

Up!

JUNE 2022

WHAT LIES
BENEATH

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



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<https://www.visitcruachan.co.uk/green-tourism/>

Up Front!

Aloha from Cullercoats!

Yes, Summer's finally here! We don't know about you, dear Reader, but here at Up! HQ we've been beavering away recently and are looking forward to a holiday in Jemima, our trusty old motorhome, for a much needed fix of life in the slow lane for a while.

Our big news this month is that we've been hard at work on a brand new website and we're delighted to announce that it's now live:

www.positivelyup.co.uk

You can access all of our back issues on the site, meet the team and find out what else we've been Up! to. We'd love to know what you think, so please do get in touch.

So it's fair to say it's been a bit of a busy month! Not that we've been slacking on your favourite positive news magazine though. Look inside this bumper issue and you'll find an interview with star of the UK folk scene, Nancy Kerr, plus we've been underground discovering all sorts of amazing things.

Step inside to find out what lies beneath ...

Bridget & Harry x



Up and Under!

BOULBY UNDERGROUND LABORATORY

Up! talks to Ed Banks, Science Support Technician, about an astonishing underground facility

Thanks so much for talking to us. Having driven past Boulby mine many times, we'd never have guessed you were there! Given our theme this month is 'What Lies Beneath', can you tell us a bit about the environment you're working in?

The mine environment is very dry, very salty, and very hot! The depth of 1.1km means that, being closer to the Earth's core, the rock temperature is significantly warmer than the surface, and the tunnels in the area where the lab is situated are around 30-35 degrees. Fortunately the lab itself is air-conditioned down to a pretty stable 20 degrees and is additionally a clean-room; meaning we have to take great pains to keep the dust and salt from the tunnels from getting in. We can do this with large air filters, by changing into cleanroom overalls and clean hardhats when we go inside and by keeping on top of the cleaning! We're also in a relatively clean area of the mine, just a little over half a kilometre from the bottom of the lift shaft where clean air is circulated into the mine.

Deeper into the mine, especially in areas where ICL are actively mining, the temperatures can be much hotter and it becomes significantly dustier. The tunnels of the mine extend almost 10 kilometres from end to end, branching out in spiderweb, fractal-like patterns to follow the seams of the types of salt that they are mining. Many of the tunnels extend far out under the North Sea.



ICL stands for Israel Chemicals Limited- they operate the mine here at Boulby. Mining started in the early 70s, producing potash which is a type of rock salt used for fertiliser. In the past few years they have moved to mining polyhalite; making them the world's first and only polyhalite mine. Polyhalite is also used as a fertiliser; it's taken by rail to Tees Dock from where its shipped around the world for agricultural use. The lab itself is owned and operated by STFC (the Science and Technology Facilities Council) which is a government body that has a number of labs around the UK; we lease the space from ICL and work in close partnership with them to ensure that everything runs smoothly.

The significant difference in the environment underground though is not noticeable by people: radiation. On the surface we're constantly being bombarded with radiation; from the sun, from space in the form of cosmic rays, from radon in the atmosphere, from general backgrounds such as medical scans and so on. Radiation at normal levels like this is not harmful to life, but it can be a problem for certain types of experiments, particularly high-energy physics experiments where you are looking for very rare interactions. If you are looking for something that only happens very rarely, then you'll need to build a detector that's very sensitive. But if your detector is very sensitive, then it may pick up other sources of radiation from all the background! So by moving so far underground, the quantity of rock above our heads acts as a fantastic shield blocking out the

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vast majority of radiation; giving us a much quieter environment to do these types of experiments. For cosmic rays in particular, our depth gives us a reduction factor of a million; for every million cosmic rays that reach the surface, only one will reach the level of the mine and the lab within.

Perhaps the most well-known example of this type of rare-event physics experiment that we carry out is the search for the elusive dark matter.



Dark Matter sounds the stuff of sci-fi to us! Can you explain to us what Dark Matter actually is, and why it... er... matters?

In short, I can't explain what dark matter actually is! Not yet, at least, and this is why our lab and similar labs around the world are searching for what exactly it is. There are lots of signs that point to the existence of dark matter but it remains invisible. It's similar to how we can't see wind directly, but by observing the way that the leaves on trees move around, we know it must exist.

The evidence for the existence of dark matter comes from our understanding of gravity. We have

a great understanding of gravity on small scales; you can throw a tennis ball and calculate exactly the arc that it will follow and how long it will take to hit the ground. This all depends on the mass of the ball and how hard you threw it, but the motion is described perfectly by Newton's laws of gravity.

Moving to a slightly larger scale, we can look at the motion of planets around a star. Now our equations of gravity hold really nicely here as well. With a bit of modification thanks to Einstein's theory of relativity we can perfectly describe how the planets will orbit the star; their speed will depend on their mass, the star's mass, and how far apart they are. In our solar system we have Mercury which whips round the Sun in just 88 days, whereas Uranus, being so much further out, takes 84 years to complete its orbit. If you plot the relationship between the distance from the Sun and the orbital speed, you get a lovely inverse relationship that perfectly matches the equations; the further out a planet is, the slower it will be orbiting.

Moving up to the next scale of galaxies, we expect the same relationship to hold true. In a galaxy you have many stars orbiting around the centre of the galaxy, and stars closer in should be moving really fast, while those further away should be moving much slower. We know how fast they should be moving because we can estimate the mass of everything that we can see within the galaxy, and we know how far away from the centre the star is. However, actual observations of other galaxies do not match this lovely inverse relationship. Stars further out actually seem to be going faster than those further in! This points to one of two ideas: first, that our equations of gravity are wrong. This is possible, but not the preferred answer as they work so perfectly on smaller scales, and there is a lot of other evidence which also points to: second, that there is a whole load of extra mass that we can't see. If there was extra mass, this would provide the extra gravitational force needed to

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move these further out stars at the high speeds that we observe. Because this extra mass literally can't be seen, we call it 'dark'; but it still has mass and interacts with gravity and therefore is 'matter'. Hence: 'dark matter'!

