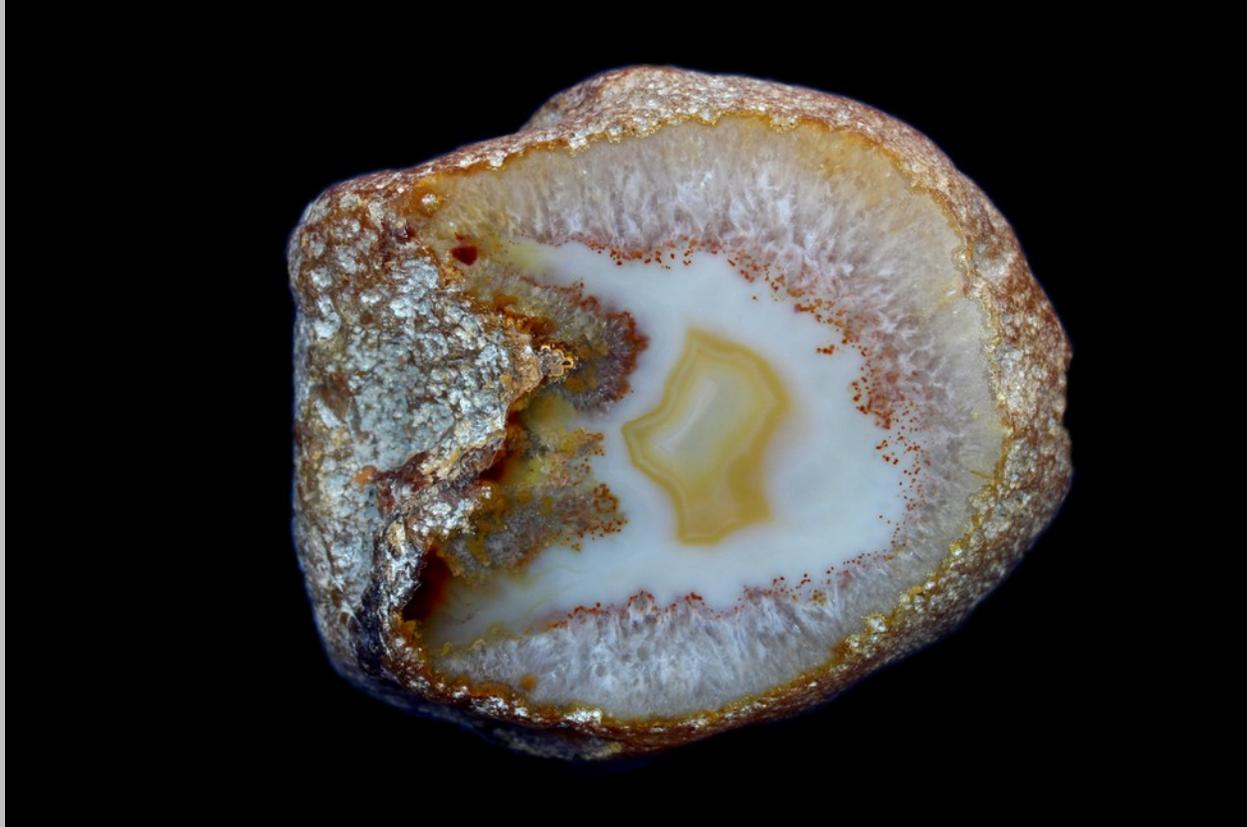
Some agates fluoresce under ultraviolet light. The inner layers of chalcedony in this Brazilian agate fluoresce weakly.



Thunder Egg, Poland

Here's an example of water flowing through cracks leaching out iron from color bands, perhaps concentrating it in some other spot. That is rather the opposite of the capillary plume process.

Enhydro Geode, Brazil



This is a hollow agate containing water, called an “enhydro” - or rather, it was an enhydro forty years ago when I first cut it. For years I could hold it up to a strong light (it is cut on both sides almost to the central cavity) and see the shadow of water when tilting it. Over the years, however, it dried out as they usually do.

