

# Up!

NOVEMBER 2022

THE COSMOS

Making the world  
a better place -  
one page at a time



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Mousemat purchased from [The Interior Flower Art](#)

# Up Front!

5 - 4 - 3 - 2 - 1 ... Blast off into the infinite universe of Up!'s November 2022 issue!

Welcome to our star-studded edition. We don't know where you're reading this from, but here in Cullercoats the weather is dark and dank and as our Scottish neighbours would say, dreich! The clocks may have gone forward, the nights might be drawing in, but at Up! Central we're wearing our positive pants and trying, as ever, to focus on all the good stuff.

There's always an 'up!'-side to everything - think of all the dark nights and crystal clear skies we'll have over the coming months. Even recently there have been some spectacular moons, and whether you know it or not, Venus and Jupiter are pretty much permanently on display in the night sky, visible to the naked eye, with Mars putting on regular displays too!

So, step aboard, strap in and see the universe as you've never seen it before.

Bridget & Harry x

PS Back here on Earth, huge congratulations to our resident book reviewer, Jenna Warren, whose debut novel - [The Moon and Stars](#) - was published last month



*This month's front cover photograph was taken by Helena Cochrane (see page 2)*

# Snap Up!

HELENA COCHRANE

**Up! travels light years with an absolutely phenomenal astrophotographer**

## How did you first become interested in astrophotography?

Great question! I've always had a love for the night sky. However, when I took part in a project titled 'Life on Other Planets' in Primary School, it made me want to know more about our universe. I wanted to be the one discovering aliens in my garden (or at least that's how I put it back then)! Mum and Dad bought a small telescope for my 10th Birthday which sat on the windowsill in the kitchen. From there, I'd spend ages looking at the moon in close detail, and was constantly amazed at how someone so far away could see an object so closely.



As I got older, I began navigating my way around the night sky, slowly using bigger telescopes to view the gas giants (Jupiter and Saturn) when they were visible too. I

was extremely lucky to be given one of my favourite telescopes to this day (The Sky-Watcher 10" Dobsonian) through a CBBC show I appeared in at the age of 12 called 'The Dengineers'. I vividly remember getting up every morning to watch it with Mum before leaving for school, and soon decided I wanted to send in an application for an observatory.



The idea behind the programme was to get youngsters to put their dream space/den down on paper. For series 3, 10 were picked across the UK to be physically built and I was truly blown away when they knocked on my door to surprise me. This experience not only gave me the observatory but also the incredible experience of working on a film set, which I truly believe has sparked my love for production, which is what I want to study at university next year.



After the team left, I decided I wanted to share this feeling with others, the feeling of excitement as I delved into a new hobby, and that's when I discovered astrophotography. I started a YouTube channel ([Helena's Astrophotography](#)) to show what it was like building up from nothing, to becoming a deep space astrophotographer. I don't regret a second of it!

# Snap Up!

HELENA COCHRANE

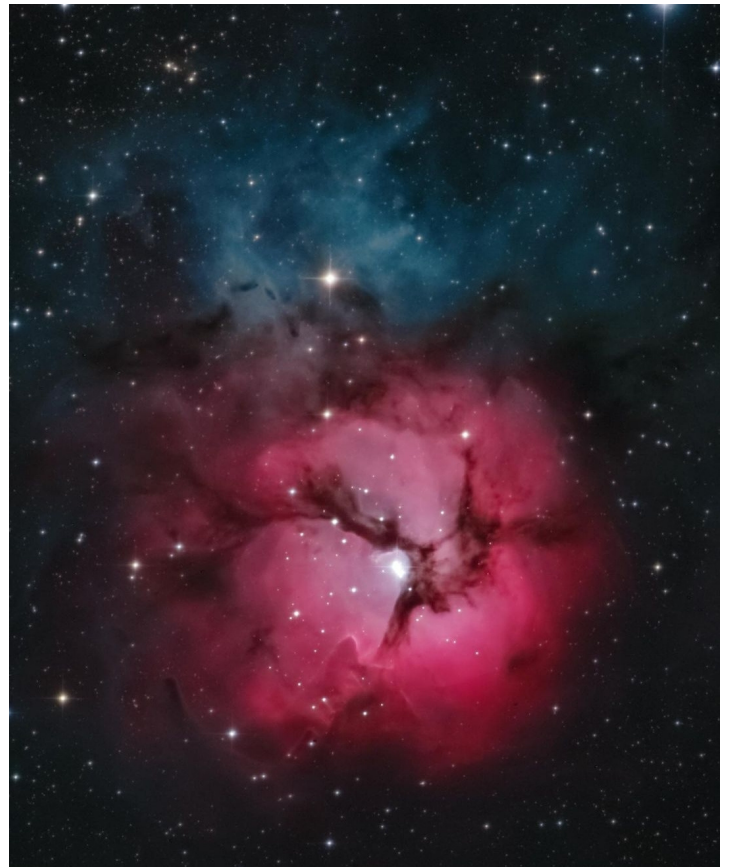
Looking at your amazing Instagram account, there seems to be a great astrophotography community out there – is that the case?

Absolutely. The astrophotography community are the most supportive, welcoming and helpful group that make such a daunting hobby a lot easier to understand and learn. Everyone has their messages open for anything, from a small technical issue to a full night's worth of troubleshooting - I've never met a more generous bunch.



Instagram is also where I found out about [STELA](#) (Striving to Engage Ladies in Astrophotography). A group of amazing female astrophotographers from around the globe that have

have come together to support each other in the hobby. Within this group I met two of my closest friends Amber and Katie, who also live in Scotland. We first met in person last October after messaging and calling online for months, and we are truly inseparable. They are my right and left arm, and I can't imagine going out under the night sky without them. This year we have created our own brand '[Scotslasastro](#)', and regularly document our trips and adventures on Instagram. Meeting people with the same passion for the night sky as you is a really special thing, and is something the community has given me that I'll never take for granted.



What's the favourite photo you've taken, and what makes it special?

This is difficult, as each image has amazing memories behind it! However, I am going to choose my most recent 2021 version of the Whirlpool Galaxy. This galaxy was one of the first that I captured when I was starting out in astrophotography, so to go back to it every year and compare previous results is both satisfying as well as motivational.

What's on your bucket list of things to capture with your camera?

I often concentrate on imaging reasonably bright targets, as they are the quickest to shoot and the easiest to process. However, my bucket list items predominantly consist of dark nebulae and dust that is harder to see from just one photo. I feel I am at a point in this hobby where I want to further challenge myself to see as far into space as possible.

Presumably getting such great shots takes time?

