



# Down to Earth

extra

Issue 82 October 2019

## SPOTLIGHT

- 2020 Residential Field Trips - the latest information
- Autumn face-to-face and distance learning courses
- Autumn Day Schools now open and booking!

*The Upper Permian dolomitic succession in Marsden Bay, South Shields, Tyne and Wear. Notice the slumping and concretions at certain horizons. In other nearby locations there is also cross bedding. An amazing outdoor classroom! (Photo: Chris Darmon)*



## From the Editorial team...

Later today I'll be teaching the physics and chemistry of the Earth to one of our face-to-face groups. It's one of the necessities for learning about how the theory of plate tectonics came to dominate the thinking of Earth scientists during the 1960s and '70s. They were heady days for our science as things began to fall into place. Today, most people take plate tectonics for granted, few really understand it and probably even fewer care!

The same goes for the Earth's physics and chemistry. What the Earth is made of is one of those constants that doesn't really excite me. I can't change it and I don't really interact with it. The same goes for the physical constants like gravity or the presence of the magnetic field. I suppose I'd get a little excited if the poles reversed, but that's about all. Perhaps I'd feel a little different if I lived in an active tectonic zone and earthquakes and volcanic eruptions were common.

No, what really excites me about the Earth is the discoveries that all of us can make in our 'outdoor laboratory', where we can indulge in fieldwork! Colin and I have just returned from a trip to Northeast England and for the first time we were able to see the Permian succession around Sunderland. It's world class geology!

It's 'in your face' rocks that shout out for attention at almost every step. There are amazing slumps, superb cross bedding and weird concretions. Despite having been studied over many years, most recently around 25 years ago, they continue to ask questions of us as to their origin and the various processes they've been subjected to. Our 'outdoor laboratory' is indeed open to all and it's free to enter at any time!

*Chris Darmon & Colin Schofield*

*The Down to Earth extra Editorial team*

## See page 6 for what's available for you to study this Autumn!



## news update

### Sirius Minerals slows things down and undertakes a major review after it hits money problems...

Sirius Minerals is seeking to develop a major mine deep beneath the North Yorkshire Moors near Whitby for the purpose of extracting large quantities of the mineral polyhalite. This will be used around the world as a natural fertilizer.

The project was delayed by a lengthy planning process, as the Woodsmith Mine is within the North Yorkshire Moors National Park. There have also been delays and large increases of the project cost as changes were made to the haulage system between the mine and the port on the River Tees.



*A recent view of the Woodsmith Mine site near Whitby, where work on the sinking of two 1,500 m shafts is temporarily slowed down.*

As a result, Sirius went to the Government to guarantee its bond issue for \$1 billion. But, as we have seen with Thomas Cook, the



*View down one of the two 1,500 m shafts being sunk to the polyhalite seam below the North Yorkshire Moors. They show all to well, how much more money is required before mining can begin.*

Government isn't keen to take on risky business ventures and turned them down. As a result Sirius was forced to abandon the bond issue. Faced with running out of available cash within a few months, it has slowed down the shaft sinking and tunnel boring operations and begun an urgent review of its options.

This was always going to be a risky business. It currently has no income stream and won't until late 2021, at the earliest. Despite, promoting more than 1000 jobs, it still has to face unknown construction headaches and costs.

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Polyhalite is a new fertilizer, currently being mined by Cleveland Potash at nearby Boulby. Investors are yet to be convinced that there's sufficient demand to meet the 10 million tonnes annual production target that Sirius have based their business case on.

This is going to be a tough nut to crack and Sirius won't be the first or last mining company to fail at this stage. We wish them luck and good fortune as they seek to move forward with what will undoubtedly be a bold venture for the whole country.

In the meantime, many small investors, some of them local people from around Whitby, have seen the value of their shares drop to almost nothing. This is particularly sad for people who believed passionately in the project and the belief that it would bring well paid jobs to a beautiful area, but one without much hope for the future of young people.

