FOLDABLE EGG

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HOW TO MAKE A FOLDING EGG

The Folding Egg activity is actually an extension of the classic Rubber Egg experiment with a really fun twist. Just imagine the look on your friends' faces when you show them an egg and then proceed to fold it in half several times until it forms a small white ball! Wait... it gets better. Just bounce the "folded egg" between your hands and the egg reappears!

Materials
• Raw egg
• Pin or a thumb tack
• Long needle or plastic coffee stirrer
• Tall glass
• Vinegar
• Patience

EXPERIMENT
1. The first step is the trickiest and requires a little practice. You'll need to blow out the inside of the egg without damaging the egg (too much!). Use a sharp pin, a thumb tack or the tip of a sharp knife (yes, with the help of an adult) to poke a small hole in both ends of the egg. The hole should be about an 1/8 of an inch in diameter. Don't be frustrated if you crack a few eggs before you get the hang of it.
2. The next step is to scramble the inside of the egg to break the yellow yolk and to blow the liquid out through one of the holes. The best way to break the yolk is to poke a long needle or something similar (like a plastic coffee stirrer) through the hole and to carefully poke around inside the egg.
3. Once the yolk is broken and the egg is "scrambled," it's time to blow all of the liquid out of the egg. One method is to clean off one end of the egg, cover the hole with your mouth, and blow the egg liquid out the other hole. Of course, it's best to hold the egg over the sink as you're doing this. People who are concerned about using their mouth may experiment with other methods or may elect not to try the activity.

4. Place the hollow egg in a tall glass or jar and cover the egg with vinegar. You want the egg to be completely submerged in the vinegar, which means that you may need to place something on top of the egg to push it down or to try to fill the inside of the egg with vinegar to weigh it down.

5. Leave the egg in the vinegar for up to 10 days or until all of the shell has dissolved. Some eggshells will take longer to dissolve than others because every egg is unique. For the first few days, bubbles of carbon dioxide gas will form on the shell. The vinegar is dissolving the calcium carbonate in the shell and producing bubbles of carbon dioxide at the same time. When the bubbles stop forming, it's a good indication that the eggshell is completely dissolved. (In the video Steve uses 3M HCl to speed up the process.)

6. Once the bubbles have stopped forming (again, this could be up to 10 days so be patient!) pour off the vinegar and carefully rinse the egg with water. The egg looks translucent because the outside shell is gone! The only thing that remains is the delicate membrane of the egg. You've successfully made an egg without a shell. Okay, you didn't really make the egg. The chicken made the egg. You just stripped away the chemical that gives the egg its strength.

7. Carefully squeeze out all of the water from the egg membrane. Gently blow a little air into one end of the egg and the egg will puff up. Hey, it looks like a real egg! Slowly squeeze the egg in your hand and it will look like you crushed the egg. Just carefully toss and bounce the "folded egg" in your hand to allow the air to slowly work its way back into the egg. The egg magically restores its shape.

8. Dust the egg membrane with some baby powder (sometimes called Talcum powder). Try to get some of the powder inside the egg as well. The powder will help keep the egg membrane from drying out and cracking - and it makes the egg look even more real.
The acetic acid in the vinegar breaks down the calcium carbonate in the eggshell, and the bubbles that form on the surface of the egg are carbon dioxide gas. Eventually the hard shell of the egg disappears entirely and all that remains is the egg membrane. Because you have already blown out the contents of the egg, the membrane is just full of air. You can fold it up and the air will sneak out the tiny hole in the membrane you used to blow out the egg. The membrane will compress down into practically nothing. As you gently shake the "folded egg," the air will re-enter the membrane, expanding back into its original shape and volume.

A Little Magician's Secret - The Folding Egg is a classic science magic trick dating back to the early 1900's. To perform the illusion, the magician would place the inflated egg in an egg carton along with several real eggs. He carefully removed the "special" egg and proceeded to squeeze the egg in his hand. With a little slight of hand, the egg magically seemed to vanish. The magician then showed his audience a clear, empty glass. While showing the glass, he secretly dropped the crumpled up egg membrane into the glass being careful to cover the bottom of the glass with his other hand. "I'll make the egg magically appear by simply shaking the glass." With a little shaking and lots of showmanship, the audience watched as the egg magically reappeared in the glass. Ta da!
HERE IS WHAT YOU NEED

VARIOUS CONTAINERS
RAW EGGS
MYSTERY LIQUID
TACK
1. Use the tack to poke holes in each end of the egg as shown.

2. Blow out the inside of the egg into a bowl.
3. Fill a container with enough of the mystery liquid to cover the eggshell.

4. Submerge the shell and let the air inside escape so it will stay beneath the liquid.
5

LET YOUR SHELLS SIT FOR AROUND 10 DAYS OR UNTIL THE SHELL HAS BROKEN DOWN

THIS IS WHAT IT LOOKS LIKE AFTER SEVERAL DAYS
6

ONCE THE SHELL HAS DISAPPEARED
YOU CAN REMOVE YOUR EXPERIMENT
AND RINSE IT WITH WATER

NOW IT'S TIME TO SEE WHAT IT CAN DO!
TOSS IT TO REINFLATE
YOU CAN NOW FOLD THE EGG

WHAT IS THE MYSTERY LIQUID?