



Down to Earth *extra*

Issue 84 December 2019

SPOTLIGHT

- **Norway trip is ON** - why not come and join us?
- **Autumn Day Schools** you can still join us!
- **Winter online learning**
- **2020 day schools** now open!

This has to be one of the most beautiful landscapes in Europe! This is the ice scoured bedrock of Southern Norway viewed from a ferry bound for Jomfruland. Here, there's the biggest glacial moraine that you've ever seen.

You could still join us on a similar trip next year! (Photo: Chris Darmon)

From the Editorial team...

General Election campaigns are always the time to set hares running in the hope that a piece of policy from one or other of the political parties will galvanise public support. At the time of writing that has singularly failed to happen, but you never know! That said, this is the first election where climate change and the future of planet, are centre stage. No longer the domain of the Green Party alone, but the major parties too. Young people in particular are making sure that green issues are being considered seriously.

In the light of this, there have been two, seemingly contradictory, announcements in the last couple of weeks. First came the announcement, not unexpected, that fracking was to be stopped in England. The indefinite suspension came as the Government pulled its support, following a report by the Oil and Gas Authority. This said that it wasn't possible to predict the probability or size of low level earthquakes triggered by fracking. Given such a statement, Government wasn't really in a position, especially in the middle of General Election, to do anything other than to suspend fracking completely. It's a pity, because despite its so-called green credentials, the SNP is happy to allow fracked gas to be imported and used at the Grangemouth plant, belonging to INEOS.

Meanwhile, Cumbria County Council has passed plans for Britain's first new coal mine in more than 30 years. The offshore mine will work coking coal near St. Bees in Cumbria. This coal is required by the iron and steel industry both in the UK and in Germany as supplies in South Wales are very limited. It's good news for jobs in Cumbria but not so good for the planet. Unless and until new methods of manufacture can be found, this high quality coal will continue to be required,

We wish all our readers a Happy Christmas and a Healthy and Prosperous New Year!

Chris Darmon & Colin Schofield
The Down to Earth extra Editorial team

See page 8 for what's available for you to study this Winter!



news update

Government calls 'time' on fracking operations in England 'for the foreseeable future'...

For the past number of months, Britain's only fracking operation at Preston New Road, in Lancashire has been frequently interrupted by low level seismic events. Operator Cuadrilla, along with the British Geological Survey (BGS) has been lobbying the Government to raise the seismic threshold so that fracking can continue.

As for the Government, it's been walking something of a tightrope trying to keep everyone happy, and probably failing everyone. Then in early November came a report from the Oil and Gas Authority (OGA). This found "that it is not currently possible to accurately predict the probability or magnitude of earthquakes linked to fracking operations."

To geologists, this is hardly news, but to politicians, particularly in the middle of a General election, such information would be seen as something they could no longer defend. This is what the Government website had to say:

"Ministers have always been clear that the exploration of England's shale gas reserves could only proceed if the science shows that it is safe, sustainable and of minimal disturbance to those living and working nearby. For that reason, government introduced tight planning controls through the Infrastructure Act 2015 and set strict limits on seismicity, in consultation with industry.

On the basis of the disturbance caused to residents living near Cuadrilla's Preston New Road site in Lancashire and this latest scientific analysis, the government has announced a moratorium on fracking until compelling new evidence is provided.



Fracking equipment is being removed from the Cuadrilla, Preston New Road site. This tidy looking site will, in the fullness of time, be restored to agricultural use. Then it will be time for everyone to look back at a tumultuous year at Preston New Road.

The government also confirmed today that it will not be taking forward proposed planning reforms for shale gas developments at this time. These proposals were consulted on in 2018 but will not be implemented now."

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Business and Energy Secretary Andrea Leadsom said:

“Whilst acknowledging the huge potential of UK shale gas to provide a bridge to a zero carbon future, I’ve also always been clear that shale gas exploration must be carried out safely. In the UK, we have been led by the best available scientific evidence, and closely regulated by the Oil and Gas Authority, one of the best regulators in the world.