What exactly it is that makes up all this missing mass is precisely what we're trying to determine; the prevailing theory at the moment is that it would be a new type of fundamental particle (something similar to an electron or neutrino) called a WIMP (or Weakly Interacting Massive Particle) that has not previously been seen. Other experiments like those at the Large Hadron Collider are hoping to see these particles as products of collisions there. It's a big mystery and one of the longest standing unanswered questions in physics- a real gap in our knowledge of the universe.



It sounds like a very remote place to spend your working days (or nights!). Would working down there pose any challenges to the average person?

I probably wouldn't recommend it for claustrophobes! That said, the tunnels are not as small as you might imagine; generally around 8



metres wide and 3-4 metres high, they are more than large enough for the forklifts and vans used by ICL to drive around the mine in. You do need a reasonable level of fitness, just to be able to get around underground with the protective gear that you need to carry, but nothing special.

The whole experience definitely requires a little bit of getting used to though. The lift only operates at very specific times, so making sure that you've remembered everything is important. You can't just pop back for an extra battery, screwdriver, or worse yet your lunch. If you've left it on the surface you'll have to wait until you come back up. You do also have to be vigilant, remember that you are in a working mine and it is a bit of an alien environment; there are lots of (very sensible) health and safety guidelines to be aware of.

You're also conducting research into climate change. What makes Boulby an ideal location for a project like this?

It's actually the geology of the mine, the rock salt, that is of interest to geologists on this particular project. The lab was originally set up underground to get away from all that background radiation for our rare-event physics experiments, but given that we are down here and have access to this fantastic, unique geological environment then we can absolutely make use of it.

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The project that we're currently working on is called RESOURCE, in collaboration with the British Geological Survey. This is aiming to tackle the problem of large-scale energy storage by using compressed gas in caverns within the rock salt. As the country moves towards more and more renewable sources, you come across the issue that supply may not always match the demand on the national grid. If it's a really windy day for example, wind turbines may be generating more energy than is needed at a given point. This energy may end up being wasted, or some turbines may even have to be switched off- which sounds like a crazy idea, wind turbines having to switch off because it is too windy! But storing this energy is a problem- traditional chemical batteries like lithium ion batteries are just not feasible on the scale needed to store energy for a national grid; a different solution is needed. In Wales there is currently a reservoir at Dinorwig that acts as a massive battery by using the potential energy of the water: when energy production is high but demand is low, the extra energy is used to pump water to the top of the reservoir. Later on, when



demand increases, this water can be released to flow down and turn turbines, generating electricity.

We hope to use the same principle with compressed gas inside cavities in the rock; when energy production is high, we can pump gas into the caverns, and when the energy is needed later the gas can be let out to turn turbines again. The rock salt at Boulby is perfect for this as it forms very tight seals and does not allow gases to seep through. It is in fact often found as the caprock for natural gas wells, or containing small pockets of trapped methane. It also moves very little over time, and is under immense pressure from the depth at which we're operating, which will contribute to the stability of the caverns.

In the past we have also run experiments testing the technology which can be used to monitor underground storage sites, for use in carbon capture and storage schemes.

Have there been any major findings yet from the project?

In terms of RESOURCE, the technology is still very much in its early stages. We are experimenting on the best ways to create these caverns in the first place; what sort of shapes are best? How close together can they be? Do they hold up over repeated iterations of injecting and releasing gas? It is too early for definitive results, but the progress is promising. The same technologies and techniques could also be applied for other types of gas storage, including hydrogen which may become more important in the future as an alternate fuel source as well.

In terms of the search for dark matter, we still haven't found it yet! But we've ruled out a large number of things that it can't be, narrowing down the search. We often joke that worldwide it is a competition to be the best at not finding dark matter, but this has its roots in truth; as

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experiments become more and more sensitive or apply different techniques, they look at new possibilities for what the dark matter could be. Given that no-one has found anything yet, this does mean that we're crossing off these possibilities, gradually eliminating them. If the dark matter did have particular properties, then our detector that was looking for these particular properties would have seen it- but we didn't see it, so we now know that it must be something else.



You can find out more about this remarkable facility here:

<https://www.boulby.stfc.ac.uk/Pages/home.aspx>

<https://twitter.com/BoulbyLab>

<https://www.facebook.com/BoulbyUndergroundLaboratory>



Those who dwell, as scientists or laymen, among the beauties and mysteries of the Earth, are never alone or weary of life

Rachel Carson

Science is magic that works

Kurt Vonnegut

I am among those who think that science has great beauty

Marie Curie

*If we knew what is was we were doing,
it would not be called research, would it?*

Albert Einstein

Science and everyday life cannot and should not be separated

Rosalind Franklin

Up Beat!

NANCY KERR

We were delighted when Folk legend, Nancy Kerr, took time out of her busy schedule to chat to us about her Tunnellers project

Thanks for agreeing to talk to Up! Nancy. Last year you completed a commission for the British Tunnelling Society. Might sound a silly question, but how on earth did you begin to write the music once you'd agreed to the project?

It felt very natural to begin writing, as I think trad/folk music is a perfect vessel for stories about landscape, work, hardship, human endeavour and hubris, and these were all themes that arose from the Tunnellers project. I began by composing *My Sweet Teredo*, a song which draws together themes of nature, engineering and love. It's the story of the sea creature which inspired Brunel's first tunnelling shield, in the voice of a miner's lover who is praying for him to stay safe underground. I wove some existing ballad imagery into it, with a free and watery soundscape – all of this felt like familiar territory as a writer, albeit for a specific and new context, and I just kept composing from there.

