OpenUp Science

CAMBRIDGE SCIENCE CENTRE

Issue 40

Fossils

Welcome to OpenUpScience

from Cambridge Science Centre.

This issue is all about Fossils.

Fossils are physical evidence of animals or plants that lived a very long time ago. They can be preserved remains or other traces, like footprints.

Fossils are a window to the very distant past. Scientists who study fossils are called **Paleontologists** and they have used fossils to look back in time and discover what the life on our planet was like millions of years ago, when life on Earth was very different to now.

Fossils can be found all over the world. Fossils have been discovered in the UK, in Antarctica and even on the top of Mount Everest!

Did you know?

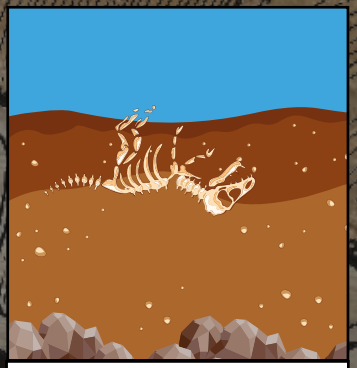
There are different kinds of fossils that are made in different ways. In this issue we look at body fossils and trace fossils.

Find out more about fossils and how they are made with activities, puzzles and quizzes inside!

How do fossils form?

Did you know that fossils aren't actual solid remains from once living things, but mineral casts of them? Here's how body fossils are formed:

An animal dies and it falls to the sea floor. It's soft bits get eaten or rot, leaving just the solid remains.

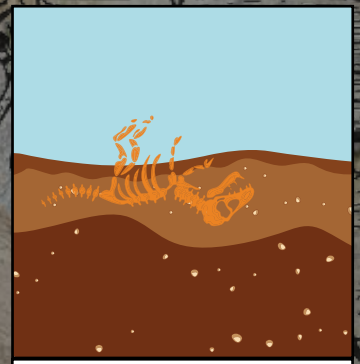


The animal is buried by other stuff that falls to the sea floor called sediment.

The sediment around the solid remains thickens and turns to stone.

Water seeps in through the stone. It dissolves most of the solid remains leaving a mould.

Minerals in the water coat this mould and crystalise forming a solid cast.



The solid mineral cast of the remains are revealed and the fossil is discovered on land!

Crayon Fossils

Fossils take tens of thousands of years to form. Make your own body fossil using some old crayons in just 10 minutes!

CAMBRIDGE SCIENCE CENTRE

What you'll need

- A crayon
- Something hard to fossilise
- A pot of damp sand
- A microwave
- A microwave safe bowl
- **A helpful adult**

What to do

1. Find something hard to fossilise. This could be a shell, a bone or even a solid toy. *This is like the solid remains of a creature that has died. (Remember the soft bits get eaten by other creatures or rot away).*

2. Place it face down in the sand. *This is like the solid remains on the sea bed.*

3. Press it into the sand. *This is like the solid remains being buried under layers of sediment.*

4. Carefully remove it from the sand. It will leave a mould. *This is like the mould left when the solid remains are dissolved by water.*

4. **Get a helpful adult to do this step.** Break up the crayon and put it in the microwave safe bowl. Put it into the microwave for around a minute until melted.

CAMBRIDGE SCIENCE CENTRE

4. Get an adult to carefully pour the melted crayon into the mould.*This is like the minerals in the water coating the mould left after the solid remains dissolve.*

5. Leave the melted crayon to cool for 10 minutes. *This is like the minerals crystalising and becoming solid.*

5. Dig up your crayon fossil! *This is like the fossil being revealed and discovered by a fossil hunter!*

A Duel Frozen in Time...

In 1962, the fossil of an epic battle between mammoths was discovered. Whilst the rivals fought, their tusks became permanently tangled and the mammoths were stuck. They both died of starvation, still face to face with the enemy.

Fossil Word Hunt

Cross out the words in the wordsearch, then colour in the left over squares to reveal a hidden word.

