

The Spark

Magazine

PUZZLES, QUIZZES, EXPERIMENTS



**ISSUE
No29**

**FIND OUT ABOUT
THE MOON'S PHASES!**

**HOW DO ANIMALS
GET READY FOR
THE WINTER?**

**SPOT
SOME BRILLIANT BIRDS!**

**MAKE SOME
BUMPY BARK RUBBINGS!**

**MEET AN
ASTROPHYSICIST!**



GLASGOW
**SCIENCE
CENTRE!**
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Inside

This issue

Hello!

Welcome to the winter edition of The Spark magazine, where we're going to learn about a stellar winter constellation, give bird watching a go, and make some brilliant bark rubbings!

We'll also meet an astrophysicist who will be using the world's biggest digital camera to answer some of the universe's biggest questions.

We've got puzzles, activities and our Bright Sparks quiz too! Time to dive into this exciting edition of The Spark.

Best wishes,
Glasgow Science Centre



Share your pics with us!

If you try any of our activities, please show us how they turned out! Send your favourite pictures to CLDteam@gsc.org.uk or share with us @GSC1 on X.

PUZZLE SPACE

Winter Wordsearch

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

SNOW
COLD
FREEZE
SCARF
COAT
GLOVES
AURORA
WINTER
FROST
HIBERNATE
STORM
MIGRATE
DARK
ICICLE
SEASON

Solution on back page.

Meet an **Astrophysicist!**

Professor Catherine Heymans **I'm... the Astronomer Royal for Scotland**

What are you working on right now?

Right now, I'm getting ready to use the brand-new Vera Rubin Observatory in Chile. This is one of the world's largest telescopes twinned with the world's largest digital camera. Over the next 10 years we'll be shooting the first high-definition movie of the Universe, watching for anything that goes whizz, flash or bang in the night sky. At the same time, we're capturing the widest-deepest image of space that has ever been taken, using it to map out the invisible dark matter and mysterious dark energy that appear to make up over 95% of our Universe.

What do you wish people knew about your job?

Many people think that scientists have to learn and know loads of facts, but actually it's nothing like that. To be a scientist is to ask "why" all the time, to be curious about everything around us, and to be creative and imaginative enough to dream up new ways to try and find answers to life's unanswered questions like: "Is there alien life out there?", "How was the Universe made?" or "Why is it always cloudy when I want to stargaze?"

Favourite subjects at school: Maths and physics. I had the best physics teacher!



Photo credit: BBVA Foundation

fun facts

My hobby: Swimming in the sea (all year round!)

Favourite food: Pizza, and I can make and spin pizza dough in the air like an Italian chef.

A moment for the Moon!

The Moon is the Earth's only natural satellite.

It is 384,400km away from Earth on average.

It is drifting away from the Earth at a speed of 4cm per year.

The Moon doesn't make light of its own, it reflects light from the Sun.

It takes about 28 days to orbit the Earth. This is where we get our months from!

The Moon is tidally locked to Earth, which means we always see the same face of the Moon from Earth.

We didn't see the far side of the Moon until 1959, when the Soviet spacecraft Luna 3 took the first photos of it.

The Moon experiences moonquakes, which can last up to half an hour!

The dark patches, or 'maria', that we see on the Moon are from ancient lava flows.

The Moon is not made of cheese, but people have been making jokes about that for over 400 years!



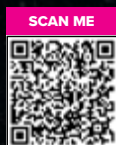
FANTASTIC FULL MOONS

You might hear that the full moon on the 3 January 2026 will be a 'supermoon'. This is a type of full moon that happens when the Moon is at its closest point to Earth in its orbit.

January's full Moon is also known as the full Wolf Moon.

The full moons we get through the year all have different names that come from different cultures around the world. Being in awe of the Moon is something we all share!

You can read more about the different names for full moons here. If you could rename them, what would you call them?



Full Moon
22 March 2026

The perigee
'Supermoon'
14 November 2016



**NEW
MOON**



**CRESCENT
MOON**



**HALF
MOON**



**GIBBOUS
MOON**



**FULL
MOON**



The Changing Moon

As the Moon orbits the Earth, it appears to change shape over the course of a month.

