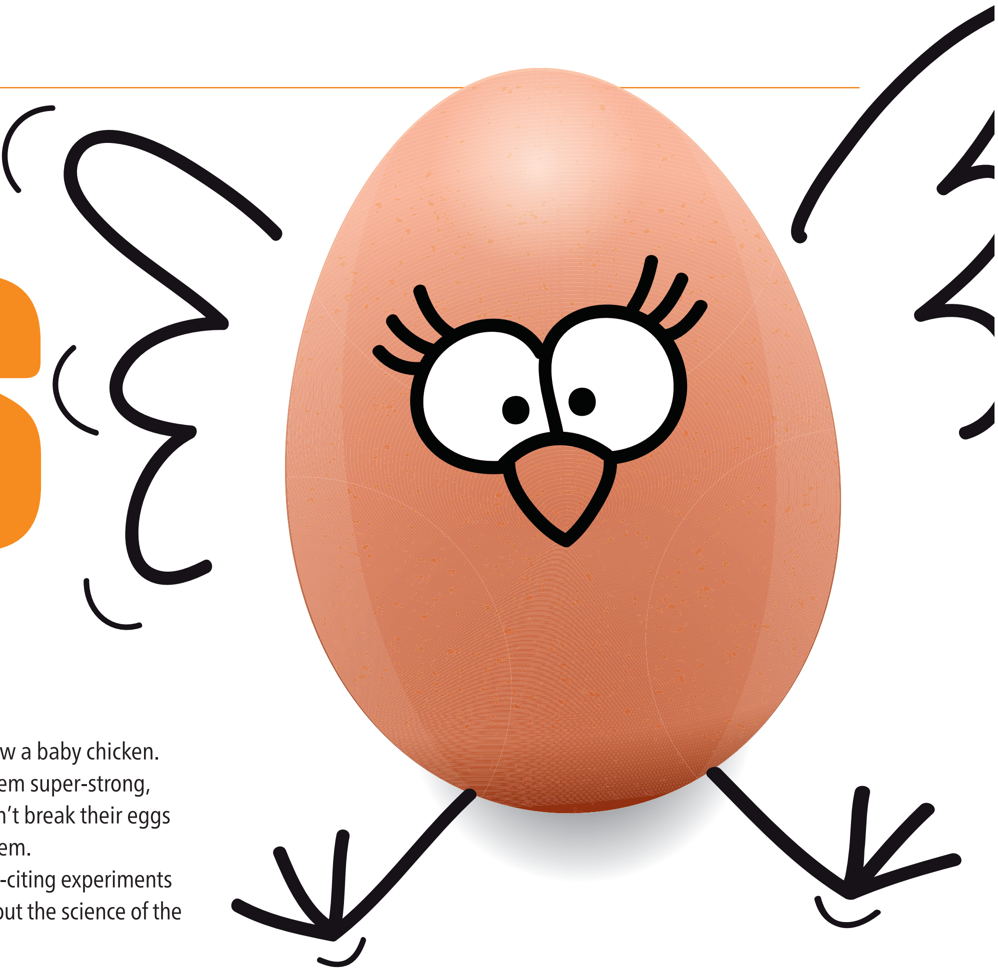
The science of eggs



Let's get cracking with some egg-cellent Easter experiments.

Many cultures associate eggs with new life and rebirth, and they have been the symbol of the Christian celebration of Easter for around 1,700 years.

Eggs are one of the most nutritious foods around. This is because they contain all the nutrients and building blocks required to grow a baby chicken. Their shape makes them super-strong, which is why hens don't break their eggs when they sit on them.

Try these egg-citing experiments and find out about the science of the awesome egg.

Perfect poached eggs

Even top chefs find it tricky to poach an egg. The perfect poached egg should have a nice oval shape and a runny yolk. Everyone has their own method, from swirling the water to adding a drop of vinegar – here's one tried-and-tested technique.

WARNING! This recipe involves boiling water. You may need an adult to help you.

What you need

- Pot of water
- 1 safety pin
- 1 egg
- Timer
- Slotted spoon
- Kitchen paper

Instructions

Bring the pot of water to a gentle boil. Make a small hole in the egg using the safety pin. This lets out any air trapped inside and stops it from cracking.

Place the whole egg (with the shell still on) in the pot of boiling water and gently simmer for 10–20 seconds. This starts cooking the egg white and helps the egg retain its shape once it has been cracked. Remove the whole egg from the boiling water using a slotted spoon and cool it under a running tap.

Now, crack your egg into the gently simmering water. Try to do it as close to the top of the water as you can. Poach your egg for 3–5 minutes, depending on how runny you like it. Remove from the water and dry on kitchen paper.

