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Raven Hill Discovery Center is a 501(c)(3) tax-exempt corporation.

Mission: Raven Hill provides a place that enhances hands-on and lifelong learning for all ages by connecting science, history & the arts.

Egg in the bottle

CAUTION: This should only be done by *adults* as a demonstration.

Materials:

- Vintage glass milk bottle or similar size opening that has smooth edges
- Rubbing alcohol
- Measuring spoon
- Peeled hard-boiled egg
- Matches

Procedure:

1. Peel a hard-boiled egg.
2. Put about a ½ teaspoon of rubbing alcohol into the milk bottle.
3. Swirl the alcohol around to coat the inside of the bottle.
4. Drop a lighted match into the milk bottle. **Caution:** let fire flare up and back down before next step so you don't get burned, but don't wait too long.
5. Set the egg on the top of the glass milk bottle and observe.

Explanation: Air pressure exerts about 14.7 pounds per square inch on the earth and everything on it. In the beginning, the air pressure is equal inside and outside the milk bottle. Once the fire burns, it uses up the oxygen in the air, so there is less air pressure inside the bottle, as long as you put the egg on top of the bottle, so it can act as a lid and doesn't let any new air back in. The greater pressure outside the bottle literally pushes the egg through the opening and into the bottle.

To get the egg out, reverse the pressure. Remove the alcohol and match by rinsing out the bottle, but leave the egg (as long as it is still whole) in it. Dry bottle with a paper towel as you hold it upside down. To remove the egg, create greater pressure inside the bottle by pressing the rim of the bottle against your cheeks and blowing into the bottle as you would blow into a balloon. Before releasing your mouth, position the bottle upside down, so that gravity pulls the egg down into the neck of the bottle. Again, the egg acts as a seal and holds the air inside the bottle, creating greater pressure inside the milk bottle and forcing the egg out.

Note: Call Raven Hill at 231.675.6025 or email cheri@miravenhill.org with questions or to borrow a vintage glass milk bottle

History: The old wood engravings or xylographs, circa 1870, are mostly German and French were used to illustrate textbooks and journals, before the rise of photography and computer illustrations. This particular activity comes from a book called *Columbus' Egg. In Victorian times, before the advent of radio and television, parlor tricks, like these, were a popular form of entertainment. Play was generally thought to pave the path to knowledge—Edi Lanners, SECRETS OF 123 CLASSIC SCIENCE TRICKS and EXPERIMENTS. PS Does work come before play or does play come first? Better yet, is play a form of work?*

Illustrations:



1 Xylograph illustration



2 Materials needed



3 Check that egg sits on rim



4 Half teaspoon alcohol in



5 Carefully lite alcohol



6 Set egg on rim



7 Pressure pushes in



8 To remove egg, blow into bottle



9 Let egg slide into neck of bottle



10 Greater pressure inside pushes egg out