F	M	O	S	E	C	A	R	T
D	I	N	O	S	A	U	R	S
S	N	R	S	I	M	G	L	A
T	E	E	T	H	M	E	R	C
M	R	M	I	B	O	O	E	S
O	A	A	S	O	N	L	T	H
U	L	I	A	N	I	O	A	E
L	S	N	T	E	T	G	W	L
D	I	S	O	S	E	Y	N	L

Dinosaurs
Minerals
Traces

Shell
Ammonite
Bones

Teeth
Remains
Mould

Water
Cast
Geology

Solutions at the back

Hidden word_____

Dinosaur footprint fossils are known as ichnites. Can you spot two identical footprints?

Trace Fossil Treats

Make some very tasty, three ingredient fossil treats!

Share these yummy snacks with your friends!

What you'll need

- 225g butter
- 175g sugar
- 250g plain flour
- **A helpful adult**
- A dinosaur toy or non-toxic leaf
- Food colouring
- A cup

What to do

1. Preheat oven to gas mark 3 (170 °C).
2. Using a whisk, beat together the butter and sugar.
3. Add the flour to the bowl and blend well.
4. Roll the dough into balls and put on a lined baking tray.
5. With the bottom of the cup, press down on the balls to flatten them into circles.
6. Take your toys or leaves and press them into the top of the dough to make a print.
7. Bake for 15 minutes or until slightly brown around the edges.
8. Remove from the oven and let rest for 15 minutes.
9. Mix some food colouring with water and paint the inside of the footprints or leaf marks.

A trace fossil is a fossil of something that a living thing has left behind. This could be a leaf, a feather or a footprint.

Match the Fossil

Draw a line from the fossil to the drawing of what scientists think it looked like.

Solutions at the back

What do you think this animal looked like?

Draw your ideas here

Fossil Excavation

Make a fossil, seal it in a rock and then excavate!

What to do

1. Make a salt dough by mixing together all the fossil ingredients and kneading for a couple of minutes.
2. Mould the salt dough into fossil shapes.
3. **With help from an adult,** preheat your oven to the lowest temperature and then place your salt dough fossils on the baking tray. Bake for 3 hours or until hard.
4. Mix together the dry rock ingredients. Slowly add water until the mixture starts to come together.
5. Take some rock mixture in your hands and put a salt dough fossil in it. Pack more rock mixture around the fossil and mould it into a rock shape. Repeat this with all the fossils and rock mix.
6. Set aside for 3 days to dry out.
7. Pack up your rocks and send to a friend to excavate - or excavate yourself!

What you'll need

- Two mixing bowls
- Two spoons
- Lined baking tray
- **A helpful adult**

For the fossils

- 120g plain flour
- 2 tbsp salt
- 1/2 tbsp oil
- 60ml water

For the rocks

- 250g plain flour
- 250 used coffee grounds
- 250g salt
- 80ml water

Mary Anning, The Fossil Finder

Mary Anning was born in 1799 and lived in the seaside town of Lyme Regis. Mary's dad made furniture and the family was poor so Mary's dad took the children along the beach to find shells and nice stones to sell to visitors at a stall on the seafront. Mary didn't go to school often, but taught herself. She read books about the science of rocks (geology) and how bodies are made up (anatomy). When Mary was 12, she went fossil hunting with her brother and they uncovered a skeleton that looked like a crocodile. They'd found the first ever complete fossil 'ichthyosaurus' or 'fish-lizard'. Mary also found a giant sea reptile, a flying reptile and a prehistoric fish whilst out hunting fossils with her dog. She liked to hunt on the beach after a storm because the wind and waves had made the rocks crumble. This made it easier to spot fossils.