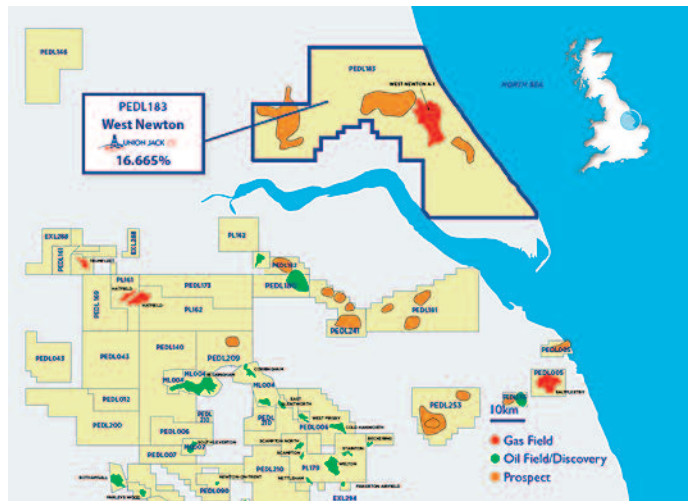
After reviewing the OGA’s report into recent seismic activity at Preston New Road, it is clear that we cannot rule out future unacceptable impacts on the local community. For this reason, I have concluded that we should put a moratorium on fracking in England with immediate effect.”

For those looking for a way forward, Leadsom’s comments leave just a mere chink open to future operations. As for Cuadrilla, they are considering an appeal. They would clearly insist, probably with some justification, that they were carrying out their operations safely and within current safety margins. Anyone who has lived in a former coal mining area will be familiar with low level tremors, which continue to this day. It’s also hard to see this other than as a slap in the face for BGS, who have, it seems, been happy with seismic events at this level and were backing an upping of the limits to enable Cuadrilla to carry on working at Preston New Road.

Meanwhile at West Newton, East Yorkshire, they are counting down to an oil and gas bonanza...

Earlier this year we told you about a significant onshore oil and gas find at West Newton some 40 km from York in East Yorkshire. At the time this was considered to be significant, but now the company behind the discovery, Rathlin Energy has been able to be much bolder in their assessment of the find.

They now say that this find is the most significant since that at Wytch Farm in Dorset more than 40 years ago. That field is still producing significant oil today. Rathlin estimates that the West Newton field is some 283 million barrels of oil and 266 billion cubic feet of gas. Of this total they estimate that 59 million barrels of oil and 160 billion cubic feet of gas is recoverable.



The West Newton field is the latest to be discovered in an area peppered with smaller prospects. (Image: Union Jack Oil)

Rathlin hope to be a position to begin production late next year, after two more wells have been drilled. Union Jack Oil and Raebald Resources are minority partners in the operations.



The drilling site near to the village of West Newton in Holderness (Image: Raebald Resources)



Show Dates

November 30 & December 1 Rock, Gem 'n' Bead Show
Burgess Hall, St. Ives, Cambridgeshire

January 18 & 19 Rock, Gem 'n' Bead Show
The Hop Farm, Paddock Wood, Kent

January 25 & 26 Rock, Gem 'n' Bead Show
Chepstow Racecourse, Monmouthshire

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>**

February 15 & 16 Rock, Gem 'n' Bead Show
Lyndhurst Community Hall, Hampshire

JFebruary 22 & 23 Rock, Gem 'n' Bead Show
Pavilions of Harrogate, North Yorkshire

February 29 & March 1 Rock, Gem 'n' Bead Show
Kempton Park Racecourse, Sunbury on Thames

Wine vaults and a mystery grotto beneath the streets of Dorking...

It seems that the Surrey town of Dorking has had connections with wine that stretch back long before the establishment of the successful enterprise that is Denbies Estate. Dorking is overlooked by the chalk escarpment on whose slopes are planted the modern vines. But the town itself sits on the boundary between the soft Gault Clay and the overlying Folkestone Sands of the Lower Cretaceous.