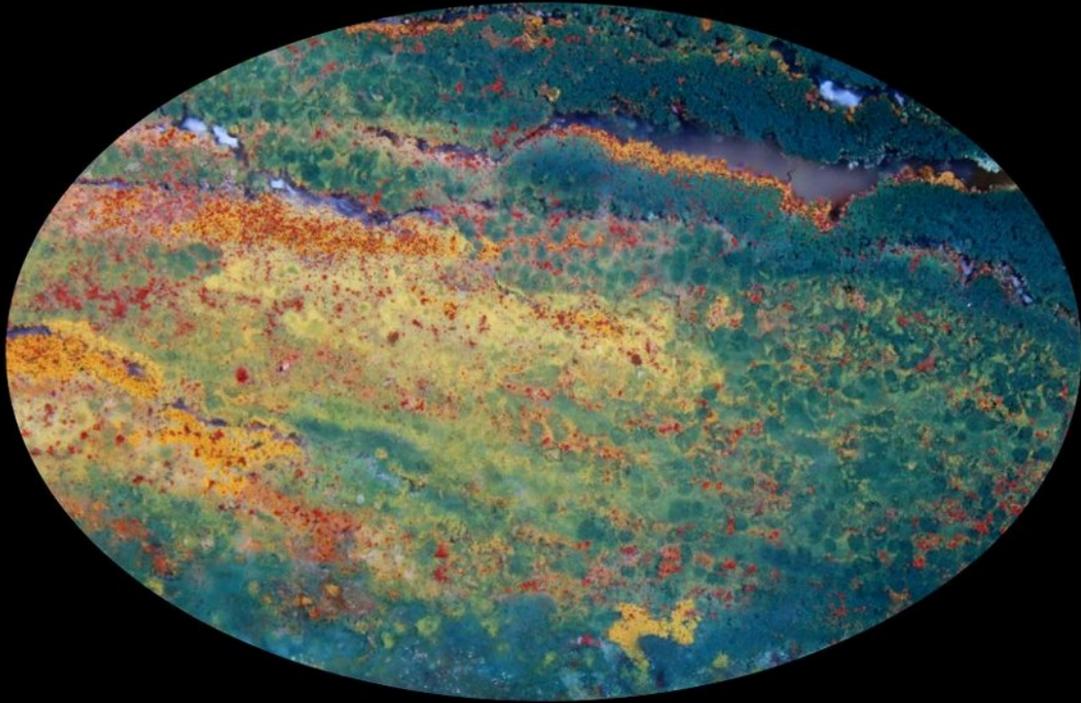
The interesting thing about it now, at least to me, is how the growing macro-quartz pushed ahead and concentrated the iron compounds at the interface with the chalcedony.