Doing the research to collect the stories must have been an interesting thing to do...?

Tunnellers was a pandemic commission – it was pitched in one lockdown, composed and recorded throughout Covid, and delivered in another lockdown. As a result, most of the research was what you'd call deskbound. I read a lot of LTC Rolt, and happily I was able to use materials generously given via the British Tunnelling Society, including historical research into British tunnelling since its earliest days which Jane Stancliffe and others had



written for the organisation's anniversary book, and perhaps most significantly, memoirs from tunnellers themselves who have worked on some of the most challenging infrastructure around the country. These oral history accounts were an absolute gift, full of poetry and humour and the kind of insight that only comes from people's lived experience. It was an honour to put them into songs.

It seems to us that folk music has a unique role in documenting the reality of people's working lives. Is this something that rings true with you?

Definitely – from rural work songs, industrial poetry, 20th century precedents such as Seeger and McColl's *Radio Ballads* and onwards – there are plenty of giants' shoulders on which to stand when writing about working life, and the task of voicing it in your own way and setting it in a current context can be a fascinating challenge. Many of the workers are part of migrant communities and that lent a great deal of richness and depth to the stories – so I wove specific place names into the lyrics, and used the Donegal fiddle tradition (which I have always loved) as inspiration for some of the melodies. Working with the actuality – those miners' memoirs – you really get a sense of how the music can amplify stories and give those testimonies the respect they command.

Up Beat!

NANCY KERR

The last two years have been a really tough time for musicians. Do you think opportunities are opening up a bit now?

I imagine we are going to look back and see immense changes to how we view creative work generally and life as a performing musician especially – speaking personally I went into full time teaching and so my working life is now very altered from what it was before, as a full-time performer, and I know many others who have done similar things. I'm lucky to have had that opportunity. Now that live music is returning, it's exciting but also tangibly different for many of us – musicians and audiences. I hope that emerging artists feel they have the opportunity to make an impact, still. Supporting them is one of the main aims of my work now.



<https://nancykerr.bandcamp.com/album/tunnellers>

So what's coming up next for you? Anything exciting on the horizon?

I have just appeared live for the first time with our Anglo-Scots folk rock band The Magpie Arc and we're thrilled to finally be playing to audiences after a very disrupted schedule – we'll be at lots of summer festivals, touring in the autumn, and with a full debut album out in the winter. I'm working extensively in my duo with James Fagan, and with Melrose Quartet. My album *The Poor Shall Wear the Crown* – songs by Leon Rosselson has been immensely gratifying to make and release, and I am officially launching it live in the summer, and I am just composing the finishing touches to my third solo album of my own songs, for release next year.



You can find details of Nancy's albums here:

[Tunnellers](#)

[The Poor Shall Wear The Crown](#)

or follow her on facebook:

[Nancy Kerr and James Fagan](#)

If you'd like to read more about the work of the British Tunnelling Society, check out their website:

<https://britishtunnelling.com/>



Word Up!

YOUR POEMS ON THE THEME OF
WHAT LIES BENEATH



The Advent of Summer

Cloudless blue skies and sand dune expanse
Announce the beginning of our summer season
Young May sun softens old April's recent chill
A couple walk hand in hand along the beach;
He zips up his coat, while she kicks off her shoes
Long skirt rippling in the persistent breeze
Two small girls in bathers jump over white horses
Scream at the feel of the icy water in exhilaration
Tiny sister egging them on, feet safe on dry sand.
Another child yet, here, builds moat and castle
Running down to the shoreline to find better sand
And over there, a dog buries its ball repeatedly
As if searching for answers in the hastily dug out pit.
Sailing boats bob on waves to an endless horizon
And windmills turn lazily, some distance from land.
From my picnic rug vantage point I record these minutiae
Truly the preserve of mad dogs and Englishmen.

1.5.2011

Jenny Thompson

The Joy of Specs

The lenses of my rose-tinted specs
Had faded to grey
My hourglass slipped from my trembling hands
And smashed
My sands of time, blowing away
Not a grain more would I waste
For a vision it lay in my brain
Like a corpse at a wake
A limp tag hung from the toe of my marriage
A wise woman once pointed
Her crooked finger at me
I finally heeded her warning
No more fool in love would I play
Now I'm happy to say
That I haven't looked back
Since the day the lenses
Of my rose-tinted specs
Faded to grey

Helen Marshall

The sea

is a seeker, coves, crevices
fissures, familiar shores.

Moon glow, sun sparkle -
sepulchre grey.

Let it hold you, float.

Close your eyes,
imagine you're a pearl.

Rona Fitzgerald

Dig Up!

STEVE LOWE

Up's outdoors man writes a love letter to soil

I bet that the last thing keeping you awake at night is SOIL. I'd also add that very few of us really think about soil at all, unless it's part of a stain on your jeans, or you are washing your hands after a spot of gardening.

It's distinctly possible that I may be facing a hard sell if I tell you that soil is vital to global health, including essential to all of us for a variety of reasons. Leonardo Da Vinci said "We know more about the movement of celestial bodies than about the soil underfoot", and 500 years later there is less information about soil than any other part of the environment.

BUT did you know that there are more living individual organisms in a tablespoon of soil than there are people on the earth? Or that almost all of the antibiotics we take to help us fight infections were obtained from soil microorganisms? Or that agriculture is the only essential industry on earth? Or that soil is a non-renewable natural resource? Or that about 70% of the weight of a text book or glossy paged magazine is soil?



