



Down to Earth *extra*

Issue 1 | 14 June 2022

NEWS FLASH...

- Still a few places available on Autumn 2022 trips!
- Iceland is filling up fast!
- More 2023 brochures released!
- Don't forget day trips!

This has to be a windy place, there's hardly a tree in sight! It could be Orkney or Shetland, but it's actually the Dingle Peninsula in County Kerry in the extreme Southwest of Ireland. It's where big Atlantic storms first strike land.

Steeply inclined folded and faulted Silurian and Devonian sediments have been affected by the Variscan Orogeny. The picture was taken from the higher ground of Clougher Head which is formed of Silurian volcanics.

(Image: Chris Darmon)

From the Editorial team...

A recent trip to Ireland in the company of a number of Americans has given us a more 'international perspective' on field geology from several different angles. On the human level there's very little difference between what the Americans and the Brits want to get out of their field geology. They are equally enthusiastic about rocks and the landscape, and the Americans show their appreciation vocally and with big smiles! Our American guests were great at making notes and taking lots of pictures indeed it was sometimes difficult to get them away from a site.

What was apparent on several occasions during the week was the use of different terminology and that wasn't just confined to rock names (such as the common use of the word diabase in place of dolerite). There was much hilarity about our use of three words for what is basically the same glacial feature; corrie, cwm and cirque! Terminology has always been something of a barrier to an understanding of our subject and this was but one aspect of that extensive topic, that was played out against a background of Irish terminology!

The Irishness of the geology, especially given the fact that the Dingle Peninsula is a Gaeltacht or an area where the Irish language is widely spoken in the home, was also quite prominent on notices and on maps. We were largely using the recently published field guide (Higgs and Williams) which uses the current Devonian time zones and nomenclature. Notice boards across Kerry can be found at various geosites and were highly informative. Unlike in some places in the UK, they were not in any way vandalised, being merely affected by salt spray and wet weather. Above all, it does all of us good to be exposed to different geocultures - we recommend it!

Chris Darmon & Colin Schofield
The Down to Earth editorial team

See pages 6-9 for the full spectrum of our 'real' and virtual events!



news update

'Dragon of death' unearthed in Argentina...

For several years now South America has been the source of some of the largest fossils ever to see the light of day. This has included some huge Titanosaur dinosaurs. Now, comes *Thanatosdrakon* dubbed the "dragon of death" pterosaur from Argentina.

Researchers in Argentina have unearthed the largest pterosaur species ever found in South America. Not content with a single specimen, they actually unearthed two giant flying reptiles in the Cretaceous Plottier Formation. They were living alongside some of the giant dinosaurs referred to earlier.



Reconstruction of Thanatosdrakon, now that would be something!
(Image: Courtesy of research team)

The fossils were found during excavations for a major civil engineering project some 500 miles (800 kilometers) from Mendoza

city, the capital city of Mendoza province. Palaeontologist Ortiz David and his team were supervising the dig when they discovered fossil fragments within floodplain deposits. Mendoza, where Aconcagua, the highest mountain in the Americas, is also located, is well known among paleontologists for other important dinosaur discoveries, including that of the giant sauropod *Notocolossus*, one of the largest dinosaurs in the world, in 2016.

Ortiz David said that the team's discovery of fossils in such good condition was surprising, because pterosaur bones are fragile, and fossils are usually found in tiny pieces.

"From the beginning, two facts caught our attention: The first was the size of the remains and their preservation in three dimensions, an unusual condition in this group of vertebrates; the second was the amount of remains found at the site, since large-giant pterosaurs are only known from fragmentary remains (with some exceptions)," he said. "The description of new specimens is always important for vertebrate paleontology, as they shed light on the different groups being studied. In this particular case, 3D elements of large pterosaurs are scarce, making *Thanatosdrakon* an excellent case study."

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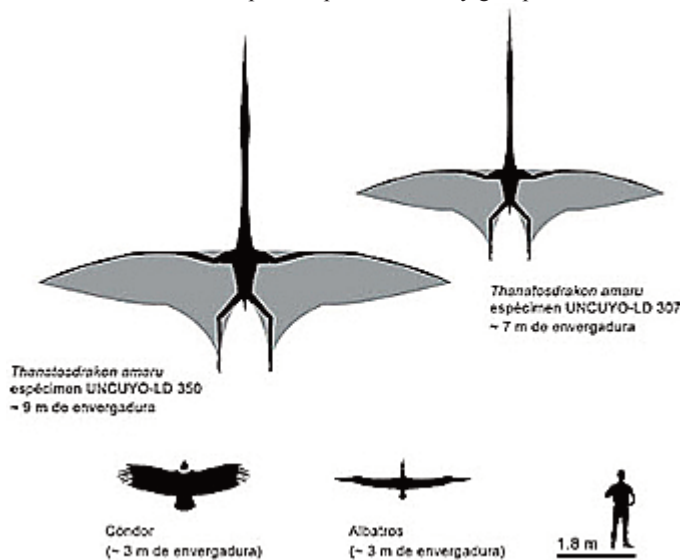
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Ortiz David carefully removes matrix from one of the fragile bones. (Image: Courtesy of Ortiz David)

The scientists identified the pterosaurs as two individuals of the species *Thanatosdrakon amaru*. This is the sole species in the genus, which means "dragon of death," in Greek. The species name, "amaru," translates as "flying serpent" from the Indigenous Quechuan language and refers to Amaru, a two-headed Incan deity, the study authors reported.

