MAKE SOME EGG SHELL GEODES

This project comes to us from Melissa Howard who is a Mom, Blogger, and photographer. This project nicely demonstrates how real-life geodes are formed in igneous and sedimentary rock. It also demonstrates super-saturated solutions and shows a nice variety of crystal shapes and formations.

YOU WILL NEED:

- clean eggshells
- water
- a variety of soluble solids: table salt, rock salt, sugar, baking soda, Epsom salts, sea salt, borax, or cream of tartar
- small heat proof containers (coffee cups work well)
- spoons
- food coloring
- egg cartons and wax paper or mini-muffin tins

WHAT TO DO:

1. Crack the eggs for this project as close to the narrow end as possible. This preserves more egg to use as a container for the solution.
2. Clean the eggshells using hot water. The hot water cooks the lining and allows you to pull the skin (egg membrane) out of the inside of the egg using your fingers. Make sure to remove all the egg membrane, if any membrane stays inside the shell it is possible that your eggshell will grow mold and your crystals will turn black.
3. Use an egg carton lined with waxed paper or mini-muffin tins to hold the eggs upright.
4. Use a saucepan to heat the water to boiling. .
5. Pour half a cup to a cup of water into your heatproof container. If you poured half a cup of water into the container, add about a ¼ cup of solid to the water. Stir it until it dissolves. Likewise if you used a cup of water, add about ½ a cup of solid to the water. You wanted to add about half again the volume of the water as a solid to the mixture. When the initial amount of solid is dissolved continue adding small amounts of the solid until the water is super-saturated. Super-saturated simply means the water has absorbed all it is able to absorb and any solid you add will not dissolve.
6. Add food coloring.
7. Carefully pour your solution into the eggshell, filling it as full as possible without over-flowing it or causing it to tip.

Find a safe place to put your shells while the water evaporates. Crystals will form inside the eggshells as the water evaporates over several days.

HOW DOES IT WORK?

Dissolving the crystals in hot water created what is called a “super-saturated solution.” This basically means that the salts took advantage of the energy of the hot water to help them dissolve until there was no more space between molecules in the solution. As the solution cooled, the water lost its energy and the crystals are forced from the solution to become a solid again. Since this happens slowly along with the evaporation, the crystals have time to grow larger than they were when the experiment started. Natural geodes in rock are form in much the same way as mineralized water seeps into air pockets in rock. This is also how rock candy crystals are formed.