### National Park Review points to a bright future for a new generation...

Seventy years after the Act of Parliament that created the first National Parks, a major independent review – led by writer Julian Glover (launched in May 2018) – has called for bold action to reignite



*Glover addressing the Campaign for National Park (CNP).*



*Chalk cliffs of Sussex, The South Downs at their very best.*

the founding spirit of our great National Park movement in order to make them greener, more beautiful and open to everyone.

The review published on 21st September, praises the brilliant work which has been done to maintain the beauty of places such as the Lake District, Exmoor and the Dorset coast.

But it warns that new challenges such as climate change, biodiversity loss, and a changing, urban society mean that new approaches are needed to get the most out of England's most-loved landscapes, including National Parks and Areas of Outstanding Natural Beauty (AONBs).

Amongst its key recommendations are several that should have a material impact on both the quality of the landscape features and their use that should have a big impact on Earth science.

- A new National Landscapes Service to act as a unified body for England's 44 national landscapes, including 10 National Parks and 34 AONBs.
- Creating a 1,000 strong ranger service to be the "friendly face" of



## Show Dates

October 5 & 6  
**Bath Racecourse, Bath**

Rock, Gem 'n' Bead Show

October 19 & 20  
**Chelmsford City Racecourse, Essex**

Rock, Gem 'n' Bead Show

October 26 & 27  
**Newton Abbot Racecourse, Devon**

Rock, Gem 'n' Bead Show

November 2 & 3  
**Cheltenham Racecourse, Glos.**

Rock, Gem 'n' Bead Show

November 9 & 10  
**Kempton Park Racecourse, Sunbury on Thames**

Rock, Gem 'n' Bead Show

November 16 & 17  
**Brighton Racecourse, Sussex**

Rock, Gem 'n' Bead Show

**All shows are indoors with refreshments & ample free parking**

**All shows are open: 10am - 5pm Saturday  
10am - 4pm Sunday**

**Admission (one entrance fee covers the whole weekend):**

**Kempton Park: adults £5.50, seniors £3.00**

**All other shows: adults £4.50, seniors £2.00**

**All shows: children 8-16 £1.00, under 8's free**

**Rock and Gem Ltd., 27 Common Hill, Steeple Ashton,  
BA14 6EE Tel: 01380 871835 • <http://www.rockngem.co.uk>**



our national parks and help engage schools and communities giving every school pupil the opportunity to spend a night “under the stars” in these special landscapes to help more children to connect with nature.

- New protections, responsibilities, titles and funding for AONBs to help them be greener, more beautiful and more welcoming to the public.
- A transformed approach to recover and enhance nature, working with farmers and conservation groups to reverse years of decline and bring landscapes alive.
- Backing for a new National Park in the Chilterns and a new National Forest, taking in areas such as Sherwood Forest, as part of a drive to increase woodland spaces to fight climate change.

**The Editor comments:** *Much of what is being proposed returns our National Parks to where they were before massive financial cuts were imposed over the past 10 years or so. If implemented in full, they should make our countryside more welcoming and increase its educational value considerably.*

*We, as Earth scientists, should back these proposals whole heartedly. We should be working with other environmental bodies to ensure that rocks and landscape are at the very centre of the countryside. It's not all going to be plain sailing though as some of the work that needs to be done to reveal the geology is going to involve the loss of some plants!*

### **Art installation celebrates the mining history of Coniston Coppermines...**

“*Copper (in our) veins*” is a temporary art installation celebrating the natural heritage of the Coniston valley of the Lake District. It features a series of large, copper leafed boulders and sculptures starting in the Ruskin Museum paddock going right up the mile-long track to the heart of the Coppermines Valley. Each installation varies in weight and size – from the size of large sheep, up to a huge boulder weighing approximately 20 tonnes.