Well, I didn't! I may have scored slightly higher than many if this was a "true or false" quiz, because I work on rivers in my role with Northumberland Rivers Trust, and also because I have dug tons of the stuff whilst working on archaeological sites. In fact, "the earth moved for me" may well have been coined by an archaeologist, as so much soil is transferred from A to B and then back again.

Soil is the Jackanory of archaeology, telling a story of the past that is locked up beneath the surface. Soil is very important for archaeologists, because it provides a source of information about the past climate, vegetation and animals (including humans) – the ecofacts - as well as man-made artefacts such as ancient metal tools, flints or coins. Soil can preserve all kinds of things for thousands of years, but it can also destroy evidence, if it is acidic, for instance.

So, whilst on a dig, it is most likely that the largest "find" comprises bags or buckets of soil that are removed for analysis, carefully labelled and which often produce the most important data. But it's not gold, so when folk ask "What is the best thing you have found", a bag of soil may not suggest anything earth shattering (pun intended). But it can be.

Soil provides many ecosystem services - acting as a habitat for soil organisms, regulating water quality, changing the atmospheric composition, medium for plant growth and recycling system for nutrients and organic wastes.

Soil is one of our most important carbon reservoirs - through soil carbon sequestration it can store carbon dioxide (CO₂) and lock it up through various chemical changes. In limey soils it becomes calcium carbonate, often at levels below the plough because water carries it in solution. It also stores other greenhouse gases in soil organic matter, with several added benefits – filtering and cleaning water, improved water retention and storage, for instance.

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But every time it rains, many of our rivers change from watery coloured to builders' tea. Quite simply, this is eroded soil, a farmer's livelihood making its way downstream. Usually because of a lack of fence, stock grazing or nothing growing on the surface to bind it together. Oh - and a lack of trees!

Recent work from the Rothamstead Institute showed that a lack of tree cover on the river Lyne in Northumberland led to an instant and rapid increase in silt entering the river. Where trees were present, this reduces almost to zero. So, the solution is obvious! And the good news is that some of the wonderful landowners here agree and are working with communities (and NRT) to increase woodland cover – a chance to get involved for some readers perhaps (cheaper than the gym)?



Over recent years, gardening fashions have been dominated by hard landscaping, paving and, of all things, artificial turf. Argh!!! Difficult to grow food in such a harsh landscape and locking the soil up like that – well you can work it out!

So, we can all make a small but vital contribution in our own gardens by keeping them healthy

(which in turn helps with our mental health and fitness). We can make and use compost, we can reduce grass cutting, go organic and encourage wildlife (including slugs, snails, worms and other things generally designed to make us go YUK!). It also contributes to retaining water, which in urban settings will be vital to prevent both drought and flood. And get growing - even a few onions are very satisfying.



“Soil is our best defence against long-term climate change as well and has a greater ability to lock up carbon than even trees. We are the soil we eat: the soil that our food grows in and the soil that our bodies will become when we have finished with them” (Marian Boswall – Sustainable Gardens).



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.

Bobbing Up!

JEN WILSON

Up!'s favourite marine biologist on the restorative powers of the sea

It's an oft-quoted fact that we've explored more of the surface of the moon than of the ocean depths. Whilst it's true that thanks to huge advances in modern technology, that ratio is starting to shift, it's still far more alien down on the ocean floor than most people could ever grasp.

And in a way, isn't that sort of how we like it? Humans like mysteries, humans like stories, and for some reason, humans like the unknown, with just a hint of fear...

As a former SCUBA-diver, the most terrifying moments of any dive were those spent bobbing around on the sea's surface, making final checks before descending. I was always so much happier when the seabed came into sight. Because for the couple of minutes with nothing solid beneath me, my imagination went into overdrive with stories of sea monsters, krakens, and more. It didn't help on one dive, when we landed near a large pipe overgrown with kelp, and the way the current moved the kelp really did make it look like a giant (and I mean GIANT) eel.



Despite those nerves though, I kept going back, kept forcing myself to get over those minutes, for the joy that is “bobbing along, on the bottom of the beautiful, briny, sea,” even if, instead of football-playing lion monarchs, there are lionfish, and instead of the Star of Astaroth, there are stunning sea-stars. And if you don't know what I'm talking about, that's on you – take it as a mental-health moment to work it out, find the film, and watch it. You'll thank me.

Because, despite some of them being genuinely terrifying to look at (even as a dedicated marine biologist, I'll never be able to defend the goblin shark or deep-sea angler fish as anything other than monstrous), and one being named *Vampyroteuthis infernalis* (literally, 'vampire squid from hell'), there are also some stunningly beautiful critters down there. I'm talking about the gorgeous sea butterfly (actually a member of the sea snail family), or the officially-classified 'cute' *Opistoteuthis adorabilis*, an orange octopus which literally has 'adorable' in its Latin name.

And then, of course, there's the bioluminescence. Even as somebody who studied marine science for years, and watched almost every ocean-based documentary made over the last thirty years, there's something inherently magical about bioluminescence. A bit like the Northern Lights, I almost can't believe in it until I've seen it for myself, but there it is, thousands of metres down,

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being used to attract a mate, find food, or to avoid becoming food. Take away the actual ecological need though, and simply watching the flashes of light captured by deep-sea cameras is hypnotic.



Perhaps that's part of the attraction, going back to that 'unknown' element; whether it's terrifying or stunning, very few of us will actually see what's down there for ourselves, having to rely on the footage brought up by remote technology, or people far, far

braver than us. I remember being a bag of nerves watching Sir David Attenborough heading 1,000ft down in Australia, for a documentary on the Great Barrier Reef, and knowing it was certainly not something I could ever do.