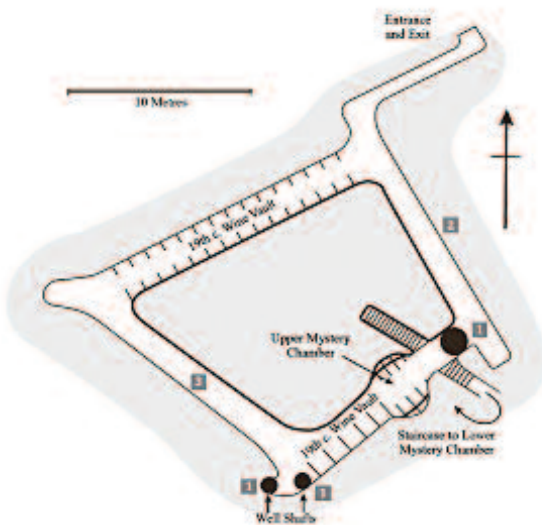
The Folkestone Sands are part of the larger Greensand Formation and have been excavated over many centuries in a series of cellars and galleries especially beneath the High Street and South Street.

Unlike similar rocks at Reigate, the Folkestone Sands were never hard enough to be used as building stones, but they would have been a source of sand. Given the scale of some of the excavations there would have been a fair amount to be removed to the surface.

The upper chambers were used as extensive wine cellars, especially during the nineteenth century. Some of this wine was produced locally, with the antiquarian John Aubrey noting in 1718 that Dorking was famous for its cherry orchards and wine.



*Part of the nineteenth century wine cellars
(Photo: Dorking Museum)*



*Plan of the South Street wine cellars and deeper mystery grotto.
Black circles mark the position of well shafts.
(Image: Dorking Museum)*



*Part of the circular chamber at the bottom level
(Photo: Subterranean Exploration)*

There are also much deeper chambers that were certainly not constructed for the purpose of wine storage. Several of these go right down to the junction with the underlying Gault Clay and the water table.

Mystery surrounds the purpose and use of these deep grottos. They may have been the setting for illicit drinking or smoking parties involving various dubious substances! Even today there are surviving seating areas and alcoves. Historical graffiti is testament to the fact that there were many people down here more than 200 years ago.

It seems that many of the deep excavations date from the late 17th and early 18th centuries and this was at a time when the wealthy of the area were keen to invite their guests into such grottos. Over the years, legends have become common, with at least one involving a waterway and a boat, although there's no evidence to support such an idea. A rising water table during the early nineteenth century put an end to the subterranean world.

Today, you can once again visit the caves of Dorking thanks to Dorking Museum and their volunteer guides. There are regular public tours from May through to October. Private group tours can also be arranged.

*For further details contact: Dorking Museum, 62 West Street,
Dorking RH4 1BS*

*Website: www.dorkingmuseum.org.uk
Email: admin@dorkingmuseum.org.uk*

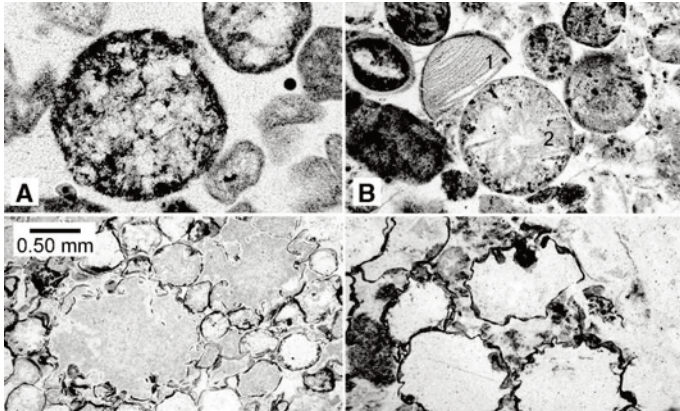
Did extraterrestrial impacts give rise to bursts of plate tectonic activity?

How and indeed when plate tectonics took over as the major mechanism for how the Earth works has, for a number of years, been one of the most important areas of Earth science research. Now an international team led by Craig O'Neill director of Macquarie University's Planetary Research Centre suggests that the transition from primordial much to rocky plates may have been triggered by extra-terrestrial impacts.

The study, which is published in the journal *Geology*, used the latest modelling techniques alongside comparisons with lunar impact

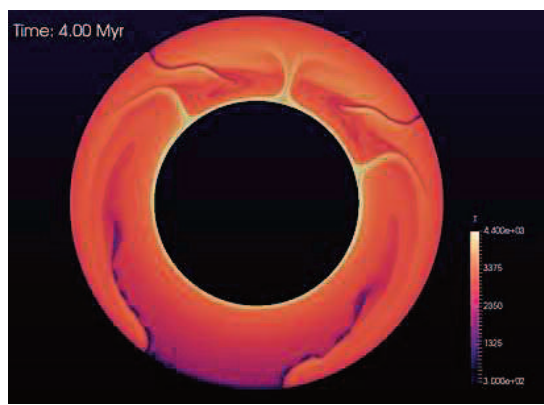
studies. These reveal that the shortly after the Earth's accretion about 4.6 billion years ago (Ga), major impacts continued to batter the planet for hundreds of millions of years.