# Snap Up!

HELENA COCHRANE

## Tell us about the commitment involved in what you do.

Astrophotography has certainly taught me patience, and one thing I am truly grateful for is that I kept going, even at points when I wanted to give up. The technology involved in taking these images can be complex to wrap your head around, but the community is full of forums and groups that you can turn to with any issue. Once you get it fixed, it's the most satisfying feeling. It makes looking at the final image so rewarding! I always tell beginners that this hobby can be as committing as you want it to be. You can take pictures of the stars with a camera you already have at home, such as your phone or DSLR, attached to a lens and tripod. Or you can go to the other extreme and get a full deep sky rig for imaging nebulae and galaxies. It works in your favour in the long run to start small and use equipment you already have, to build up step by step and not get too overwhelmed. This



allows for learning what needs to be done outside of the actual imaging session, such as stacking and editing the final image.

Away from the technical side of things, astrophotography requires you to be committed to extreme outdoor temperatures – especially if you live in Scotland! The best nights with the clearest conditions are always in the cold winter months when the temperature drops below zero. To make sure I get full enjoyment from being out and come back in without any frozen limbs, I wear thermal underclothing, thermal gloves, and a thermal jacket to keep me nice and toasty warm.

## What's the furthest away object that you've ever photographed?

M51 – which just so happens to be my favourite object, the Whirlpool Galaxy! It lies 23.16 million light years from Earth and is located within the constellation Canes Venatici. My image shows what the object looked like 23 million years ago, as that's how long it's taken the light emitted from it to reach us.

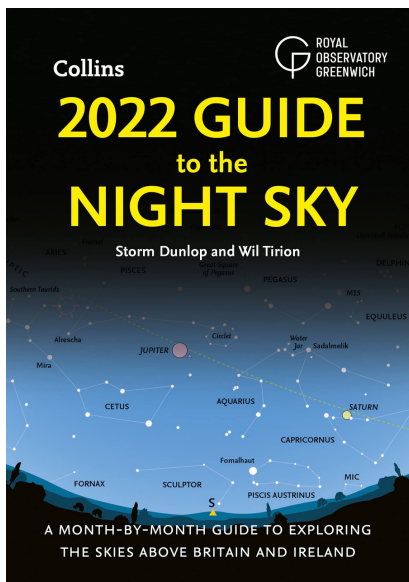
Astrophotography is essentially time travel without the Tardis – who knows what the galaxy looks like now!

# Snap Up!

HELENA COCHRANE

Can you tell us what's coming up in the Night Sky that we should keep an eye out for?

There are a lot of exciting astronomical events coming up in the night sky in the year 2023! The nearest being the Quadrantids meteor shower. 40 meteors per hour is the expected rate when they are at peak level on January 3rd. However, they will be visible from 1st -5th January and will make a great start to the New Year.



I find the Collins annual Night Sky Guides especially helpful when looking ahead to future astronomical events occurring in the year and would highly recommend purchasing one if you don't want to miss a trick!



You can connect with Helena here:

[www.instagram.com/helenas\\_astro](https://www.instagram.com/helenas_astro)

[YouTube](#)



*The earth is what we all have in common.*

**Wendell Berry**

*Let us permit nature to have her way.  
She understands her business better than we do.*

**Michel de Montaigne**

*Preserve and cherish the pale blue dot, the only home we've ever known.*

**Carl Sagan**

# Word Up!

## YOUR POEMS ON THE THEME OF THE COSMOS

### **Cosmic reconnection (with apologies to T. S. Eliot)**

When we cease our exploration  
and have reached our starting point,  
will we recognise our origins  
or pass by without a glance?  
By some chance of fate or folly  
will we look up at the stars  
and wonder, in our common gaze  
at how great, and small, we are.

**Gerda Pickin**

### **The Consolations of Technology**

Our darkneses connect us.  
We tap out manic Morse messages

in the silent days, adjust our headphones  
to hear a response. Eyes widen through  
telescopes,

see hope in the flow of cold stars  
hidden in pale skies. Our stubborn fingers

roll the radio dial as slowly,  
as slowly as possible, tune through hours

of unnerved static, find the one remaining  
voice.

A harsh burst of something Nordic –

tuned past, tuned back to. Gone.

**Penny Blackburn**

### **A Year of the Sea**

It took a long time for me to be here to see a year of the sea:  
Its turns and its tides;  
Twelve new moons and  
Twelve wide, full moons;  
From bud to soil  
And back again;  
The winds and the rains;  
Frosts and heat hazes;  
Haars and fog-bows;  
Drizzles and rainbows.  
I had to believe that even when I had not been  
Here to see it, when I strained to but still failed to  
Hear the waves from the city, that the sea,  
Changing every second,  
Every minute, every hour, every day,  
Somehow stayed the same, kept faith and waited.

**Ali Rowland**



# Pulling Up!

JENNIFER C. WILSON

**Up!'s Marine Biologist on the magic behind the tides**

It's one of those facts you randomly pick up at school, are aware that you 'know it' throughout your adult life, probably, but never really think about. The tides are caused by the moon. Somehow. Gravity and the moon, somehow work together, something about pulling water closer to it, giving us highs and lows, right?

Pretty much.



It's not just the moon though. The sun has a part to play, although not as significantly. Essentially, the sun, the moon and the earth work together, creating alternatively stronger and weaker gravitational pulls, and with water being more flexible than the rest of the earth, it 'bulges'. Of course, standing on the shoreline, all we see is the retreat and advance of the water's edge twice a day (in most places), rather than any noticeable change in overall water depth.

Now, there's a chance that when something is



described scientifically, it loses a hint of its magic. And because so many of us are used to the tides, especially those of us who are lucky enough to live within sight of the coast, I thought I'd go down a slightly different route this month, and talk about some of the magic and myths that accompany the tides, and some of the large-scale issues that can arise as a result of them. Of course, there will be a fishy reference or two later, so stick with me, if that's what you're here for.

It's no wonder the tides are tangled up in so much mythology. An ancient belief held that creatures, even humans, couldn't die when the waters were high, and that death could only occur when the tide began to ebb. Even today, there are parts of the world that hold such a belief in association with chronic illnesses. It gets a Shakespearean reference too, with the death of Falstaff happening on the turning of the tide.

Naturally, association with death is a relatively tidy metaphor. The use of the phrase "tides are turning" comes up time and time again when luck, public opinion, or anything for that matter, seems to be changing, albeit not in a sudden rush. Power is said to 'ebb and flow', things are 'on the rise'; since we all know and understand the notion of the tides, it's easy to use, and to get a message across. Even the notion of 'seizing the moment' can be related to tides; miss one,

# Pulling Up!

JENNIFER C. WILSON

and you could be stuck (literally, depending on where you are) for at least a day, more, if you're waiting for a spring tide.

When we talk of the mythology of tides, we really can't avoid the obvious. Infamous King Canute, telling the tides to turn. Except, he didn't. The tale so often gets reported that he sat by the edge of the sea, and commanded the incoming tide to halt, rather than soaking him as it advanced. Well, it didn't. What a lot of the stories don't continue to report is that he then pointed out to his courtiers that of course the tides don't follow his orders – only God could control such matters.