I do also wonder whether we're constantly attracted to water because we know it's somehow good for us. Or even, if we're going to get really deep (sorry!), because in our core, we know it used to be 'home'?

There have been countless studies of the benefits of being near water, and the ocean in particular. So-called 'Blue Health' is a rapidly-growing field, with experts around the world looking into why blue spaces, whether rivers, lakes, or of course, the sea, can improve both our physical and mental wellbeing.

Obviously, from a physical perspective, wild-swimming, surfing or snorkelling are active sports, and exercise is, on the whole, a positive thing for the majority of people. The benefits of physical exercise is also one of the reasons behind ventures such as the England Coastal Path, improving access to stretches of our stunning coastline, so that we can make the most of cliff-tops, beaches and promenades, depending on mobility levels and preferences.

Mental health is more challenging to quantify, but one major study, asking participants to record their wellbeing at various intervals, found that in general, marine and coastal locations were deemed 'happiest', scoring on average six points more than urban spots[1]. Spending time near water is consistently linked with positive mood and reduced stress levels. Another study found that on average, people sleep for an extra 47 minutes the night after a long walk along the coast; that sea air really does blow off the cobwebs, and although inland walks also resulted in extended sleep duration, it was a measly extra 12 minutes in comparison[2]! In these busy, stressful days, an extra three quarters of an hour sleep can make a big difference to how people feel.

Of course, connecting with the deep sea is out of bounds for most of us. We can't all have access to Alvin (my favourite crewed deep-sea submersible, which I always assumed was a cool acronym, but was apparently just named after Allyn Vine, a prominent physicist and oceanographer, who had a leading role in the development of crewed submersibles), or Boaty McBoatface (not manned, but great for data-collection!). What most of us do have access to though, is the coast.

As presented above, time spent on the coast can bring us huge physical and mental health benefits, and the best part? It's some of the best free gym equipment available. Yes, things like kite-surfing, diving or boating can be money-drains at times, but going for a plodge and a hunt around a rockpool on a weekend afternoon is thankfully more affordable.

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JEN WILSON

There won't be any deep-sea angler fish (thank goodness), but there could well be starfish, blennies, gobies, or pipefish, as well as countless shellfish, urchins and crustaceans. Have a (gentle) poke under that floating seaweed, lift up a rock (as long as you put it back carefully, in the same place), and you'll be amazed what you can find.

If time, accessibility and funds allow, get yourself out on one of the boat trips which offer promises of seals, seabirds or even whales and dolphins. Even if you can't go on targeted wildlife trips, if you find yourself on a ferry, spend as much time as you can up on deck; you never know what you'll spot if you keep looking out across the blue. After all, some of what lies beneath needs to come to the surface every now and then!

During Lockdown, as soon as we were allowed to meet non-bubble friends outside, I lived for weekend seafront strolls, with chips, ice-cream

and gossip. Yes, this would have been nice in a country park, or even along urban streets if that's all there was available to me, but there was something about those walks down on the sand, and I don't think my mental health would have been anywhere near as resilient without them. On my first Lockdown birthday, there was takeaway fish and chips, with a bottle of sauv blanc, on a bench looking over the sea, and you know what, it was wonderful. I'm very glad this is something that's kept going, now normal life is resuming. In summary then, Blue Health, whether in the deepest abyss, or a rockpool plodge, can only ever be a good thing to get more of in your life. Happy splashing!



[1] MacKerron, G., and Mourato, S. (2013) *Happiness is greater in natural environments*. *Global Environmental Change*, Vol. 23, Issue 5, p992-1000.

[2] Study commissioned by the National Trust Great British Walk Campaign, reported in *The Guardian*, September 2015



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

Facebook: <https://www.facebook.com/jennifercwilsonwriter/>

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

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

Word Up!

YOUR POEMS ON THE THEME OF
WHAT LIES BENEATH



A tangle of yarns

In the lull after tea and homework
she sat with her knitting, tv on low.
Clack, tap, hum as the needles collide
weave a pattern. Fair Isle mostly, each child
gifted a colour of their own.

No chance for the devil here, her hands busy
bustling full of work and care. Then, the stories -
of course, your granny didn't knit. Like you,
she preferred to buy in chic places, Paris, Edinburgh.
How she enjoyed smuggling them home.

She mentions her great aunt Maria,
a seamstress in Guinness. Her tiny hands stitching
waistcoats for staff. She journeyed in Dublin city
from Dun Laoire every day - a small lunch, Yeat's poems
in her bag of fabrics and threads.

Rona Fitzgerald

View From the Lighthouse

The oyster catchers have all turned
to face the sun, though it's hidden
by the mist. When a stronger wave comes
a shower of terns flies up,
but the oyster catchers stand their ground -
like housewives reluctant
to lose their place in the queue.

The rock space grows smaller
as the tide washes in. The starlings
on the rock cluster closer.
The ones that litter the lighthouse roof
chitter ceaselessly, calling out hunger
or bitching about the weather.
They take off in twos and threes, dive

with Olympic grace towards their brethren.
The tide keeps coming, throwing
wet lace over the rocks. All the birds -
herring gulls, guillemots, starlings,
terns, oyster catchers - scatter loudly
into the fog and are lost.

Penny Blackburn

Next month's theme is -
SUMMER

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

Making Up!

ANNIE & ME

Up! talks to jewellery maker, Clare Walton

Tell us how you came to be making a living by creating beautiful objects from the deep.

As a mostly self-taught silversmith & jeweller, I finally took the plunge to indulge my creative energies in creating silver jewellery in November 2020. I had already left my lifelong career in children's nursing, in order to concentrate on my family's needs. At the time I was fulfilling my creative needs by teaching yoga and throwing clay on a potter's wheel amongst other things!