These impacts have left their mark on our planet in the occurrence of so-called spherule beds. These are distinctive layers of round particles that have condensed from rock that was vapourised during these brief impacts. Such rocks have been found in South Africa and Australia. Some of these beds date to around 3.2 Ga, roughly the same time that plate tectonics was thought to have been initiated.



Spherules in the Barberton greenstone belt in the Kaapveel craton of south Africa (Image: Lowe et al, 2014)

"Our results indicate that giant meteorite impacts in the past could have triggered events where the solid outer section of the Earth sinks



Geodynamic simulation of the early Earth (Image: Phys.org)

into the deeper mantle at ocean trenches – a process known as subduction. This would have effectively recycled large portions of the Earth's surface, drastically changing the geography of the planet," explained lead author Associate Professor Craig O'Neill from Macquarie University.

"Large impact events may have also kick-started the Earth's magnetic field by triggering the planet's cold outer crust to suddenly move downward and interact with the Earth's outer core. This affects convection in the core, and thus the geodynamo – the process that creates the Earth's magnetic field," he added.

The Editor comments: This comes as no surprise to me. It's clearly not going to be the last word as it begs further questions about what happened even earlier in the Earth's history. There's also question marks about much later impacts, including those that occurred around the K-T boundary 65 Ma.

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Alan Clewlow

NORTH LONDON ❄️ ❄️ ❄️ CHRISTMAS

MINERAL, GEM & FOSSIL SHOW

Saturday 7th December 2019

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

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10am to 4pm

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Organised by Finchley Amateur Geological Society

For contact details and all about us: amgeosoc.wordpress.com

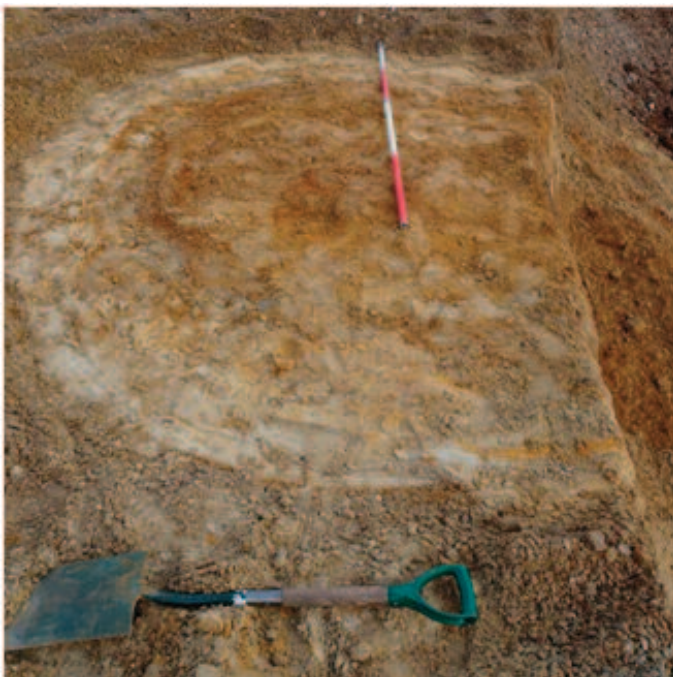
Can anybody help Jane Leathard?

Jane Leathard has been studying some of the Quaternary of a location some 6 miles south of Kings Lynn in Norfolk and she came across these features. In her own words:

“They are around 2-3m deep and wide comprised of mainly sand fining down the feature (there are some small flint clasts in the upper sections). They are surrounded by unsorted flint gravel which is older (Optically stimulated luminescence dated them). They are bowl shaped with narrower necks in the vertical profile, and round in the horizontal profile. They are seemingly unconnected and randomly dispersed.