And really, that's the point. It is incredibly hard to stop the tides. You can try. There are plenty of sea defences, or areas of 'managed realignment' (scientific speak for 'letting this bit of land flood so that bit stays safe'), and it'll work for a little bit, in a certain area. But water has to go somewhere, and unfortunately, keeping one area safe and dry means another could end up perilously submerged. There are villages off the Yorkshire coast that stand

testament to that. The Holderness coastline has been eaten away by coastal erosion for centuries, with villages such as Owthorne vanishing over approximately fifty years in the 1800s. Even further back, Hornsea Beck was lost before 1747, with just under forty homes, a pier and a lighthouse being eaten up by the North Sea. Even further back, Ravenser Odd was lost in the mid-1300s from its location near Spurn Point.

All that change, due to the simple movement of water, pulled and pushed along its course by alignment of planetary bodies.

That's the big stuff though, and I did promise you fish. After all, this last month, I've done nothing but write about fish, so you should suffer with me!

The critters of the intertidal zone need to be tough. It's a harsh environment, after all. See, when the water retreats, we all see lovely rockpools, but those rockpools can be hell on earth (hell in sea?) for the creatures left behind. Think about it. It's a hot day, the tide has retreated, and whereas before, you were in a comfy spot in a big ocean, plenty of fresh (salt) water, lots of oxygen, nice and cool, now, now, you're stuck. For the next few hours, there's no water exchange. The water's going to get warmer. It's going to start to lose oxygen. The salt is going to become more concentrated as some of the water evaporates. All the water might evaporate!!! Your rockpool stops being a pool, leaving only rock... Not the perfect situation for a fish. Or any other marine organism.

So they adapt. Because when it's good, life in a rockpool can be really good, with plenty of sunlight, so plenty of algae, meaning plenty of food. Some fish then, have evolved to be able to

# Pulling Up!

JENNIFER C. WILSON

breathe air at the surface, to enable them to stay alive in shallowing pools. Other adaptations include sea snails secreting mucus to seal their



shell to rocks, stopping themselves drying out. Limpets use the same approach, sealing themselves tightly to the surface and hunkering down for the duration. Crabs have thick shells which help slow down evaporation of water from their bodies, and for some, simply tucking under seaweed or into rock crevices is enough to wait for the waters to return.

And this, this is where I start to panic. For the first time since starting to write these articles, I cannot think of a single film reference to bring into things.

After some thought, my brain wanders into *Local Hero* territory. For those who have seen it, you might remember the scene where beachcomber Ben Knox offers to sell his beach to MacIntyre for as many pound notes as there are grains of sand in his hand. Mac breaks down and backs down.

Because that's another thing that tides do; they break things down. Sometimes taking centuries, sometimes in one large storm surge, but it's a nice way to sum things up. For every tragedy we hear about - a cliff fall, or a building crumbling over a cliff - there's a stunning gem exposed: whether that's an ancient dinosaur fossil, or the simplest piece of seaglass, rubbed smooth by the water and the grains of sand which surround it.

And, when you're standing at the water's edge, it's always the magic that strikes first.



*As well as being a full-time marine biologist, Jen also writes historical fiction.*

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Twitter: <https://twitter.com/inkjunkie1984/>

Blog: <https://jenniferwilsonwriter.wordpress.com/>

# Word Up!

## YOUR POEMS ON THE THEME OF THE COSMOS

### SPACE PATROL

Forget Fireball XL5, Thunderbirds,  
or Captain Scarlet. Remember Venusian Slim,  
Martian Husky, and Captain Larry Dart,  
a Democrat-voting Charlton Heston,  
with goatee. Diverse crew long  
before Star Trek. You'd find them  
checking out the rings of Saturn,  
swamps of Jupiter, going into the freezer,  
leaving things to the robots.

Ethereal B-movie avant-garde music.  
The Gabblerdictum was a kind  
of Martian parrot. Beautiful Marla at HQ:  
A Venusian has the facility never to forget.  
All aboard the Galasphere!  
All in order, captain. I'm ready.  
Yobba rays were Husky's department:  
All I want's a Martian sausage,  
delivered in an eastern European accent.

*Greg Freeman*

### Galaxies Matter

Deep space in chaos  
a curtain of black.  
Masses swirl, congregate,  
knead themselves into a pliable ball  
infused with the yeast of life  
which rises and explodes  
to form a galaxy.

It burns brightly, feverishly,  
illuminates the void,  
reflects vibrancy for millions  
of years of its life span,  
earning the attention and respect  
of the cosmos,  
until it burns itself out,  
leaves no crumbs,  
invites darkness to return.  
Dust to dust, matter to matter.  
Much like a human life,  
only with fewer years.

*Evie Groch*

### New Moon

Hanging in the sky is a little slice of moon  
Indigo sky with a layer of setting sun, the colour of orangey zest  
A crystal wedge of moon, bright in an icy sky  
A monthly celestial calling card, bringing hope of things to come  
A cosmic reminder of what has come to rest  
There, low on the horizon, bewitching and blinking and promising to reveal more  
Forever given the position of signalling the end of an era, pointing the way to go  
Cycling around the sky, I trust the ebb and flow will go on

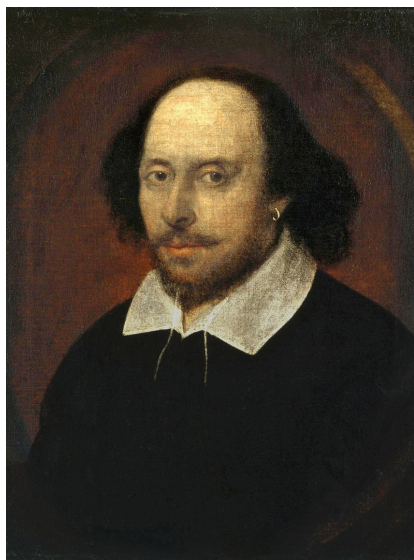
*Fiona Stacey*

# Growing Up!

HARRY GALLAGHER

It all started with a packet of Weetabix ...

“What a piece of work is a man!” So said Hamlet, Prince of Denmark, and who am I to disagree? Arguably what sets us apart from the rest of the animal kingdom is firstly our endless curiosity, and then our seemingly insatiable want to turn things we see but can't explain into stories. Just ask Mr Shakespeare.

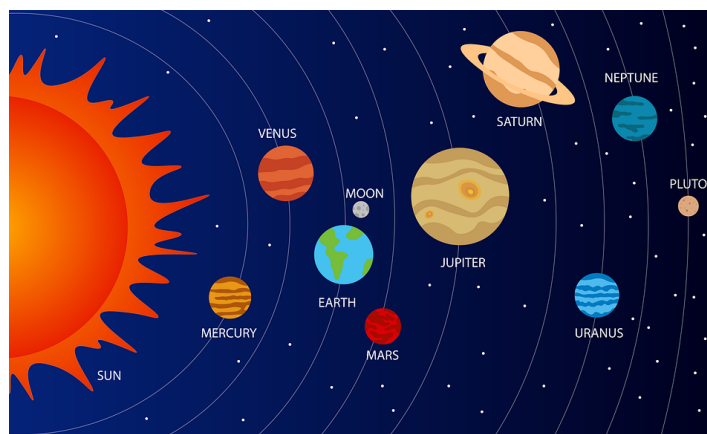


In fact, people more learned than this writer reckon that the earliest examples of human beings' storytelling dates back to the thick end of 100,000 years ago. Our stories then really weren't so very different in subject matter to the ones

we tell each other now. They were concerned with who we are, our place in the scheme of things and our lived environment.