My love of silver jewellery began years ago whilst globetrotting in my early twenties. I stumbled across loads of beautiful jewellery, made by the most talented local artisan jewellers whilst travelling across different continents and living my best life. The seed was sown and a lifelong passion for silver jewellery was born. Fast forward many years, combine this passion with a love of the ocean and a desire to create my own jewellery, throw in a little of 'what's it all about?' and 'a light bulb moment', and the next chapter in my career began.



Life's journey has taken many twists and turns, particularly in the last few years and essentially, Annie & Me evolved as an escape and a way of channelling my energies into something positive and fun- a very much welcomed



silver lining - pun intended! We've all heard the cliches - 'you only have only one life', 'life isn't a dress rehearsal', 'do what makes you happy' etc, and often after the initial promise to

ourselves to make some changes, life continues pretty much in the same vein. At this point in my life, however I didn't just carry on; my world-view had been rocked and I really did see life through a different window. I knew that I needed to make some changes and I wanted to do something that would be interesting, fun and fulfilling - something to get the creative juices flowing. Most importantly I needed to demonstrate to loved ones, that actually it is possible to change direction in life and to do something that perhaps previously you would have only ever have dreamed possible.

Has the fact that you live by the sea had a positive impact on your creativity?

Making jewellery, drawing inspiration from the beauty in the outdoor world around me - particularly the seascape, the oceans and the beaches - has been the best 'career move' yet! I absolutely love love love the beach and the seaside, being out walking and breathing in the sea air is just an amazing feeling. After a challenging period in life, I found myself taking long walks along the coast daily. It became a kind of therapy, an opportunity to think and reflect about my life, but it also provided a distraction and the perfect circumstance in

Making Up!

ANNIE & ME

which to think about a new direction and jewellery making. Ideas seem to flow much more freely when I'm out walking and taking it all in - I get so much inspiration from what's around me and the thoughts that my surroundings evoke in me. Walking along the coast has introduced a new 'slowness' to my life that there hadn't been space for previously. With the ever-changing seascape affected by the weather, the tides and the seasons, there is so much to take in and embrace. All perfect inspiration!



What is it about sea glass, do you think, that people find so attractive?

I think sea glass has this magical ability to draw you into a hidden world, tapping into a natural curiosity that gets you thinking and wondering. The fact that it's been in the ocean for years and years, tumbled and turned for an eternity, transformed into the shape and beauty we find it in, definitely gets the mind thinking. Sea glass



lets us see beauty in something previously discarded, inviting us to think and wonder about times gone by: we wonder

where has it's come from and how far it's travelled, how long it's been submerged beneath the ocean waves and we find ourselves wondering what its purpose was and how it came to be down in the depths of the ocean.

Sea glass looks beautiful and shiny when you spot it lying in the sand, wet and glistening, but as it dries it takes on a frosted, milky like appearance. Some people love it this way, others prefer to draw out the beauty of how they originally found it (this is achieved very easily by the way, with a good soapy wash and application of a little oil).

There is so much sea glass to be found and the ocean really is a treasure trove of gems to the sea glass lover. There's nothing nicer than walking a beautiful beach in search of that unique sea gem and then spotting it lying glistening in the sand, or finding it amongst the pebbles you're raking through. I adore the blue and turquoise shades of the ocean, but equally the greens, mustards and ambers are a draw. And then there's 'multis' - sea glass finds with lots of colours - and pieces with a single vibrant colour which can frequently be found in Seaham (where previously a glass factory existed).

Incorporating sea glass into jewellery making is a perfect way for supporting the need to preserve this wonderful planet and do something very small towards saving it from ecological disaster. The slow jewellery trend

Making Up!

ANNIE & ME

encourages this with its move away from mass produced fashion jewellery and replacing it with sea glass jewellery with a story to tell, past and present. I'd like to think that there's also a story to tell in the future.



How does it work? Do you start with a stone and create for it, or start with a vision and look for the right stone?

My jewellery always starts with the stone! Noticing different textures,

colours, shapes and patterns in the natural world is what inspires me to try to create something that reflects all this beauty.

There are many silver-smithing techniques that can be applied to achieve this: hammering a smooth piece of silver can create dips and undulations that look like rock pools and ripples in the sand, punching lines and crevices to mimic the barnacled rocks or the bark of a tree trunk.

Playing with fire to melt down and change the surface of a piece of silver gives a wonderful texture and it can also prepare it ready for forging and reforming - there are so many possibilities which makes it so exciting!



Difficult question, what's your favourite piece so far?

To choose my favourite piece really is a difficult thing to do! 'Firsts' are always special, I guess.



My first statement sea glass ring is definitely a favourite because of its colour in the first instance, but also because of the fact it was the first time I created a band in that specific way. I was delighted with my achievement from a skills point of view and so

happy with the finished piece. And then I was even happier that it ended up going to a friend of my sister, who was commissioning something for her daughter, and spotted the ring on my bench. She fell in love (which was just wonderful to witness - a huge compliment as a maker), so gifted it to herself!

The first time I made a sea glass cuff was also memorable (mostly because technically it was a nightmare as I was doing something new in the world of soldering!) and in fact it's one piece I have kept. Again, it was the first time I managed to do something tricky technically but, after lots of failed attempts, I succeeded. It was also an unusual mustard colour which I absolutely love and I was delighted with the textured and slightly oxidised bezel (the setting the sea glass is housed in) because it really brought out the colour of the sea glass.

So, favourites are a difficult one ... maybe they are all favourites at the time until I move on to the next ...

You can see more of Clare's beautiful jewellery here:
<https://www.facebook.com/annieandmejewellery>
<https://www.instagram.com/annieandmejewellery/>

Powering Up!