Crazy Lace, Perimorph/Pseudomorph Agate, Mexico



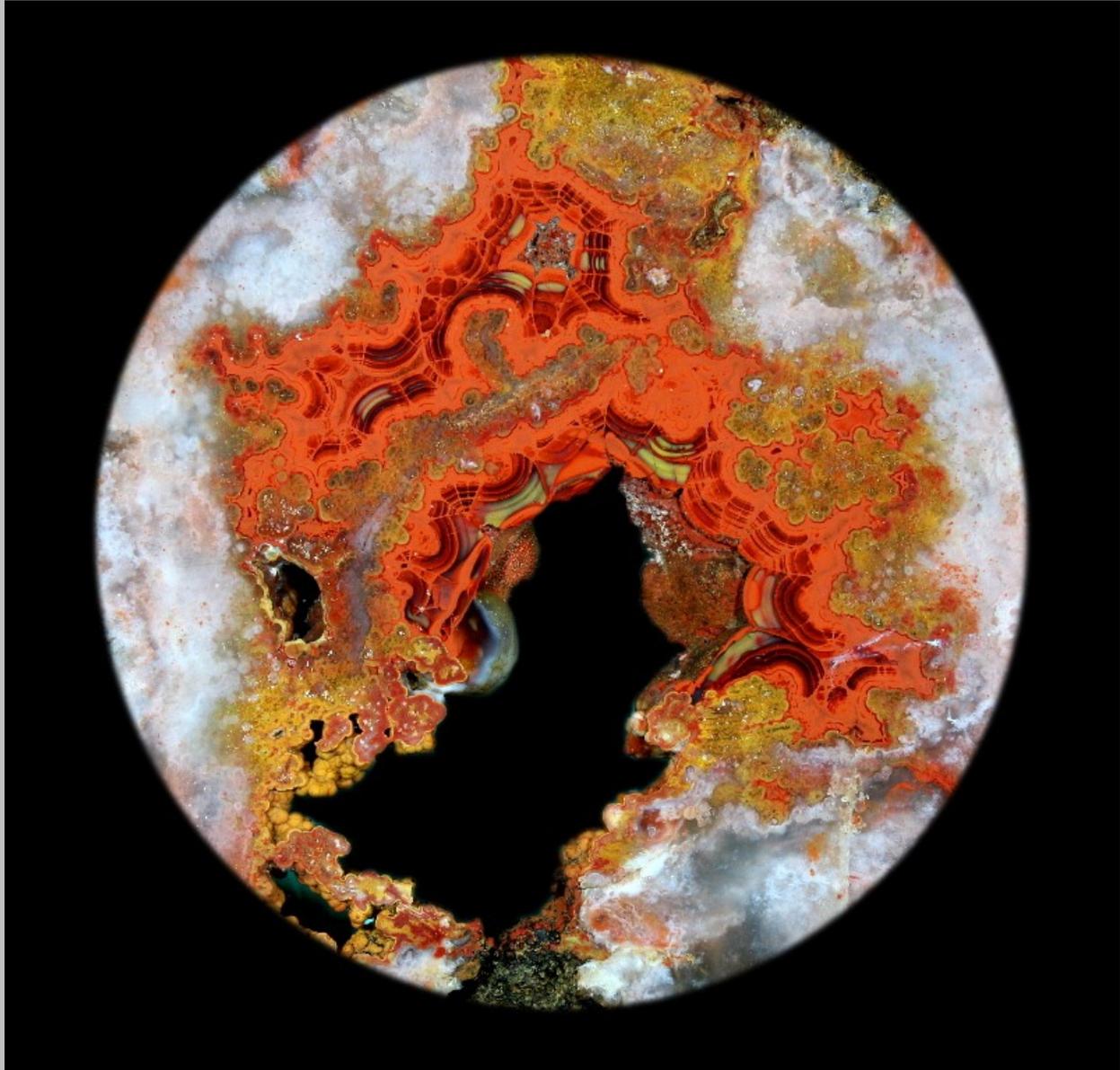
We've looked at this one before – the lace agate formed over calcite crystals that dissolved away and that void was filled with banded and pseudomorph agate – I think. But if you can figure out exactly how that amazing transformation happened, my hat is off to you.