And it's kind of mind-blowing to think that people way back then looked up at the night sky and saw exactly the same things that we do now. Not only that but there's a body of evidence out there in the form of structures thousands of years old which are still exactly aligned to those same, strange objects in the sky. Did they know more than we think? They must have done.

But back to that wide-eyed childish curiosity. The kind that if we're lucky, we never quite lose. One of my strongest memories of childhood was my bedroom wall. Many of my friends had posters



of favourite footballers on their walls, cut out from Shoot! I remember one pal who proudly hung up his own drawing of Dracula – this was in the heyday of Hammer Horror with Christopher Lee as the main (vein) man – and then had to leave his light on to go to sleep for fear of being the Count's next unlucky donor.

But I was never going to be happy with these fripperies! No, my obsession was the night sky and particularly our solar system. Thus, one day my parents sat me down, made me close my eyes and unrolled a 4 foot by 2 foot colour poster of our solar system, complete with detailed illustrations of all the planets, including the badly mistreated Pluto! Was my delight dampened by the fact it came free on the back of a Weetabix packet and even carried their logo on the bottom corner? Not a jot! Every detail about the planets carried on that poster soaked through my skin and is still in there today.

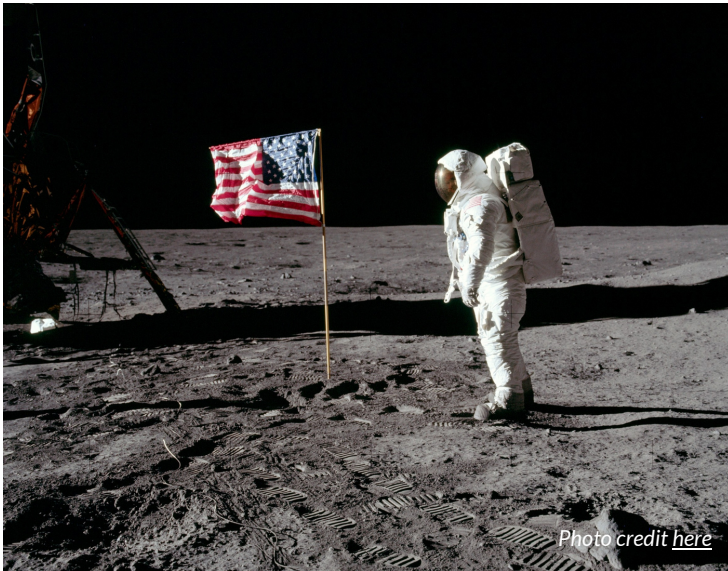
After seeing me finally getting interested in something vaguely scientific, my subsequent requests to my Dad to be allowed to stay up late to watch a seemingly semi-intelligible old man present the Sky At Night were welcomed with open arms! The fact that I'd usually fall asleep at some point during the heavier physics theories was never questioned.

In retrospect, this was all during the era of the space race. When Neil Armstrong took 'one giant leap' I was an impressionable 6-year-old. The

# Growing Up!

HARRY GALLAGHER

thrill of seeing him and all of the subsequent brave adventurers risk never making it back, in grainy black and white may seem passé now but seeing this stuff happening live in our living room, it felt like we could do anything, go anywhere. Nothing was out of reach! Since the moon landings lost their sheen, and we stopped going there, we have of course built and launched spacecraft far more complex than those early monsters.



But the greatest advancement in learning that I remember took place right at home. During one particular episode of *The Sky At Night*, an excitable Patrick Moore – then still to gain the ‘Sir’ – began babbling about a ground breaking, amazing, stupendous opportunity to witness the appearance of THE GREATEST COMET EVER SEEN!!! Called Kohoutek, it was going to light up the sky like a ... well, like a giant comet! You get the picture.

Soon after this (over sold, it turned out) build up, the long-suffering parents – never well-off at the best of times – gave into my urgings and managed to find a 2nd hand telescope, and delivered it as a birthday present. It was of course received as the bestest birthday present ever!



The memory of my Dad setting it up at the rear of the house on a dark, clear night and the mini-revelation that followed will never leave me. Telescope ready, I was asked what I'd like to see first. I'm sure he expected me to choose the moon but being a somewhat unusual child I instead chose the brightest star in the sky. "Alright then", he replied, turning the telescope towards it and beginning to focus, "What do you think it is?"

Everyone knows the answer to the question, "What's the brightest star in the night sky?" – it's the North Star, otherwise known as the Pole Star. I never could spot a trick question and still can't. Beckoning me over, he guided me to the eye piece. I looked into this miraculous contraption and saw not a star ... but a planet! Jaw agape, I looked over at him and saw him grinning. My heart racing away, he explained that what most people think is the North Star is actually Venus.

Half a century on, with the telescope and my old Dad long departed, that memory and that wee piece of knowledge is still with me. Try it yourself. Have a look up on any clear night; beg, steal or borrow a basic telescope and focus in on your 'bright star'. The odds are that it'll be that old glamour puss, the Goddess of Love putting on a show in half-crescent. If your viewer is strong enough, you'll find me and my old man there, swapping star stories in Summer's half light ...

# Word Up!

YOUR POEMS ON THE THEME OF  
THE COSMOS



## **Cosmos**

Even as the plane takes off  
—a swift dart of chalk scratching the familiar board of the sky  
taking us home for Christmas,  
the stars stay out of reach.  
It's easy to believe, peering out of the tiny window squoval,  
that these specks of light were dabbed onto the vantablack night sky by a brush.

Galileo swung his scope across the heavens.  
With self-ground lenses, he documented the heretical moons of Jupiter,  
their rhythms saying the earth moves round the sun.  
He couldn't leave the ground, but saw it all moving in 3D, as if from space.  
Dizzy with perspective, he scratched his quill on parchment,  
tallow light a greasy yellow echo of moons he simply named I, II, III, and IV:  
Io, Europa, Ganymede, Callisto.

Now, with a bright swash of perfect mirror, ultra flat and inhumanly dust-free,  
we could gaze out beyond, beyond, beyond,  
not just in space, but also time, unfathomable light echoing back to us from the ancient past.  
Yet still, in the vast silence of the cosmos,  
even from our gravity-defying yet blandly comfortable plane,  
we see our own familiar moon, explored, trampled, cold as an empty temple;  
the silent stars like baubles on a tree.