CRUACHAN - THE HOLLOW MOUNTAIN

Up! talks to Sarah Cameron, Visitor Centre Manager at a power station ... inside a mountain!

Sir Edward McColl sounds a remarkable man. Can you tell us a bit about his role in the history of Cruachan?

Cruachan was the brainchild of Sir Edward McColl, a Dumbarton-born engineer and pioneer of hydro power in Scotland. Having started his career at the Glasgow Corporation and Clyde Valley Electric Power Company, McColl turned his attention to bringing hydroelectricity to the Highlands and conceived the idea for Cruachan Power Station in the 1930s. His vision became reality when Cruachan first started generating power in 1965 after six years of construction.

In 2019 Drax, the power station's owners and operators, commissioned a new tartan made by Kinloch Anderson in Edinburgh, based on the Clan MacColl Sett, in respect of Sir Edward MacColl and it has also been used to make some special scarves, available to buy from the visitor centre shop.

We thoroughly enjoyed our (pre-Covid) tour of the project, and especially loved learning about the Tunnel Tigers! Could you tell us a bit more about their role?

"Tunnel Tigers" is the nickname for the men who drilled, blasted and cleared the rocks from the inside of Ben Cruachan, eventually removing some 220,000 cubic metres of rubble to make way for the power station. The work was



physically exhausting and the environment dark and dangerous.

It took six years to construct, enlisting a 4,000-strong workforce who came from far and wide. But few of them were fully prepared for the extent of the challenge – it was dangerous work.

Sadly 15 men died during the construction of Cruachan – the new tartan which was created by Drax commemorates them with 15 special dark blue threads within it. There is also a mural within the turbine hall which commemorates them.

The Tunnel Tigers came from a range of backgrounds and cultures. Polish and Irish labourers worked alongside Scots, as well as displaced Europeans, former prisoners of the Second World War and even workers from as far as Asia. The men would work 12, sometimes 18-hour shifts, seven days a week.

Many men would make treble the salary of their previous jobs, with some receiving as much as £100 a week, at a time when the average pay in Scotland was £12. Some teams' payslips were stamped with the words 'danger money' – illustrative of the life-threatening work they carried out.

Powering Up!

CRUACHAN - THE HOLLOW MOUNTAIN

We know that Cruachan produces electricity from inside a hollowed-out mountain. Can you explain in laymen's terms(!) how this actually happens?

Cruachan acts like a giant water battery, using excess power from the grid to pump water to an upper reservoir where it is stored, before re-releasing it to generate electricity.

The flow of water rotates the turbine, which in turn rotates a generator to produce electricity. Electricity from the grid can then be used to drive the turbine in the opposite direction, to pump water from the lower reservoir back up into the upper reservoir.

This is very useful – because it means excess renewable power, generated on very windy days by wind turbines, can be stored and made available later when demand increases.



It strikes us as a very sustainable method of producing energy. Is this the case?

Yes, that's right. Completed in the 1960s, Cruachan was built to support Hunterstone, a nuclear power station but has been at the very heart of the modern roll-out of renewable power across Scotland. The energy it produces is essentially re-released, ensuring no renewable power goes to waste.



Last question. What's it like working in such a unique environment?

It is always a thrill to drive down into the underground cavern and take our guests into the heart of the power station. Every tour is unique, with many of our visitors having a close personal connection to the power station. Earlier this year we had a group of brothers who met up for the first time in some years and did so at Cruachan, as their Dad worked on its construction and a picture of him hangs in the turbine hall. Cruachan has been at the heart of the community for more than half a century and I'm excited by Drax's plans to expand the power station to ensure it is here for many more years to come.

To find out more about this amazing facility, follow the link below:

<https://www.visitcruachan.co.uk/>

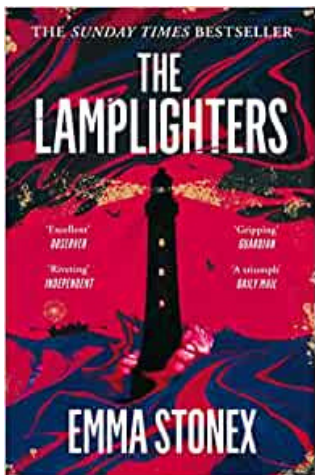
Read Up!

JENNA WARREN

Up!'s literary reviewer takes us on a magical mystery tour



To tie in with this month's theme of 'What Lies Beneath', I thought I would recommend novels that are all about solving mysteries and uncovering truths. I enjoy ghost stories and Gothic novels, so I'm going to focus on mystery stories that have a hint of the supernatural or fantastical (or do they? Some of these stories are ambiguous, which is half the fun).



My first recommendation is *The Lamplighters* by Emma Stonex. This wonderfully atmospheric novel takes a real-life mystery as its inspiration. In 1900, three lighthouse keepers disappeared from the Flannan Isles in the Outer Hebrides and were never seen again. Stonex transposes this mystery to a remote lighthouse off the Cornish coast and changes the year of the disappearance to 1972. The chapters set in the lighthouse are very tense and creepy in places. This is not due so much to the presence of anything supernatural, but rather the claustrophobia of the men forced to share a small space far out at sea. This is powerfully evoked in the novel.

Another interwoven plot strand takes place twenty years later, in 1992. A novelist is trying to solve the mystery of the keepers by interviewing the three women they left behind. This offers us three fascinating narrators, who have all been affected in different ways by the tragedy. This is a wonderful and humane mystery story.

Another of my recent favourites is *The Nesting* by C. J. Cooke. The main character, Lexi, is homeless and desperate to start a new life. She steals another woman's identity and becomes a nanny to two young children at a remote house by a Norwegian fjord. She soon discovers that the girls' mother died less than a year previously, and their father, an architect, has stayed in Norway to finish the dream home he promised his wife.