*Coppermines Valley, Coniston, is home to the temporary trail and art installations. (Image: Ruskin Museum)*

The trail route has been chosen to “guide the feet of explorers over key mining features”, passing various structures and artefacts. Described by the artists as “non-invasive in-landscape sculptures”, the

trail will feature temporary sculptures that represent key stories and happenings from history, including gilded horseshoes, horseshoe tack buckled around a tree and footwear, from miner’s clogs to fell running shoes. It will follow existing routes and will not be fixed into the ground or impede pathways. On completion of the exhibition in the Ruskin Museum on 5 October 2019, all items except the gilded stones will be removed, leaving no evidence of having been there.



*This installation shows ‘copper minerals’ seen from the perspective of the artists. (Image: Ruskin Museum)*

**Update:** The trail was featured in the BBC’s *Countryfile* programme of September 29th. The website shows it running until October 6th, but may be extended thanks to the recent TV coverage. Contact the Ruskin Museum for further information.

### **Preparing for space travel by going underground!**

In Slovenia’s dramatically beautiful Karst region, six astronauts have been put through their paces for future missions—not in a flashy futuristic space centre but deep underground in the area’s network of cold, dark and muddy caves. They emerged blinking into the light after swapping their space suits for caving gear and spending six full days underground in the UNESCO-listed Skocjan cave system. All in all they completed six weeks of training organised by the European Space Agency’s (ESA) CAVES programme.



*The six astronauts who took part in the CAVE programme in Slovenia.*

“Living in a cave is very similar to living in space, mentally. Actually, I thought it was much harder than living in space,” 43-year-old Japanese astronaut Takuya Onishi told AFP.

Onishi's harsh tone is unsurprising given temperatures in the cave fluctuate between six and 10 degrees, not to mention 100-percent humidity and the fact the participants only had the light of their head lamps to guide them.

"Caves are a fantastic alien world. You actually live in an environment which is terrifyingly difficult, different and risky," said Loredana Bessone of the CAVES programme.

The experiments include monitoring life in the caves such as microscopic organisms as well as assessing atmospheric conditions.

"The main goal for the astronauts is to work together as a team and achieve a mission in a very complex environment, to prepare better for an analogous situation, which is space," the head of the programme's science component Francesco Sauro said.

*Material courtesy of phys.org*

### **Ancient continental plate material trapped 3,000 km down is 'as old as the Earth'...**

Researchers from Oregon State University have located what they say are ancient continents entombed some 3,000 km down in the mantle that date to the birth of the Earth around 4,500 Ma.

The existence of the two bodies was first reported by scientists from Harvard University in 2014, but the seismic imaging could not determine enough detail to say what was setting them apart from the material around them. It was assumed that they were oceanic plates that had been subducted. But the new findings suggest that they "may have been formed from an ancient magma ocean that solidified during the beginning of Earth's formation".

According to the researchers, the two masses, which lie close to the core/mantle boundary, may be survivors of the massive collision that brought about the formation of our moon. One of the masses is under Africa, the other under the Pacific Ocean.

*Material courtesy of phys.org*

### **Sedgwick Museum's specimens are on the move in Cambridge...**

Moving house is seldom easy and when you've amassed a collection of rocks, minerals and fossils that amounts to some 150 tonnes, it's certainly not going to be an easy process or a quick one. This vast hoard has been collected by the Sedgwick Museum in Cambridge, since it was founded in 1728. Another of the highlights, are fossils collected by the celebrated Victorian collector, Mary Anning.

Over the next two years the material, which includes specimens collected during Darwin's voyage of The Beagle and Scott's British Antarctic Expedition of 1913, will be moved to a new temperature and humidity controlled home. In total, some 2 million specimens will be moved from the Cambridge University's Atlas Building to the £2 m Colin Forbes collection centre in the west of the city.

Museum conservator Sarah Wallace-Johnson said the climate would be controlled to prevent rust and corrosion, as "rocks are surprisingly sensitive things. We're moving about 15,000 drawers of rocks - with an average weight of 10 kilos each - it is literally moving a mountain," she said. Each column of drawers alone is about 300 kilos (47 stones)."