Sometimes it's a big, bright full Moon, and sometimes only a sliver of a crescent Moon. We call these different shapes the phases of the Moon.

We get the phases of the Moon because the Moon isn't making any light of its own, but is being lit up by the Sun. Just like the Earth, the Moon gets daytime and nighttime!

From Earth, we can only ever see the parts of the Moon that are in daytime, and how much of the daytime side we can see changes over the course of a month.

Do you have a favourite phase of the Moon?






































Why not try keeping a Moon phase journal? Pick a date to get started and try looking for the Moon for a whole month.

Use <https://www.timeanddate.com/moon/uk/glasgow> to work out when the Moon will be visible from your location.

On the Moon calendar on the opposite page, use a coloured pencil to shade in the circles on each day's Moon to match the real Moon.



1	2	3	4	5	6	7
						
8	9	10	11	12	13	14
						
15	16	17	18	19	20	21
						
22	23	24	25	26	27	28
						
29	30	31				
						

Seasonal Stargazing

There are lots of lovely winter constellations to see. Orion is one of the most famous, and you can check him out in Issue 14 of The Spark, but why not try looking for the twinkling stars of Taurus the bull too?

Taurus is visible towards the south in winter, rising ahead of Orion.

His face is made up of the V of the Hyades star cluster.

The bull's eye is a red giant star called Aldebaran. It is 45 times bigger than the Sun!

You can find the Pleiades star cluster in his shoulder. It is sometimes called the Seven Sisters, although it is really made up of at least 1000 stars.



Go on a planet hunt!

Through January, have a go at spotting the gas giants Jupiter and Saturn. They'll appear as star-like points of light in the sky.

You'll know that they're planets, not stars, because they won't be twinkling!



We took this picture of Jupiter and 3 of its moons using a basic camera.

If you have a small telescope or binoculars, try looking at Jupiter. You might be able to see its 4 largest moons.

They are called Europa, Callisto, Io, and Ganymede. Ganymede is the largest, it is bigger than Mercury!



Winter Wonders

The changing seasons don't just give us different constellations to spot, long dark nights, or wintry weather. The changing weather can also make animals behave differently, as they get ready for a long, cold Scottish winter.

Migration – Some animals don't have to worry about winter at all! They migrate to warmer countries when the summer ends. Every year, birds like swifts and swallows make an epic journey from Scotland to South Africa in August to avoid the cold.



Hibernation – Hibernation is when animals snooze their way through winter. Animals like hedgehogs and dormice will eat as much as they can through autumn, then find somewhere warm and safe to hole up until spring arrives. Big piles of leaves are a favourite place for hedgehogs to hibernate!

Staying cosy – Some animals stay active during the winter. They may grow thicker coats to keep them warm. Herdwick sheep and Exmoor ponies have extra layers on their coats to protect them from icy winds.

Changing colour – In summer they are brown, but hares and stoats will grow white fur in winter to camouflage themselves against the snowy landscape.



A Herdwick sheep in the snow.



A hare in summer.



A hare in winter.

How do you stay toasty when the weather is cold? Why not try making a den out of blankets and couch cushions on a chilly day? You could pretend to be a hibernating hedgehog!



Spot the birdie!

A lot of birds that can be found in the UK don't migrate; they stick around for the whole year! Why not keep a count of the birds that visit your garden or local park? We love to use the Merlin Bird ID app to identify birds by their song or from a photo. This free app from the Cornell Lab of Ornithology (the scientific study of birds) is a fantastic way to help you work out what birds you are seeing and hearing on your wintry walks.

This is great practice for the RSPB's Big Garden Bird Watch. You can take part in this from the **23-25 January 2026**. All you need to do is spend an hour keeping track of the birds that you've seen, then report it to the RSPB! In 2025 over 9 million birds were counted, and over 590,000 people took part!

<https://www.rspb.org.uk/whats-happening/big-garden-birdwatch>



Robins – Often seen on Christmas cards, robins are very territorial, and what we think of as their lovely song is often a warning to other birds to keep off their patch!