Lexi grows to love her new home and the children in her care. But something sinister is stalking the forest. There are unexplained noises from the basement, and hoofprints on the wooden floors. And, strangest of all, are the folk tales about a being who is unhappy that the river has been diverted. Soon, Lexi begins to suspect that not everything is as it seems in the house by the fjord.



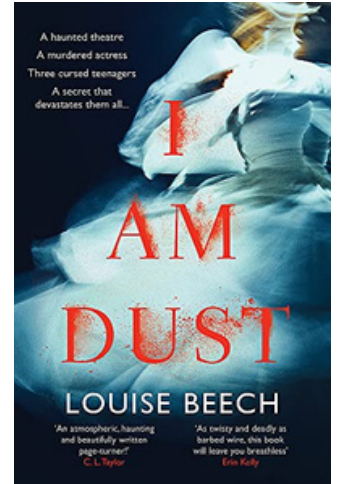
I love the way Cooke has woven Norwegian folklore into her novel, and her descriptions of the landscape are wonderful. This is a gripping mystery, with a great sense of place at its heart.

Read Up!

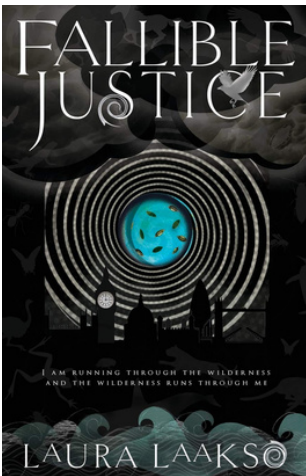
JENNA WARREN

I am Dust by Louise Beech is a fabulous novel set in a theatre. It follows Chloe Dee, a young usher and aspiring playwright. The book opens with news that *Dust*, an iconic musical, is going to be revived at the theatre. But the musical is rumoured to be cursed: twenty years earlier, at its premiere in the same theatre, the star Morgan Miller was murdered in her dressing room. Understandably, not everyone is happy about the revival.

When a figure from Chloe's past arrives at the theatre to take part in the new production, she's haunted by memories of troubling events that occurred when she was a teenager. It also appears that the theatre is being literally haunted. Is history going to repeat itself, and can Chloe find out what really happened twenty years ago?



This novel is dark in places, but it's also a wonderful read for a theatre fan. The backstage areas of the theatre, and the dynamics between the cast, crew and staff are all vividly evoked. As a musical theatre fan, I also love that the action revolves around the staging of a musical.



Paranormal crime isn't a genre with which I'm particularly familiar, but I really enjoyed *Fallible Justice* by Laura Laakso, the first book in her Wilde Investigations series. Laakso creates an alternative version of London where supernatural beings exist alongside humans. Yannia is one such being. She grew up as one of the Wild Folk and has the power to borrow sensory abilities from nature. She also happens to be a private detective. Together with her assistant, Karrion, she's given an impossible task to prove a condemned man's innocence.

This is an intriguing and unusual murder mystery, with a great main character. Yannia feels isolated in London, far from her roots, and this gives her great depth as a protagonist. I also love Laakso's descriptions of an alternative London, where magic – both benign and sinister – is lurking around every corner.

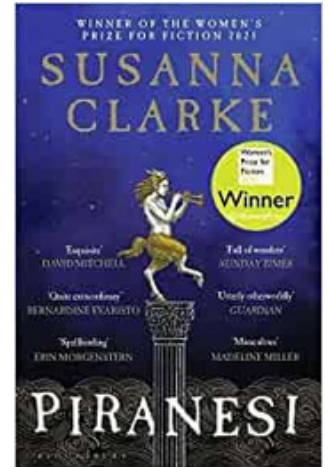
Finally, I would like to take the opportunity to talk about one of my favourite fantasy novels of recent years: *Piranesi* by Susanna Clarke (author of the wonderful *Jonathan Strange and Mr Norrell*). This is far from a conventional mystery, but it is definitely a novel about uncovering truths.

Read Up!

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The main character, known as Piranesi, has always lived in the House. The House is a vast stone labyrinth with many statues, some bones, and a sea which floods particular levels. There's also Piranesi's friend, The Other, who he meets on Tuesdays and Fridays. Apart from that, he leads a solitary existence.

But then messages start to appear around the House, written in chalk on the stones. Soon, Piranesi starts to question what the House is, what he is doing there, and whether another world exists outside the labyrinth. In short, the mystery at the heart of this novel is: what on earth is going on? But this mystery is beautifully and elegantly explored, and I really felt for Piranesi. This is a fabulous read for lovers of mysterious, complex fantasy 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 will be published by Fairlight Books in autumn 2022.



Where Is HoneyB?



Where on earth has HoneyB been this month?

Do you recognise the mystery location?

If you think you know, or would like to hazard a guess, simply post your suggestion on the Up! facebook group page and tag it #HoneyB.

Good luck!

Coming Up!

Everyone made it back up to the surface? Excellent.

My, it's very bright up here - it must be Summer. Funnily enough, 'Summer' just happens to be the theme of next month's edition. Regardless of the weather outside you can be assured of a warm, sunny welcome in these pages.

In the meantime, don't forget to check out Up!'s new [website](#) and let us know what you think. We have a new email address now, too - admin@positivelyup.co.uk.

As always, Up! magazine remains completely free to read and download, but if you'd like to support the work we're doing, you can 'buy us a coffee' via the link below.

Until then stay healthy, stay happy, and may the sun shine for you!

Much love
Bridget & Harry xx



[Buy us a coffee](#)



Don't forget, if you have any suggestions for future articles or features, we'd love to hear from you. Just email us at admin@positivelyup.co.uk