*One of the many drawers of specimens that are being moved to a new home. This historic collection will be available to researchers across the world. (Photo: Sedgwick Museum)*

She said the collection contained rocks and samples "from the Arctic to the South Seas. We have the whole of the Earth in our building so that researchers don't have to go out to a tiny South Sea island to get a piece of volcanic rock - we have a piece of it here," she said.

In such a gigantic moving operation, there are bound to be surprises, so who knows what will be uncovered for researchers to delve into.

*Meanwhile, the public are still welcome to visit the public collection in the current museum building that is unaffected by the move. If you haven't ever visited, you are missing out on what is one of our finest geological collections.*

**NORTH LONDON** ❄️ ❄️ ❄️ **CHRISTMAS**

**MINERAL, GEM & FOSSIL SHOW**

**Saturday 7<sup>th</sup> December 2019**

Large hall of: Minerals, Gems, Fossils, Jewellery, Books. 

Children's Lucky Dip + Tombola + Refreshment area.  
10am to 4pm

**TRINITY CHURCH** Nether Street, London, N12 7NN.  
Near Tally Ho' Pub & Artsdepot, Ballards Lane, North Finchley.  
Local car parking + nearby Northern Line undergrounds -  
**West Finchley + Woodside Park stations.**  
**Finchley Central** and buses 13, 125, 460 to Tally Ho'.  
Adults £2 Accompanied children under 12 -- Free  
Organised by Finchley **Amateur Geological Society**  
For contact details and all about us: [amgeosoc.wordpress.com](http://amgeosoc.wordpress.com)



## Our last 2019 Day Trips are here...

*During October we'll be running a number of day field trips, before this programme gives way to our Day Schools over the Winter months - see later section.*

*The standard price is £15.00 per person, with some trips at the lower rate of £10.00 per person. All trips offer a £3.00 discount for holders of Club Class, students under 19 and groups of 5 or more people booked together.*

*To book for any Day Trip go to: [www.geosupplies.co.uk](http://www.geosupplies.co.uk) and enter the online shop. Alternatively ring us on: 0114 245 5746*

**Saturday, October 12** (NB Change of date since last issue)

### Geology of Nefyn, North Wales

The Llyn Peninsula is one of the most interesting areas of North Wales yet it is little known to most people. A lot has to do with its relative remoteness, but a visit it well worthwhile. We'll be taking in some of the rocks of a former ophiolite complex, including serpentines and pillow lavas. Across a major fault lie igneous intrusions and slates, which will be studied during the day.

*Meeting: Nefyn Harbour at 10.00 Standard prices*



**Wednesday, October 23**

### Geology of Hastings & Rock-a-Nore

Come and join our small group of resident geologists for a day spent exploring the cliffs and coastline around Hastings. This is a famous area for the rocks of the Lower Cretaceous, below the Chalk. There are some fascinating insights into ancient environments with sedimentary structures and fossils.

*Meeting: Central Hastings, to be confirmed at 10.00*

*Standard prices*

**Saturday, October 26**

### Geology and landscape of Dorking

On this exciting day, we'll be taking in a tour of the sandstone caves of Dorking as well as seeing something of the geological setting of the town. There will also be a short visit to Denbies wine estate, famous for its bubbly! Places on this trip are strictly limited, so first come, first served.

*Meeting: Denbies wine estate at 10.30 Standard prices Cave tour is an additional £6.00*

**Wednesday, October 30**

### Geology of Clowne, Derbyshire

We end this year's day trips with a visit to a newly opened cycle track and footpath that follows the course of a railway line through the Coal Measures. Work is still going on to extend the site, but there's about half a mile of rock exposure to be seen.