Starlings – These glossy, social birds are brilliant mimics. Starlings can even copy the songs of other birds! You can sometimes see them fly in huge flocks called murmurations.



Blue Tits – With their blue cap and wings, these colourful little birds are big fans of peanuts and sunflower seeds. They have a distinct alarm call that sounds like a very cross "churring".



Blackbirds – There are over 5 million breeding pairs of blackbirds in the UK. They hop around on the ground looking for food, so keep an eye out for them turning over dry leaves as they look for a snack!



House Sparrows – Sparrows aren't very strong fliers, as they only have short wings. They like to stick close to hedges so they can hide quickly if they sense trouble.



Woodpigeons – Woodpigeons are the largest pigeons in the UK. They have a lovely cooing call and can sometimes sound a bit clumsy when they take off, making a clattering noise with their wings.



Magpies – These birds look black and white from a distance, but their wings have a beautiful purple sheen when seen up close. They are relatives of crows and are a very smart bunch!



Dunnocks – These small brown birds eat spiders and insects. They can be seen hopping about the ground alone and in pairs. They have a squeaky song and like to sing from high up in trees.



Jackdaws – With striking blue-grey eyes, and a grey hood, jackdaws stand out from their relatives like crows. They're just as smart though, having been shown to recognise human faces!

Snack time!

If you would like to encourage more birds to your garden or outdoor space in winter, helping them to find food is a great way to do that.

If you visit your local pond, you could feed the ducks with frozen sweetcorn or peas. They even like leftover lettuce!

Ducks are fed a lot of bread, so it's best to avoid that and help them get a varied diet.

You can also put a bird table in your garden, or stick a feeder to your windows, and fill it with tasty nuts, seeds, and grubs.

Just make sure that wherever you put the food, that it's away from any predators like cats or dogs!

You could try making bird feeders, like this festive and tasty pinecone tree decoration.



Pinecone Tree Decoration:

What will you need?

Adult supervision

A large pinecone

Lard or margarine

Birdseed

A small, shallow
tupperware or dish

Natural fibre string –
cotton, sisal, or jute is best

Scissors

A blunt knife

Paper towels – to wipe your
hands

Newspaper – to cover your
work surface

How to make:

Step 1. Collect everything you need and cover your work surface with the newspaper.

Step 2. Pour the birdseed into the shallow tupperware or bowl.

Step 3. Tie a length of string to the top of the pinecone, so it looks like a Christmas bauble.

Step 4. This is the messy bit! Cover your pinecone in lard or margarine – if the lard is very cold, warm it a little with your hands before spreading it onto the pinecone. Make sure you get the lard or margarine into all the nooks and crannies of the pinecone to give it a generous coating. You can use the blunt knife for this.

Step 5. Roll the pinecone in the birdseed so it is well covered in seeds. If there are any gaps, sprinkle the seed over the gaps, and press it firmly into the lard or margarine.

Step 6. Hang the pinecone in a nearby tree and keep an eye out for birds snacking on it!

Step 7. Once the birds have finished feasting, you can remove the pinecone and string from the tree and dispose of them in a bin.



Beautiful Bark

In winter, some trees lose their leaves. These are called **deciduous** trees. These are trees like oak, ash, and birch.

The trees that keep their leaves are known as **evergreens**. You might see holly, pine, or rhododendrons on your walks. They'll still be sporting green leaves even in the middle of winter!

With or without their leaves, trees are still interesting to investigate when you're outside.

You might notice that the bark of their trunks can be different textures. The bark might be smooth, rough, ridged, bumpy, cracked or flaky. The bark might be different colours: silvery grey, green, or brown.

There might be moss or lichen growing on the trees, or even some spectacular fungi too!

Why not make some bark rubbings when you go for a walk, and build a collection of different types of bark?

Remember not to peel the bark off the trees, as it could harm the trees.

The bark is often home to insects too, which need somewhere to hide from the cold winter weather.

What will you need?

Sheets of plain paper

Wax crayons in your favourite colours

A tree or two!