Vertical profile (Photo: Jane Leathard)



Horizontal profile of one of the features (Photo: Jane Leathard)

If you have come across features like this before, or can point Jane towards any useful research papers you know of that would be really helpful.

*Please contact the Editor if you can help.
Email: downtoearth@geosupplies.co.uk*

If you enjoy reading your *Down to Earth* extra - why not sample it's big brother' - free of charge!

After we published this offer in our November issue, a number of you contacted us and some have since taken out a subscription, so we're offering it again!

We've now been publishing *Down to Earth* extra for nearly seven years. Over that time the circulation has steadily grown and today we estimate that it's read by more than 3,000 people across the UK and even overseas! But you can get your hands on a lot more geo-news, articles and so much more by subscribing to our quarterly magazine *Down to Earth*!

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Something new for DtoE extra...

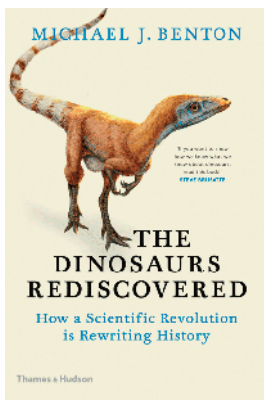
In Down to earth magazine we carry at least two pages of book reviews in each issue. The problem is that our magazine is only published every three months, so this sometimes means that books have been out quite a time before we can tell you about them.

The solution is to run "Book shelf" in each issue of DtoE extra! This will feature books in a more timely fashion. We won't be giving you a full review, just a basic outline. We'll also take the opportunity to remind you about some books from the backlist.

New books for this issue...

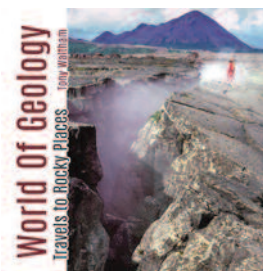
Book Choice

Title: The Dinosaurs Rediscovered
Author: Michael Benton
Publisher: Thames & Hudson
ISBN: 978 0 500 05 200 6
Format: Hardback
Cost: £24.95
Level: Adult & general interest
My rating: *****



Recommended

Title: World of Geology
Author: Tony Waltham
Publisher: Whittles Publishing
ISBN: 978 1 84995 437 2
Format: Softback
Cost: £18.99
Level: Adult & general interest
My rating: *****



Something different

Title: Hutton's Arse
Authors: Malcolm Rider & Peter Harrison
Publisher: Dunedin Press
ISBN: 978 1 780 80460 93 2
Format: Softback
Cost: £19.99
Level: Adult general interest
My rating: *****



Great present idea!

Title: Timefulness - How thinking like a geologist can help save the world
Author: Marcia Bjornerud
Publisher: Princeton University Press
ISBN: 978 0 691 18120 2
Format: Hardback
Cost: £22.00
Level: Adult general interest
My rating: *****



Our price
£14.99

Book Choice

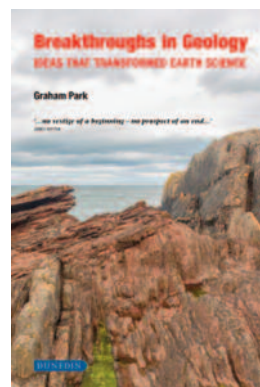
Title: Lakeland Rocks
Author: Alan Smith
Publisher: Crowood Press
ISBN: 978 1 785006 51 7
Format: Softback
Cost: £16.99
Level: Adult & general interest
My rating: *****



Our price
£14.99

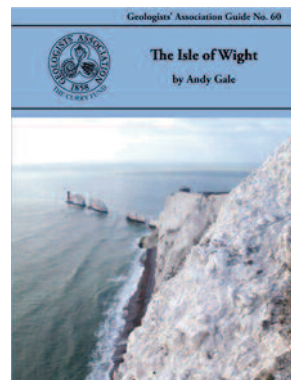
Recommended

Title: Breakthroughs in Geology
Author: Graham Park
Publisher: Dunedin Press
ISBN: 978 1 780 460 76 5
Format: Hardback
Cost: £24.95
Level: Adult & general interest
My rating: *****



New edition

Title: GA Guide No. 60
Authors: Andy Gale
Publisher: Geologists' Association
ISBN: 978 0 900 717 96 3
Format: Softback
Cost: £12.00
Level: Adult/student interest
My rating: *****



Our price
£15.95

From the backlist...