*Helga Zunde-Baker*

# Look Up!

## KIELDER OBSERVATORY

**Astronomer, Hayden Goodfellow, takes Up! on a trip around a truly remarkable place**

### **What makes Kielder such a perfect place to site an observatory?**

Kielder village is the most remote spot on the English mainland, with only the small villages of the North Tyne valley and Scottish Borders surrounding it. We are also on the western edge of the expansive Kielder Forest, which for over a century has been England's largest area of managed woodland. The Observatory is two miles up a forest road outside the village itself, so the few lights from the village are hidden among the trees, which means the stars above have the best chance to shine brightly overhead.



The other advantage Kielder has is the strong tourism economy in Northumberland. Kielder Water and Forest Park welcomes around half a million visitors each year, all hoping to escape the hustle and bustle of city life. We think that enjoying the vista of a starry sky overhead is a vital part of that experience. Next year will mark the tenth anniversary of the Northumberland Dark Sky Park, which exists to protect the dark skies of this remote corner of England and promote the



area for tourism. Five years ago it was already estimated to have brought over £100 million to the local economy and we are excited to see how its impact has grown as more people have holidayed in the UK over the pandemic years.

It's strange to think that we are possibly more connected to the Universe around us than ever before. Many of us carry devices in our pockets which can access superb quality images of planets and far-away galaxies from the world's flagship observatories, and learning how hot/big/far away these objects are can be done by a few seconds of searching rather than looking through large printed data tables. And yet with 94% of Brits living under more artificial light at night than natural light, many of us have never been able to enjoy views of the Milky Way and a truly dark sky.

Kielder Observatory exists to offer that escape. The chance for people to get away from city streetlights and see the sky as it was seen hundreds of years ago, but also with the benefit of modern instruments and understanding.

### **Some of our readers may have telescopes at home, but the telescopes you have at the Observatory are something else, aren't they?!**

Our telescopes are some of the largest available to look through anywhere in the UK. The larger a telescope is, the more light it is able to gather and the fainter the objects we can see through it. Our two iconic square turrets each house a 40



# Look Up!

## KIELDER OBSERVATORY

cm wide telescope on a computerised mount, which are regularly used to observe galaxies over 40 million light years away. Beginner telescopes range from 10 - 20 cm in aperture, and binoculars are even smaller. But sometimes lower



magnification is better for observing larger targets, so we have telescopes of a range of sizes to cover all scenarios. When the Moon is out, we can observe it at magnifications ranging from the naked eye right down to the level of individual craters.

In 2018 we also opened the Gillian Dickinson Astrophotography Academy, which houses telescopes equipped for taking images of the night sky. By allowing light to fall on the sensors of these cameras for many minutes, we can pick out details in distant nebulae and galaxies which would be invisible to the human eye even through the eyepieces. The GDAA also houses our kitchen and gift shop, and the telescopes are available to look at on nights when they are not being used.

### What could someone coming along to one of your Dark Skies nights expect to see?

The first thing people will experience at the Observatory is just how dark and quiet it is.

Although the track from the main road is only two miles long, the slower speed limit through the trees makes it feel longer. When you switch off your headlights and step out you will be surrounded by total darkness, with only the gentle whirr of our wind turbine and rustling of trees to be heard. Around ten minutes before the start of your event, one of our team members will welcome everyone down from the car park to be checked in. Our events prioritise observing and the weather in Kielder can be a formidable beast at times. If the stars are out then after a quick introduction to the team and the night you will be whisked out to one of our three observing stations (the two turrets and outside decking) to begin observing as soon as possible. Each station has an observing list to take full advantage of the telescope there (planets and nebulae in the large telescopes, larger galaxies and star clusters in the small ones) and you will get to go to each station, with time allotted for a hot drink such as our famous hot chocolate. Each of our events has a theme and one of our astronomers will be



# Look Up!

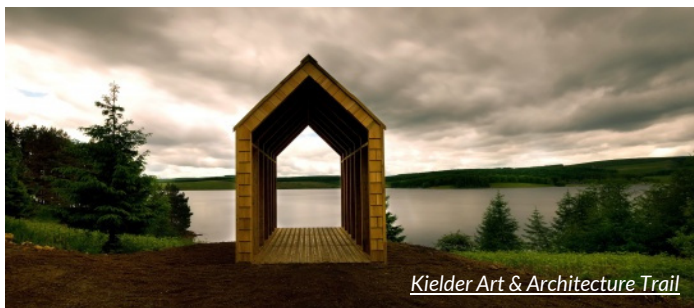
## KIELDER OBSERVATORY

delivering a feature talk in our main classroom about that theme at some point during your event. This can be on anything from the life-cycle of stars, to the Aurora, to the unseen Universe of black holes and dark matter.

On nights where the weather is against us then there is still plenty to see and do. You will learn more practical tips on how to navigate the night sky using virtual planetarium software and get the chance to see the latest results from humanity's fleet of space-faring robots and largest observatories. We will also offer you the chance to see our meteorite collection, where you can stand on a piece of Mars and hold some remnants left over from the formation of our solar system in the palm of your hand. Some of our rocks have floated undisturbed in space for over four billion years before dropping to Earth and holding them can be a reminder of just how many are still out there waiting to have their orbits mapped.

**Here at Up! we love hearing about people combining forces to make good things happen. We understand that you've been busy working with Forestry England. What can you tell us about the project**

Of course, we couldn't do what we do without our valued partners. Being in Kielder Forest, we have a close partnership with Forestry England. They



maintain our building as part of the Kielder Art and Architecture trail, which led to the Observatory's construction in the first place. They also prioritised clearing the 80 trees which fell across the access track during Storm Arwen, allowing us to re-open and bring astronomy experiences to audiences again as soon as possible. They are currently undertaking a mammoth renovation of Kielder Castle and we look forward to working with them in the near future to bring new astronomy experiences to visitors there as well. Another partner of ours, for example, is the North of Tyne Combined Authority who work with us for our schools programme, allowing us to take planetarium and science workshops out to schools across the North East and inspire over 10,000 young people annually to take an interest in STEM (science, technology, engineering, mathematics) subjects.



**One of the wonderful things about stargazing is that it makes you think about your place in the world, doesn't it?**

Contemplating our place in the Universe is something we believe all people should be able to do. Astronomy has taught us that the atoms in our bodies were forged in the inconceivably hot aftermath of the Big Bang or the cores of stars which have long since exploded in supernovae. The distances, sizes, temperatures are so extreme compared to the environments on Earth and yet we have, over hundreds of years, been able to

# Look Up!



## KIELDER OBSERVATORY

make sense of the light which has reached us and tell the story of how the Universe came to be and where it might be heading. So far as we know, that makes the Earth a unique place in the cosmos and it gives us a sense of hope. As the international effort to return to the Moon begins with the first Artemis mission, we have hope for all the discoveries yet to come, and all the stories we are yet to tell...