How to make:

Step 1. Pick your tree.

Step 2. Place the paper against the bark.

Step 3. Rub the long edge of the crayon up and down. You will start to see the texture of the bark appearing on your paper.

Step 4. Try identifying your tree using an app like the Woodland Trust Tree ID app and write the type of tree on your paper. ↩

Step 5. Pick another tree and repeat the process!



BRIGHT SPARKS!

Are you a bright spark? Test your knowledge with our tricky questions! Check your answers on the back page.

Which birds like to stick close to their hiding spots in hedges?

- ☐ A) Sparrows
- ☐ B) Parrots
- ☐ C) Emus

1

When animals leave the UK for the winter, this is called...

- ☐ A) Vacationing
- ☐ B) Migrating
- ☐ C) Hiding

2

The largest moon of Jupiter is...

- ☐ A) Galatea
- ☐ B) Gerd
- ☐ C) Ganymede

3

Stoats turn blue in winter.

- ☐ True
- ☐ False

4

Where do swifts spend the winter?

- ☐ A) South America
- ☐ B) South Africa
- ☐ C) South Ayrshire

5

The cluster of stars in the shoulder of Taurus is called the...

- ☐ A) Plasticine
- ☐ B) Plates
- ☐ C) Pleiades

6

Aldebaran, the red eye of Taurus, is how much bigger than the Sun?

- ☐ A) 4.5 times
- ☐ B) 45 times
- ☐ C) 450 times

7

When did Luna 3 take the first photos of the far side of the Moon?

- ☐ A) 1959
- ☐ B) 1949
- ☐ C) 1939

8

Which is the largest pigeon in the UK?

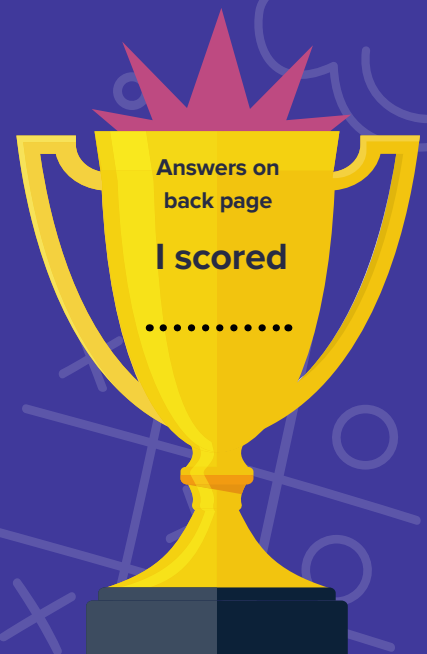
- ☐ A) Feral Pigeon
- ☐ B) Collared Dove
- ☐ C) Woodpigeon

9

Which type of trees lose their leaves in the winter?

- ☐ A) Deciduous
- ☐ B) Delicious
- ☐ C) Decisive

10



ABOUT US

Glasgow Science Centre is a 5-star visitor attraction located beside the River Clyde. We are home to hundreds of interactive exhibits where you can discover how the world works.

Glasgow Science Centre is a registered Scottish charity SC030809.

For more information and bookings, visit: glasgowsciencecentre.org

PUZZLE SOLUTIONS



Bright Spark QUIZ ANSWERS



- Q1. A** Sparrows.
Q2. B Migrating.
Q3. C Ganymede.
Q4. FALSE Stoats turn white.
Q5. B South Africa.
Q6. C Pleiades.
Q7. B 45 times.
Q8. A 1959.
Q9. C Woodpigeon.
Q10. A Deciduous.

WE WANT YOUR FEEDBACK

We would love to hear what you think!

We hope you liked this issue, but if you didn't, what could we change? What other things would you like to see? What topics are you most interested in?

You can send feedback to CLDteam@GSC.org.uk or message us on **X @GSC1**



Winter Wordsearch



SNOW
COLD
FREEZE
SCARF
COAT
GLOVES
AURORA
WINTER

FROST
HIBERNATE
STORM
MIGRATE
DARK
ICICLE
SEASON