DID YOU KNOW?

An average hen lays between 300 and 325 eggs per year.

Amazing eggs

Magic colour change

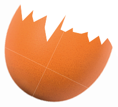
The proteins in eggs have very specific shapes, but when they are heated they lose their shape and become tangled. This is what turns egg white from clear liquid to solid white when you cook an egg.

Expanding foam

Beating raw egg whites traps air bubbles into the liquid. This unfolds the proteins and causes them to fluff up and become stiff.

Sticky stuff

Eggs play an important role in baking, adding air into the mixture to make light, fluffy cakes. Eggs also act as a binding agent, sticking dry cake ingredients together.



Bouncing eggs

What you need

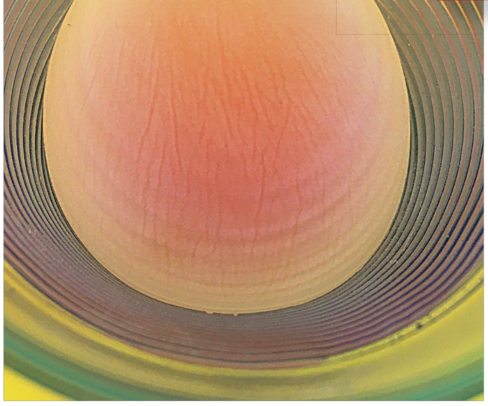
- 1 egg
- White vinegar
- Empty jar

FASTEST OMELETTE MAKER

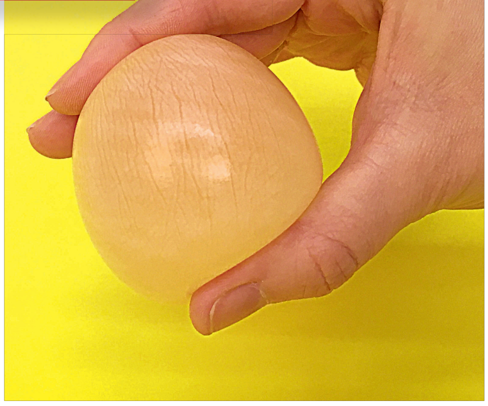
US chef Howard Helmer is the omelette king. He holds three world records for making omelettes. In 1990, he made 427 two-egg omelettes in 30 minutes.

How does it work?

Eggshells are mostly made from a hard mineral called calcium carbonate, which is also found in limestone and chalk. The acid (vinegar) attacks the calcium carbonate – look for tiny bubbles of carbon dioxide gas forming on the shell. After a few days, the vinegar completely dissolves the eggshell, leaving just the thin membrane to hold the egg together.



1 Place the egg in the jar and fill the container with white vinegar. Leave with the lid off for 1–3 days. The longer you leave it, the easier the shell comes off.



2 Gently remove any remaining shell with your finger. Then hold your freaky rubbery raw egg up to the light and admire it.

WARNING!
This could get messy.

3 Now, drop it from a height of no more than 10 centimetres to see if it bounces... or splats.

Super-strong eggs

What you need

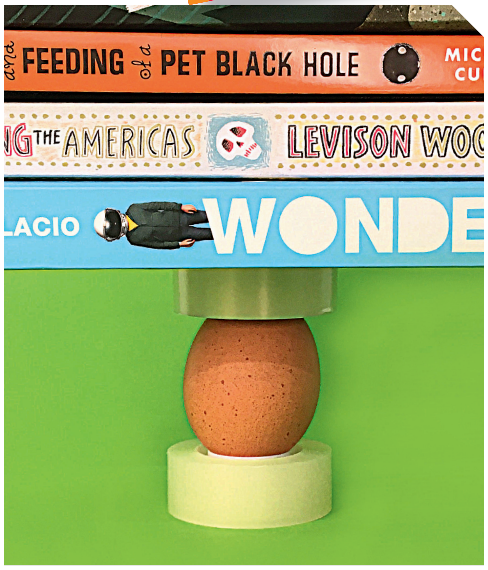
- 2 small rolls of tape
- 1 egg
- Books

WARNING!
This could get messy.

How does it work?

The shape of an egg incorporates two arches. The arch is one of the strongest forms in the world. It distributes weight evenly across its shape, enabling it to hold things many times heavier than itself. This shape has been used in bridges and buildings for thousands of years.

1 Place the first roll of tape on a table, then place the egg with one end in the hole in the middle. Place the second roll of tape on top of the egg.



2 Now, carefully place a book on top of the tape. Keep adding books – you will be surprised by how much weight the eggs can hold.

3 How high can you get the book stack before the egg breaks? Send your gravity-defying pictures to *scienceandnature@dennis.co.uk*