*Check out the Observatory's updates on social media here:*

*Twitter: [@kielder\\_obs](https://twitter.com/kielder_obs)*

*Facebook: [@KielderObservatory](https://www.facebook.com/KielderObservatory)*

*Instagram: [@KielderObservatory](https://www.instagram.com/KielderObservatory)*

*Or, if you fancy a visit, their website has a current calendar of bookable events:*

*[www.kielderobservatory.org/our-events](http://www.kielderobservatory.org/our-events)*



We are currently crowdfunding for a new wind turbine! Please help us reach our target by pledging your support:

<https://www.spacehive.com/kielder-observatory-wind-turbine>



*The more clearly we can focus our attention on the wonders and realities of the universe about us, the less taste we shall have for destruction.*

**Rachel Carson**

*Limitless undying love which shines around me like a million suns,  
it calls me on and on across the universe.*

**John Lennon**

*Remember to look up at the stars and not down at your feet. Try to make sense of what you see and wonder about what makes the universe exist. Be curious. And however difficult life may seem, there is always something you can do and succeed at. It matters that you don't just give up.*

**Stephen Hawking**

# Word Up!

## YOUR POEMS ON THE THEME OF THE COSMOS

### **Cosmic Silence of Love**

The cosmos is silent,  
The stars shimmer behind  
The floating silver clouds.

The autumn stopped counting her fallen leaves  
The early winter is coming  
Bringing chills in the dark.

The full Frost Moon is busy charging  
Precious stones and ancient sigils  
That are carved on the face of the earth.

I gather her celestial dust  
In my palms and amass  
All blessings of this mystical Universe.

I am chanting to all silent nebulas above.  
Tonight, I'm a tiny part  
Of this cosmic silence of LOVE.

***Petrouchka Alexieva***

### **a space for me**

vast as the cosmos is,  
amid all the chaos and nightmares  
there was a space for me;

a space for my magic and my light,  
my dreams and my hopes,  
and my fire;

so i know i have a purpose in this  
universe if nothing more than to enjoy  
life while i am here—

so i will drink in all the sights that i am able,  
take in the scents of autumn leaves, cinnamon,  
pumpkin, and everything else that makes me  
feel safe and secure; and go on as many adventures  
as i can because life is a journey not a race.

***linda m. crate***

### **Galileo embraces the Cosmos**

I saw such wonders out among stars -  
with my grafted lens, I embraced  
Copernican movement.

A revolution of celestial spheres  
chiaroscuro of tides, phases of Venus  
pearls on the milky way.

In their wisdom, my compatriots  
in urban Rome forbid such views  
as *contra mundum*

I recanted, allowing geocentric  
conviction to hold stable  
the elliptical earth.

*And yet it moves!*

***Rona Fitzgerald***

# Beam Up!

STEVE LOWE

**It's all in the stars for Up!'s Outdoors Man**

Well, the Up! editorial team has selected a tough topic to cover as a naturalist! Especially one like me, who grew up on a heavy diet of moon landings, Jules Verne, Philip K. Dick, Star Treks and Wars and Isaac Asimov.

Science “fiction” became fact in my younger years, with the Sputnik missions and later space exploration. This despite the fact that there are vast areas of our own planet that we do not know about!

And since the industrial revolution we have been slowly disassembling our own world and dreaming of venturing to others, in search of what? More disassembling?



What seems to absorb the general public is the speculation on the potential for life on other planets, preferably in a humanoid shape, with similar ideals to our own (but hopefully less self-destructive). TV, film, books and comics all seem to be determined that these life forms exist – even that life on earth may be one great experiment by extra-terrestrial lifeforms.

Yet, to know whether life exists beyond Earth, we must surely understand our own significance in the universe. Are we uniquely special or merely unremarkable?

The planet Earth orbits one of the hundreds of billions of stars in our galaxy. In turn, this galaxy is one of hundreds of billions in the observable universe. This apparent insignificance fits with the Copernican principle “our planet is not the centre of the cosmos but simply a mediocre member of a mediocre solar system”.



*Photo credit [here](#)*

Nicolaus Copernicus was born on 19 February 1473 in Poland. He is best known for his theory that the Sun and not the Earth is at the centre of the universe and that planets revolved around the Sun, rather than the Earth.

At the time this would have been considered heretical but his skill at mathematics, his faith and his study of astronomy (not astrology, which is not a science, more of a lottery) interlaced to shape his thinking. Certainly, much more convincing than Flat Earthers (in my opinion) who, apparently, have believers “all around the globe”!

Some ‘bodies’ in the Solar System have the potential for an environment in which extra-terrestrial life could exist, particularly those with possible subsurface oceans. However, should life be discovered elsewhere in the Solar System, astrobiologists suggest that it will more likely be in the form of micro-organisms.

# Beam Up!

STEVE LOWE

But even if life existed on every planet that could support it, living matter in the universe would amount to only a few grains of sand in the Gobi Desert. A sobering thought!

But the “near cosmos” or solar system has a massive influence on the daily life and existence of every single life form on the planet. Indeed, its very makeup, movement and activity has established the ideal conditions for life to exist.

The earliest life forms that we currently know of were microscopic organisms (microbes) that left “signals” of their presence in rocks about 3.7 billion years old. The “signals” consisted of a type of carbon molecule that is produced by living things. These vastly pre-dated what most of us would think of as fossils.

But the idea of this was, until one June afternoon in 1788, a “blasphemous truth”!

On that afternoon, James Hutton stood before a rock outcropping on Scotland’s western coast named Siccar Point. There, before a couple of



other members of the Scottish Enlightenment, he staked his claim as the father of modern geology, as he showed that the Earth was old, almost beyond comprehension.

Hutton proposed that the Earth was constantly (re)cycled through “disrepair and renewal”, that exposed rocks and soil were eroded, and formed new sediments that were then buried and turned into rock by heat and pressure.



This rock would eventually reappear to be eroded again, a cycle that continues uninterrupted. Hutton concluded “The result of this physical enquiry is that

we find no vestige of a beginning, no prospect of an end.”

His ideas were startling at a time when most natural philosophers - the term scientist came much later - believed that the Earth had been created by God roughly 6,000 years earlier. The popular notion was that the world had been in a continual decline ever since the perfection of Eden. Therefore, it had to be young. The King James Bible even included a date: October 23, 4004 BC.

Hutton pointed to proof of his theory at Siccar Point, where the junction of two types of rock (created at different times and by different forces) are exposed. Grey layers of metamorphic rock rose vertically, like weathered boards stuck into the ground. These thrust themselves into horizontal layers of red, layered sandstone, a rock only beginning to be deposited.

# Beam Up!

STEVE LOWE

Thus, Hutton explained, the grey rock had originally been laid down in horizontal layers (perhaps an inch a year of sediment) long ago, but, over time, subterranean heat and pressure had transformed the sediment into rock. Then a force caused the strata to buckle, fold and become vertical.

