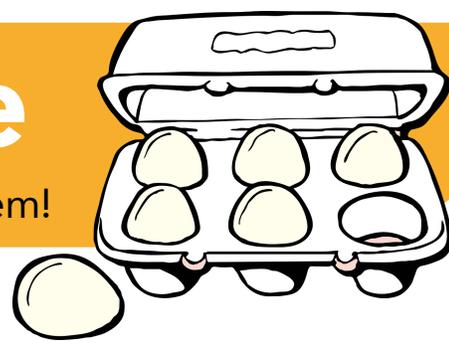


# Egg-in-a-Bottle

Nature may abhor a vacuum, but we love them!



## Materials:

- Hard-boiled egg, peeled
- OR
- Water balloon filled to egg size.
- Glass bottle with a 1" - 1.5" opening (milk bottles work great)
- Matches (\*and a grown-up!)
- Strips of paper

## Procedure:

The whole experiment happens quickly, so read through the instructions thoroughly, and then give it a try!

1. Gently try to fit the egg/water balloon through the bottle opening. Doesn't fit? Don't fight it!
2. Rub a little water on the egg/water balloon and around the opening of the bottle.
3. Have a grown-up light a strip of paper and drop it into the bottle.
4. Quickly place the egg/water balloon at the bottle opening and watch what happens.
5. Now how do you get the thing out of the bottle? If you're up for it, we recommend shaking the ash out of the bottle, wiping down its rim, tipping the bottle upside down, positioning the egg "upright" at the mouth of the bottle and blowing into it. Does the egg pop out?

## What's Happening?

Even though you can't feel it, the air around us is pushing down at a force of almost 15 pounds per square inch! Air always wants to move from areas of high pressure to areas of low pressure, and heating or cooling air in a bottle is an easy way to change the pressure.

When you lit the paper and put it into the bottle, the air inside heated up, and when air heats up, it expands and the pressure increases; since the bottle wasn't covered, some of the air escaped out the top. But when the flame went out, the air inside the bottle cooled and contracted, and the pressure dropped.

That meant that there was more air pressure outside the bottle than inside (that's the vacuum), so air tried to rush back in from the top. But what was in the way? The egg! So the air just pushed the egg into the bottle!

Blowing more air into the bottle increases the pressure, and pushes the egg back out. Can you think of other ways to increase the pressure to get the egg out? Give 'em a try!