*Meeting: Clowne former Midland Railway Station at 10.30 Lower prices*

*Several of these day trips are set to coincide with residential field trips that we are running in the respective areas. Please enquire about additional days that may be available.*

## Autumn Day Schools are here...

*During November and December we'll once again be running a programme of Day Schools in venues around the country. If you've not joined us on one of these before, what can you expect.?*

For the first time, we're running a couple of experimental events in the West Midlands which feature some classroom work and also a couple of local rock outcrops. These are particularly aimed at people who are beginning to get acquainted with rocks and the landscape - *see below for more details.*

Our other Day Schools follow our familiar pattern of being entirely indoors. They are a mixture of hands-on practical work involving specimens and images and also some stimulating teaching with videos. These are aimed at a wide audience from the beginner though to those with more knowledge and experience. All day school venues offer hot drinks and biscuits and others will provide us with a full lunch buffet - *see below for details.*

**Wednesday, November 6 Shropshire**

### How do we read rocks & landscape?

This inside/outside day is aimed particularly at those for whom reading rocks and landscape is something new, although all are welcome. There will be an indoor session in the morning, followed by lunch in the cafe (at your own expense) and then we'll take a stroll to see some local rock outcrops and take in the wider landscape.

*Meeting: Severn Valley Country Park, Highley, Worcs at 10.30 Cost: £10.00*

**Wednesday, November 20 Wiltshire**

### How the Earth works, new views of an old planet

An exciting day that starts with an examination of our planet through its rocks and minerals and then moves on to peer inside to see how it is constructed, before moving on to examine how our understanding of how it works has changed radically in the last 100 years. From a rigid cooling body of the past, to a mobile, highly active Earth that we perceive today. There will be hands on practical work and several video presentations. Includes full buffet and drinks.

*Meeting: Devizes Conservative Club at 10.30 Cost: £35.00*

**Wednesday, November 27 Worcestershire**

### Rocks of all kinds explained!

How do we distinguish different rocks? What's the difference between a granite and basalt, or a slate and shale? This inside/outside day will combine a classroom session with an outdoor visit around Bewdley where we'll be able to see natural rocks 'in the street'. There's an onsite cafe where you can buy lunch. This day is aimed particularly at beginners, but all are welcome.

*Meeting: Bewdley Museum at 10.30 Cost: £10.00*

**Saturday, November 30 Newcastle upon Tyne**

### How the Earth works, new views of an old planet

See Devizes above, for details of this course. At this Central Newcastle venue, only hot drinks and biscuits are included in the price.

*Meeting: Commercial Union building, Pilgrim Street at 10.30 Cost: £25.00*

**Saturday, December 7 Sheffield**

### Rockstars, a celebration of famous rocks

There are some rocks that everyone has heard of, like Portland Stone or Shap Granite. But why are they famous, what makes them so special? We'll be examining some famous rocks in a practical session and then learning more about them in a lively teaching session during this day of two parts. Included in the price is a hot and cold buffet lunch and hot drinks.

*Meeting: Commercial Inn, Station Road, Chapeltown Cost: £35.00*

**Wednesday, December 11 Birmingham**

### Rockstars, a celebration of famous rocks

See Chapeltown above for details of this course. At this venue only hot drinks and biscuits are available.

*Meeting: Lapworth Museum, Birmingham University at 10.30 Cost £20.00*

**Saturday, December 18 Hertfordshire/North London**

### How the Earth works, new views of an old planet

See Devizes above, for details of this course. At this venue, hot drinks and lunch are included in the cost.

*Meeting: YHA Lee Valley, Cheshunt, Herts. at 10.30 Cost: £35.00*



## Our Residential Field Trip Programme for 2020



The majestic Black Cullins of the Isle of Skye  
(Photo: Chris Darmon)

We're so excited by our 2020 Residential Field Trip Programme that we've decided to release details of all the trips at the same time. This will allow you to plan your year, well in advance. We look forward to seeing you somewhere in 2020!

We've got a mix of new and old locations with, what we hope, is something for everyone. We've an exciting mix of locations some old and some new, both in the UK and abroad. Join us in Portugal, Norway, Ireland, Scotland, Wales or England! Make your decision soon, as places are filling up fast!

At this stage, we are only awaiting final details for the Summer School and the Forest of Dean trips, all of the others have brochures and are open to book. Contact us for your booking forms.