Geology was born. Later scientists such as Wallace and Darwin added new scientific thinking, challenging the thinking of the time and sparking even greater interest in the natural world. It's worth pointing out here that the natural world had been a topic of immense human study for centuries and these luminaries owed much to Arabic and classical philosophers. But a new age of scientific study was up and running.



Nowadays, we understand much more about the influences that the cosmos has upon our own world, and everything within it. The vital role of the sun in providing heat and light is obvious, but rotation of the earth through its daily and annual cycles brings us seasons and daylight, darkness and temperature fluctuations and, most obviously, climate and weather – all of which change permanently but have been given greater impetus by human misuse of our own environment.

A good example is that of the tide. Twice a day, the

ebb and flow is predictable - now that we understand they are caused by the gravitational forces exerted on the earth by the moon, and to a lesser extent, the sun.

And because the Earth rotates through two tidal “bulges” every lunar day, coastal areas experience two high and two low tides every 24 hours and 50 minutes. High tides occur 12 hours and 25 minutes apart. Along coasts, the water therefore slowly rises up over the shore and then slowly falls back again.

The land in this tidal range is called the intertidal zone and it is often marked by tide pools - or rock pools as we call them locally. Many a nature lesson here on trips to the beach for us all!



Tide pools are completely underwater at highest tides but remain as pockets of seawater when the tide ebbs and are home to some of the ocean's richest biodiversity. But think about one of its inhabitants for a minute.

A limpet, for example, clinging to a rock and virtually impossible to dislodge from its mount.

Inside its shell, it contains a mini-environment containing all it needs to survive during the period of exposure once the tide has gone. Not only does the exposure lead to changes in surface temperature (sunshine etc), but the limpet will be outside its normal saline

# Beam Up!

STEVE LOWE

environment for a long period of the day, before being immersed into a gradually deepening and salty solution as the tide re-covers the rock. This requires a very tough composition. Once covered, the limpet relaxes its grip and surges off to feed and undertake its normal functions.

Most of us would be unaware that common limpets move around during the first few years of life, before settling in one home for the remainder of their lives (they still wander around the local patch though). Most would think they are sedentary - but far from it.

Watch one by torchlight and you will see they move pretty quickly and also leave a beautifully artistic trail in the sand when they do so. I was recently amazed to discover that scientists at Newcastle University's Dove Marine Lab in Cullercoats are

placing sensors on limpets in an effort to study their movements and the environmental changes they experience throughout their daily lives. Although a "robotic" whale appears in "Godwhale" by T C Bass (read this slightly apocryphal book), I am eagerly awaiting the blockbuster cult classic that will be Robolimpet, set amongst the stars!



*An experienced wildlife professional, Steve currently works freelance with Northumberland Rivers Trust as well as undertaking work with volunteers on local heritage and archaeology projects.*

*His hope is to leave the world a better place.*



Did you know that the Open University offers lots of short courses, all of which are totally free? You can find the full list of what's on offer here:

<https://www.open.edu/openlearn/free-courses/full-catalogue>



One in particular caught our eye:

[Galaxies, stars and planets](#)

This Level 1 programme of study takes approximately 8 hours to complete. You'll even get an online digital badge when you complete the course!



# Word Up!

## YOUR POEMS ON THE THEME OF THE COSMOS

### GEMS

I bathed in gold today  
Upon morganite sands  
And rinsed it off with liquid zircon.

I snorkeled among aquamarine  
Under a dome of turquoise  
And admired stars of garnet.

I wandered through a forest of emeralds  
And rolled around in blades of jade  
Dotted with flowers of sapphire and rubies.

I got my feet wet in a flow of topaz  
And almost slipped on stones of peridot  
As moonstones washed over me against a rocky face.

I got lost in a horizon of citrines  
Perfectly blended with streaks of amethysts  
And the magic of alexandrite.

Then slept under a mosque of onyx  
Adorned with sparkles of diamonds  
And lit by a giant pearl.

*Gail Rivera*

### NORTH STAR

Four in the morning:  
crescent moon  
in dark sky. The silence.

Churchyard gravestones  
look like people  
in camera's flashlight.

The blinking of the internet.  
Every day,  
a new start.

I was a dying man.  
Now everything seems  
possible again.

We will be searching  
for red squirrels  
and Northern Lights.

I think I'm seeing things:  
stars sparkle  
up here in the true dark.

*Greg Freeman*

Next month's theme is:

### CHRISTMAS

Feel free to interpret the theme  
as you see fit and send up to 3 poems  
(no more than 20 lines each please) to:  
[admin@positivelyup.co.uk](mailto:admin@positivelyup.co.uk)

Full submission details can be found  
on our website:

<https://positivelyup.co.uk/poetry-submissions>

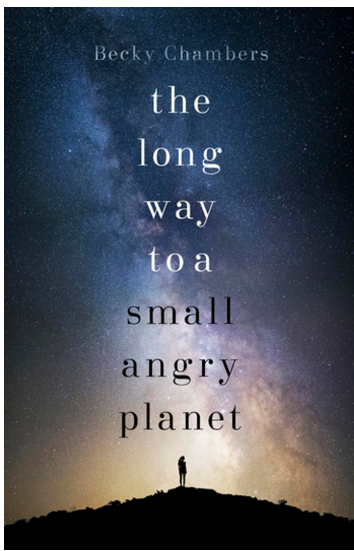
# Read Up!

JENNA WARREN

Hitching a ride around the universe with Up!'s resident book reviewer



When I first saw this month's theme, I thought it would prove a bit of a challenge! 'The cosmos' made me think of space travel and especially science fiction. I've only started reading sci-fi over the past few years, so it's by no means a genre I'm particularly familiar with, but I've really enjoyed the books I've read, and I thought this would be the perfect opportunity to highlight them.

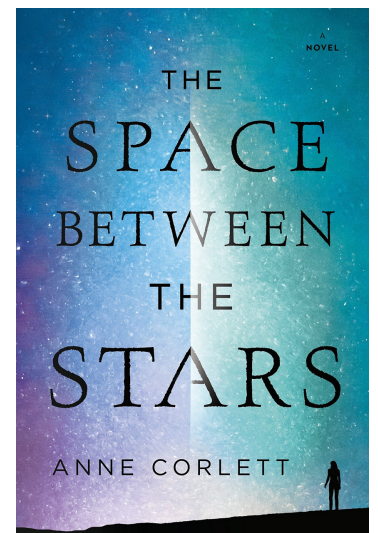


My first choice is *The Long Way to a Small Angry Planet* by Becky Chambers. This was recommended to me by a friend, and I'm so glad she told me about it, because it's a wonderful novel. It takes place at a future point in history when long distance space travel is a feature of everyday life, and alien planets are in contact with each other and work together. Rosemary Harper grew up on terraformed Mars but now wants to get away, so she joins the crew of the spaceship Wayfarer. The Wayfarer's latest mission is to travel to the distant 'small angry planet' of the title and build a hyperspace tunnel.