1. How old was Mary when she discovered the first complete fossil ichthyosaurus?

A. 21 **B.** 18 **C.** 12 **D.** 32

2. What is geology the science of?

A. Books **B.** The body **C.** Rocks **D.** Waves

3. What does 'ichthyosaurus' mean?

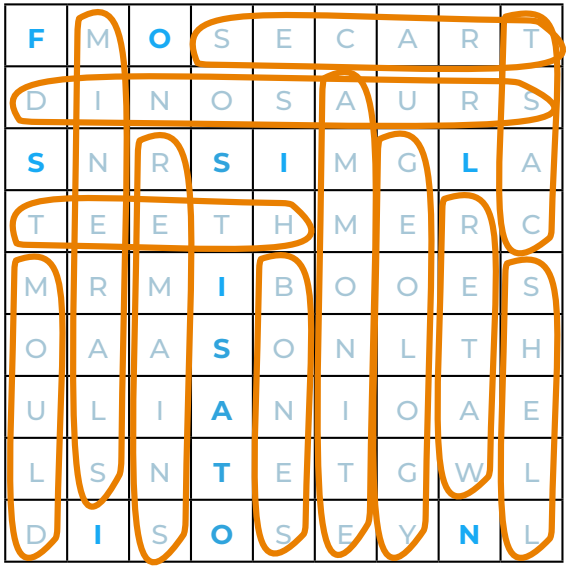
A. Fish-lizard **B.** Cold-croc **C.** Old-reptile **D.** Beach-fish

4. Why did Mary like to fossil hunt after a storm?

A. The air was fresher **B.** The rocks had crumbled **C.** No one else was on the beach **D.** The ground was wet

Puzzle solutions

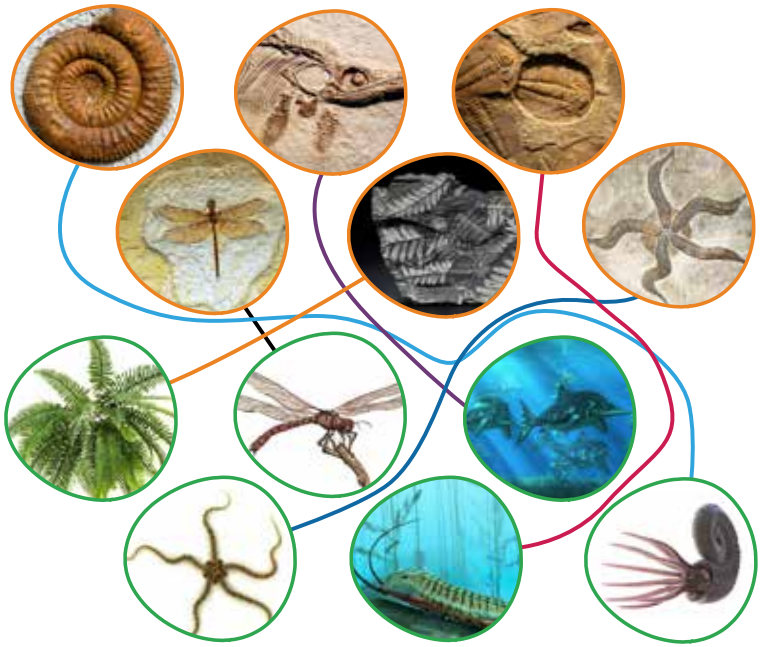
If you have any questions or want to send us a photo of your experiments, drop us an email at *openupscience@cambridgesciencecentre.org*



Hidden word **FOSSILISATION**

Mary Anning, The Fossil Finder Solutions

1. C 2. C 3. A 4. B



This issue has been kindly supported by

Qualcomm foundation

CAMBRIDGE SCIENCE CENTRE

Find out what else we're up to:

@camsciencecntr

/cambridgesciencecentre

@camsciencecntr

openupscience@cambridgesciencecentre.org

/cambridgesciencecentre

www.cambridgesciencecentre.org

Cambridge Science Centre is all about empowering young people to discover science for themselves through hands-on activities. Take a look at our website for our centre opening times, events and all the other exciting things we do!

Spark, Ignite, Fuel, Illuminate

Tell us what you think!
We always want to improve, so let us know what you liked - or didn't like - about this issue!

Scan me