Fancy Jasper, India

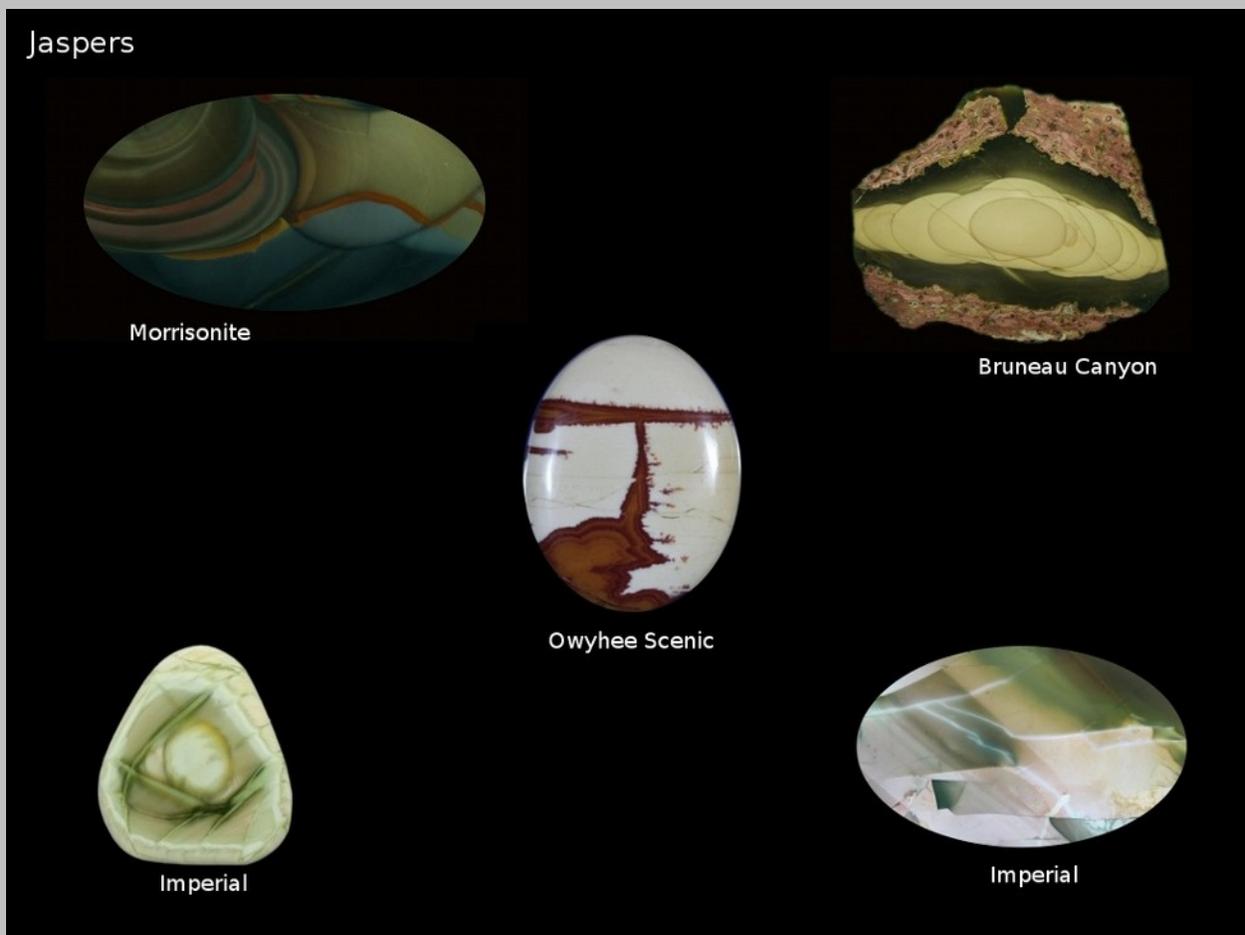


This material is called a 'jasper' for commercial purposes. Similar material from the area also goes by the names of 'bloodstone' and 'heliotrope' – both forms of chalcedony. In looking at this piece closely I would be inclined to place it in the category of a moss agate, at least for informal purposes. I certainly think it more chalcedony than jasper.

Here is an unusual Paint Rock (I think) where it seems that some of the bands have become darkened, possibly due to weathering, but the interfaces of the fibrous chalcedony 'colonies' have not been affected. Or is something entirely different?



I am going to just touch on jaspers here. This photo shows several popular “porcelain jaspers”; so called because they take a fine polish. You will notice from the Bruneau Canyon jasper that some of them form in ways that appear similar to thunder eggs, although most are massive silicated rocks. Even the apparent similarity of the Bruneau Canyon is mis-leading. The molecular structure of jaspers is different, and the banding results from an significantly different process. In banded jaspers like these, the color bands result from mineral bearing solutions soaking in and depositing the minerals in a porous, crypto-crystalline but not fibrous banded rock. Though they are not agates, they make fine display pieces and jewelry, and some fine specimens are remarkably pricey.



Rooster Tail Agate, Mexico

I'll leave you with this last agate photo both to enjoy and to ponder. I couldn't decide whether or not to include it in the broken agate gallery. The dendritic structures have certainly been disrupted but, it seems, while still in a soft state. Can something torn apart in a soft and yielding state be considered 'broken', much less brecciated?

Oh, and one last thing, the most important thing – an invitation to join the Family of God! How does one do that? I've beat around the bush for pages and pages about that because there is such a cacophony of 'say this and do that' that people are bewildered and skeptical. I can only report what worked for me. One day, looking into the mirror of my soul, I didn't like what I saw there. All alone on my knees beside my bed I challenged Jesus: “Jesus, if you are real, if you care about me, come into my life, save me and change me, give me a new life.” And He did, and is, for I am slow, stiff necked and rebellious.

If you have read this pdf series, you know that I am not a believer in magic incantations for salvation; it is the faith behind the words that usher one into the Family of God. Nor is it a lifetime of good works. The thief dying on the cross next to Jesus had no good works to lay at Jesus' feet, or to place on some heavenly balance against a lifetime of sin. He had only this: “Lord, remember me when thou comest into thy kingdom.” What faith it took to look upon Jesus, reviled, abandoned, stripped naked, beaten almost to death and nailed to a cross between two criminals and recognize Him as the Messiah, the Lord of a kingdom beyond this world! Check out the Links on the main menu for a little extra help. God Bless!