The crew of the Wayfarer are a diverse cast of characters, some human, some alien, all with their own problems and secrets. What follows is a story about a group of very different people trying to live together in a small space, and the conflicts that arise. This very human story is contrasted with

an interstellar journey featuring visits to weird and wonderful planets. It's both moving and tremendous fun. I would highly recommend it to anyone (like me) who wants to get into science fiction, as the science aspects are explained in an accessible way.

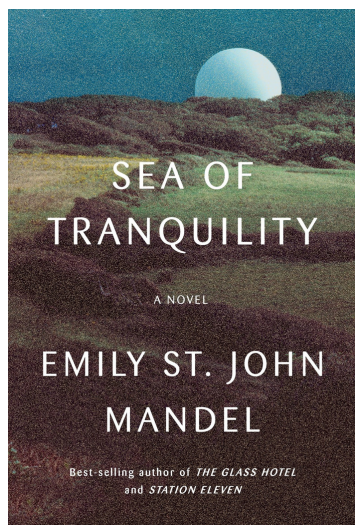
Another book that explores space travel is *The Space Between the Stars* by Anne Corlett. This novel has a slightly darker tone than the Wayfarers Series, but it still tells a very humane story. Once again, mankind has spread out among the stars and, in this case, colonised various other planets. Jamie Allenby, the main character, travelled to one of these distant planets to get away from a loss she experienced on Earth, leaving behind her partner Daniel. But while she's away, a deadly virus spreads across the universe. Jamie survives the pandemic, and when she receives a garbled message from Earth, she decides to make the dangerous journey home in the hope of being reunited with Daniel. On the way, she picks up other survivors. Some are friendly, and some have more sinister motivations. Together, they travel back to Earth.



# Read Up!

JENNA WARREN

This is a sensitive novel about the way people deal with loss and isolation. It also has an interesting North East link: when they reach Earth, Jamie and her companions land in Northumberland and walk to Holy Island, where she has family connections.



One of my favourite recent reads is *Sea of Tranquility* by Emily St. John Mandel, author of the brilliant *Station Eleven*. *Sea of Tranquility* is a novel set over several time periods. Each thread of the narrative is linked by the characters experiencing some kind of anomaly in time and space. In 1912, Edwin walks into a Canadian forest and suffers what he thinks is an hallucination: he hears someone playing the violin and feels that he's suddenly in a busy environment surrounded by people. A century later, another character captures this same anomaly on film.

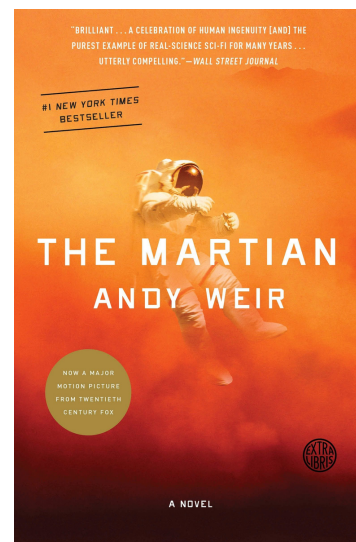
Much further in the future, humans have colonised the Moon. Gasperry-Jacques Roberts, who lives in the rundown Night City, is hired as a detective by the Time Institute. His job is to travel back in time to learn all he can about the anomaly.

This is a novel about time travel, simulations, and parallel universes. But it's also about people, and how their motivations and emotions don't change even as technology does. A good example of this occurs when Gasperry – perhaps inevitably – commits an act which disrupts the timeline, leading to far-reaching consequences. I loved this book. It's both moving and mind-bending (in an intriguing, fairly accessible way!).

*The Martian* by Andy Weir is a fast-paced story of survival against huge odds. It's later in the 21st century, and there are now manned missions to Mars. The latest mission is disrupted by a dust storm, causing the Ares 3 to evacuate the planet. In the confusion, Mark Watney, the crew's botanist, has an accident which leaves him temporarily pinned to the surface by debris. Believing him to be dead, the Ares 3 departs, leaving Mark alone on Mars.

Most of the novel takes the form of Mark's log, as he recounts his struggles to stay alive. This involves a lot of potatoes – both growing them and eating them – and also figuring out how to communicate with his crewmates and get home. There's also a parallel story set on Earth, where NASA have realised that Mark is still alive. These parts of the novel read like a fun action movie, and the book has since been turned into an excellent film by Ridley Scott.

This novel is a pacy thriller, with some genuinely interesting writing about science and technology, and I really rooted for Mark.



# Read Up!

JENNA WARREN



I can't end this column without mentioning one of my favourite comic novels of all time: *The Hitchhiker's Guide to the Galaxy* by Douglas Adams. Endearingly hapless everyman Arthur Dent wakes up one morning to discover that his house is being demolished to make way for a new bypass. His friend Ford Prefect swoops in to save him, and it soon transpires that the whole planet is scheduled to be destroyed by the Vogons, who intend to build a (hyperspace) bypass of their own.

Ford is a researcher for *The Hitchhiker's Guide to the Galaxy*, the bestselling book in the universe, and he manages to hitchhike onto a Vogon ship just before the Earth is demolished. Arthur and Ford eventually find Zaphod Beeblebrox, the president of the galaxy, who has stolen a valuable starship and gone on the run with Trillian, a woman from Earth for whom Arthur holds a torch. Together, they travel through the universe and embark on various adventures in the hope of discovering the answer to the great question of life, the universe and everything. This is an imaginative and hilarious short novel with fantastic characters. A true masterpiece of comic fiction.

*Jenna Warren is a bookseller and writer from Teesside. She studied Theatre and later Creative Writing at university. She runs Book Corner, an independent bookshop in Saltburn-by-the-Sea. Her debut novel, *The Moon and Stars*, was published in October by Fairlight Books.*



## Where Is HoneyB?



Where on earth has the intrepid little explorer been this month?

If you think you recognise the mystery location, simply post your suggestion on the Up! facebook group page and tag it #HoneyB.

Good luck!

# Coming Up!

Welcome back to earth! We hope you enjoyed your voyage.

So where's our next destination? Well, next month is December so ... it's CHRISTMAAAAS! What's on your list to Santa?

But before we post our lists up the chimney, a quick word about some great projects that we're involved in.

We're delighted to report that Feeding Folk (our initiative to help hard-up foodbanks through shared music and songs) is going from strength to strength. Not only has it become a regular event, but the baton has also been picked up by other local groups - all brilliant news for local food banks at such a key time.

Mariners & Marras - our community singing group - also continues to grow and flourish with bookings already in for the festive season!

Our other bit of news is that we are setting up a series of FREE creative writing sessions via Zoom starting in December. Full details will be available on the facebook page and also on our website soon.

Until next month, keep your feet on the ground and your head in the stars!

Much love  
Bridget & Harry xx



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**Website:** [www.positivelyup.co.uk](http://www.positivelyup.co.uk)



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