Title: The Geology of Britain
Authors: Peter Toghill
Publisher: Crowood Press
ISBN: 978 1 840 374 04 9
Format: Softback
Cost: £16.99
Level: Adult/student interest
My rating: *****

Geo Supplies stocks hundreds of geological books and booklets, as well as holding a full range of BGS maps and other publications. If we haven't got it in stock, we can usually get a current title for you within a short period of time.

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Autumn Day Schools still available...

During 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?

We still have events in Sheffield, Birmingham and Hertfordshire, where you will be most welcome to join us.

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

Wednesday, December 18 (NB) Hertfordshire/North London

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. Includes some practical hands-on rock work and also lots of handouts!

At this venue, hot drinks and lunch are included in the cost.

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

Winter Distance Learning Courses are here

Commencing in mid-January we'll be running a variety of distance learning courses. They run for around 10-weeks and all cost £75.00 in electronic form (either email or via the Moodle platform) or £100.00 in paper form.

You can enrol by entering the online shop at: www.geosupplies.co.uk or by ringing us on 0114 245 5746 (You can enrol now!)

For January 2020 we'll be offering:

NEW COURSE!

"Backyard Geology - and a little beyond"

This is an exciting new venture for us and you! We've often been asked if we have anything that can help you in the study of your home or favourite area, well now we have.

It's an 8-week course that provides you with what can best be described as a 'manual' for discovering more about your area of choice in the British Isles.

As part of the course you are provided with a BGS 1:50 000 map which then forms the basis of your study area. From the start, we'll help you to choose your area and with people studying different parts of the country at the same time, this provides the opportunity for interaction on our learning platform Moodle.

Backyard Geology is also suitable for groups to study at the same time. Ask us about how your U3A or other group can join in, with special group rates available.

"Geology of the British Isles" - a detailed look at the geology of our country taking each period in time (13-weeks).

"Sedimentary rocks" - takes in the rocks and the process that shaped them. It's a while since we offered this, so why not take us up on the offer? (10-weeks).

"Steps towards the Rock Face" - is our beginner's course that covers a wide range of geological topics, from plate tectonics to rocks, minerals and fossils. This is available 'on demand' to commence at any time.

Further information on all courses is available by emailing: downtoearth@geosupplies.co.uk or ring: 0114 245 5746

Winter Day Schools are here...

During February and March we'll be offering day schools in several different locations around the country. We are currently working on the programme and will have it available for the next DtoE extra.

We are planning events in Devizes, Sheffield, Birmingham and London. We would also like to bring a day school to YOU! If you have a suitable venue, we can provide a day of activities from as low as £15.00 per person. If you've got the people, we can do something for you!

Contact us at: downtoearth@geosupplies.co.uk

Autumn face-to-face adult classes...

This Winter we'll be running 8-week adult education classes in three locations in Sheffield and Chesterfield. In each case, our subject will be "Backyard Geology - and a little beyond".

Classes cost £60.00 (with a £5.00 discount for holders of Club Class cards). Alternatively you can pay by the week, in which case the cost will be £8.00 for each session. Price includes a copy of the relevant BGS map.

*Totley Rise Methodist Church, Monday 2.30-4.30 commencing 16/09
Commercial Hotel, Chapeltown, Thursday 10.15-12.15 commencing 19/09
Eyre Chapel, Newbould, Chesterfield, Thursday 2.00-4.00 commencing 19/09*

You can enrol for these classes via our website by entering the online shop, or ring us on 0114 245 5746 to pay by card. www.geosupplies.co.uk



Our Residential Field Trip Programme for 2020



**Dramatic landscape at Wasdale Head, Lake District
(Photo: Chris Darmon)**

Quite a bit has happened since we last updated you in November. Our trip to Norway in March/April is now confirmed, but we still have vacancies.

Due to an illness related cancellation, we now have a vacancy on the Portugal trip - contact us if you want to join us.

Our Summer School, which is this year based at the University of Worcester in August, has set off really well - remember that there are plenty of single rooms available.

Don't forget our Autumn trips - we have plenty of availability at the moment.

For further details, visit the website or Tel: 0114 2455746.

Booking forms are only available direct from us. Email: 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 * are now fully booked.*

We look forward to hearing from you!