For further details, visit the website or  
Tel: 0114 2455746  
Email: [downtoearth@geosupplies.co.uk](mailto:downtoearth@geosupplies.co.uk)

### The complete 2020 field trip programme...

- Terras de Cavaleiros, Portugal - March 13-20\*
- Norway revisited - March 27 - April 5\*
- Raasay & Skye - April 25 - May 2\*
- Eigg & Rum - May 3-12\*
- Dingle Peninsula - May 31 - June 7\*
- Shetland Isles - June 20-27\*
- Western Lake District - July 4-11\*
- Summer School - July 25 - August 1
- Pembrokeshire - September 1-8\*
- Isle of Arran - September 14-21\*
- Forest of Dean - September 27 - October 1
- The Yorkshire Dales - October 6-11\*
- The Malvern Hills - October 23-28\*

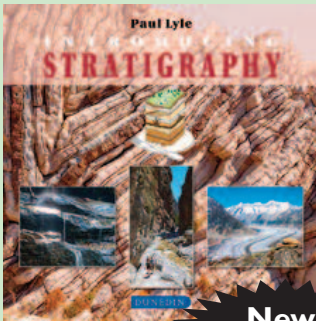
Trips marked \* have brochures that can be viewed on our website: [www.geosupplies.co.uk](http://www.geosupplies.co.uk)  
We look forward to hearing from you!



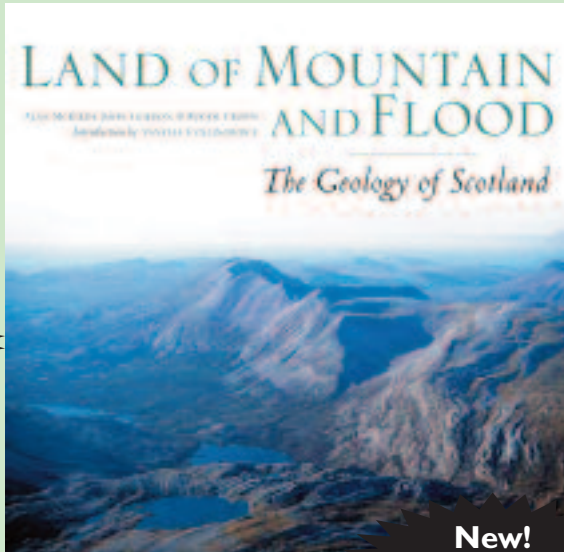


# Featured books August - October

In each issue we are pleased to be able to introduce you to a range of featured books. Where they are being offered at reduced prices, these will be current to the end of the month shown above, provided that stocks are available. Please note, all prices include UK postage.



**New!**  
£16.00



**New!**  
£35.00  
hardback



**New!**  
£11.00



**Bedrock Geology of the United Kingdom and Ireland**  
£19.95

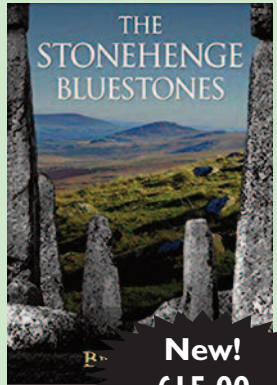
Including a folded copy

**New!**  
£19.95

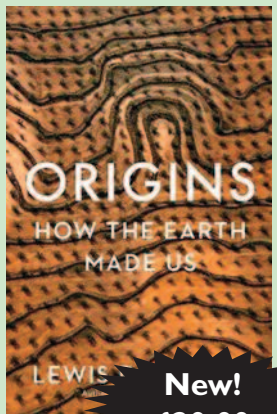
Bedrock UK Geology 1,000 piece jigsaw - includes a folded copy of the map!

Finished size: 50 x 66 cm (20 x 26 ins)

Logos: British Geological Survey, Geological Survey, Department for the Economy, GSNI, British Cartographic Society



**New!**  
£15.00



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£20.00

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