Down to Earth

"Earth science learning for all"

Come and join our fourth Summer School...

**Worcester Summer School
August 15-22 2020**

The Devil's Chimney, Leckhampton Hill, Cotswolds.

St John's Campus, University of Worcester

Worcestershire is at the very heart of England - and perfect for geology...

Our Summer School journey has so far taken us to the Lake District, Shropshire and then last year to the Peak District of Derbyshire. Each venue has allowed us to study some very varied geology and to put on an exciting programme with mix of field trips, indoor talks and social activities. So for 2020 we are heading for the City of Worcester; specifically we're based at the St Johns Campus of the University of Worcester.

It's the perfect base from which to explore the amazingly varied geology within a 50 mile radius of the city. This can encompass the Precambrian rocks of the Malvern Hills, the amazing sites in the Worcestershire village of Martley, the Devonian and Carboniferous rocks of the Forest of Dean, the Triassic and Jurassic rocks of Aust Cliff and splendid scenery of the Cotswolds. For those looking for something a little more gentle we can offer geology in the historic city centre of Worcester; including its magnificent cathedral and even a visit to the Lapworth Museum in Birmingham. If you are looking for something a little more unusual we can offer a day trip on the Severn Valley railway with a geo-walk along the way.

We'll be offering single en-suite rooms (there may be a few twin/double rooms) on the St. John's Campus which is around a 15 minute walk from the city centre. Here, we'll be taking breakfast and evening meals and have our Summer School talks. As is usual on our Summer School, there will be a full programme of evening talks and activities with some outside speakers. It promises to be enjoyable, educational and fun! Early booking is strongly advised.

Chris Darmon & Colin Schofield

View the brochure online at: www.geosupplies.co.uk

Email for a booking form: downtoearth@geosupplies.co.uk

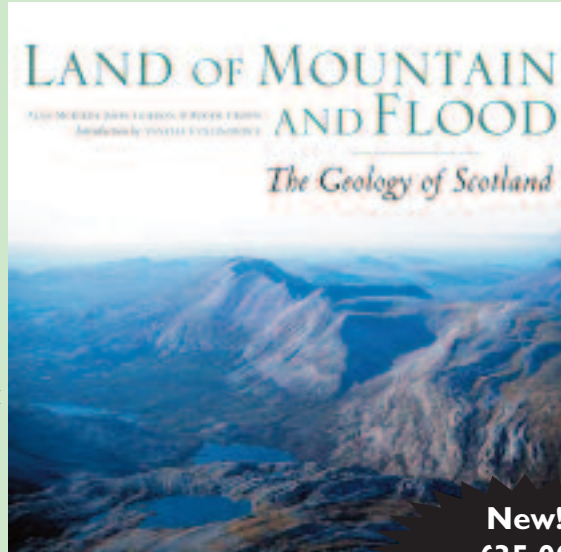


Featured books November - January

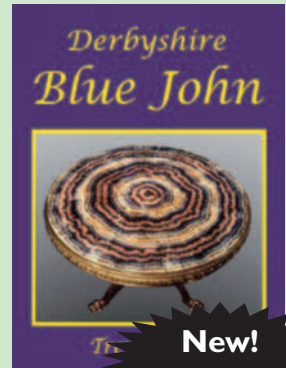
In each issue we are pleased to be able to introduce you to a range of featured books. Where they are being offered at reduced prices, these will be current to the end of the month shown above, provided that stocks are available. Please note, all prices include UK postage.



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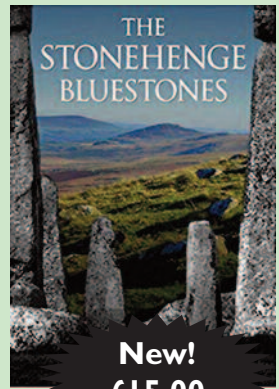
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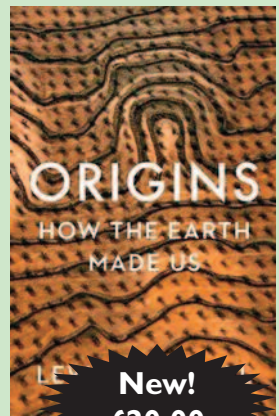
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