Researchers determined that the two pterosaurs died at the same time and that one was not yet fully grown. But the scientists can't say for sure if the two animals represent part of a family group.



Size comparisons for the new pterosaur.

"There is no indication in the fossil remains of a degree of parental relationship," Ortiz David said. "However, it can be confirmed that both specimens are of different sizes, and that the smaller one is The two specimens' wingspans measured approximately 7 metres wide and 9 metres wide, respectively. Researchers confirmed that they are azhdarchids, a family of pterosaurs that lived during the end of the Cretaceous period (approximately 146 million to 66 million years ago).

The fossils are currently housed in the Laboratory and Museum of Dinosaurs at the National University of Cuyo in Mendoza. To help preserve the specimens, museum experts made casts of the different fossils on a 1-to-1 scale; the casts are on display at the museum.

The researchers' findings will be published in the September 2022 issue of the journal *Cretaceous Research*.

You can find out more at:

<http://novataxa.blogspot.com/2022/05/thanatosdrakon.html>

We are indebted to the online website *Live Science*, for the material used in this news item.

UK heritage steam railways in coal supply crisis...

There was a time when railways carried millions of tonnes of coal a year around the country. We produced so much coal that we exported it all over the world from places like the River Tyne and South Wales. The railways themselves were huge coal customers, the coal being used to power thousands of steam locomotives.


Today there are around 50 heritage steam railways up and down the country that still have a requirement for good quality steam coal. That has been coming from two main sources, South Wales and Russia. Until quite recently Poland was also a source. Now with the war in Ukraine, the Russian source has dried up and the South Wales supply also looks to be in doubt.

We are grateful to *Down to Earth* reader Tony Wardle for the following information which comes from *The National Traction Engine Trust*.

The owners of the Ffos-y-Fran mine are progressing with their appeal to the planning consent within the existing site boundary. This would

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extend mining for roughly a further 1.7 million tonnes of coal over an additional 2 years. This is being supported by the NTET.

On the basis that this appeal is successful, work continues to ensure that a suitable supply of Ffos-y-Fran steam coal – washed, graded and bagged – will again become available for the UK Heritage Steam market from the summer and moving forward.

Hargreaves are also continuing to look into the possibility of washing and grading at a different facility to support the earliest return of washed, graded and bagged Ffos-y-Fran steam coal.

Whilst the war in Ukraine has stopped the incoming supply of Russian coal to the UK, reasonable quantities are available with most distributors and coal merchants. There are also supplies of Colombian coal and early suggestions of Polish coal also being available in limited quantities. It is recommended that you speak to your coal merchant or to a national distributor if you require more information on what is available, as it is an ever-changing picture.”

The Editor comments: Thanks for this Tony. This also seems to confirm that Ffos-y-Fran is indeed the last source of opencast coal in the UK.

BGS Open Day - initial release of tickets has sold out...

When BGS announced that it would be holding an open day at its



Keyworth campus on June 25th the response from the public was huge and the initial release of tickets has now sold out.

They expect to release more tickets nearer to the date and urge people who want to go, to register online at:

<https://www.eventbrite.co.uk/e/bgs-open-day-tickets-318793328427>

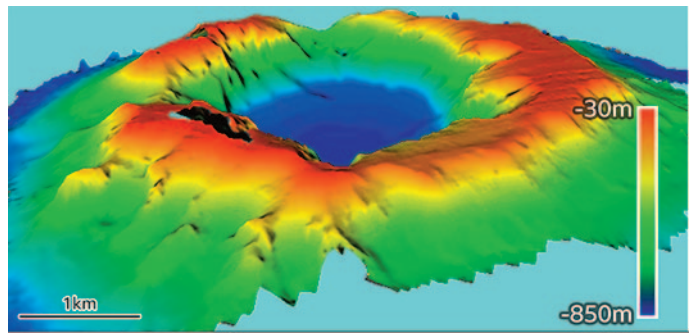
How big is the Tongan crater hole?

You will recall that we covered the immense volcanic eruption that just about destroyed an island in Tonga. It happened on January 15th of this year. Whilst we were aware that this was a huge explosion, we were unable to quantify much about the eruption at the time. Now the hard numeric data is catching up with the event and some of the numbers are pretty alarming.

Scientists have determined that the Tongan eruption of January 15th was the biggest atmospheric explosion in over a century. Indeed we probably have to go back to Krakatoa eruption of 1883 to find anything that exceeds it.

As to the Hunga-Tonga Hunga-Ha'apai crater, it is now 4km wide and drops to a base 850m below sea level. Before the catastrophic event it was a mere 150 m deep. The calculation is that some 6.5 cubic km

A 3-d model of the Tongan crater after the explosion of January 15.



(Image: University of Auckland, Shane Cronin via BBC)

of ash and rock was ejected from the caldera. Speaking after the findings were released, Prof. Shane Cronin of the University of Auckland said: "If all of Tongatapu, the main island of Tonga, was scraped to sea level, it would fill only two-thirds of the caldera."

Prof. Cronin has spent the past two and a half months studying the site, seconded to the Tongan Geological Services Department. His task was to produce a report that assessed the eruption and to make recommendations to increase the future resilience of the islands. He does not think that there will be another similar eruption at the same site, as there are at least 10 other seamounts in the wider southwestern Pacific region that could produce something similar in a shorter timescale.

Find out more at:

<https://www.bbc.co.uk/news/science-environment-61567521>

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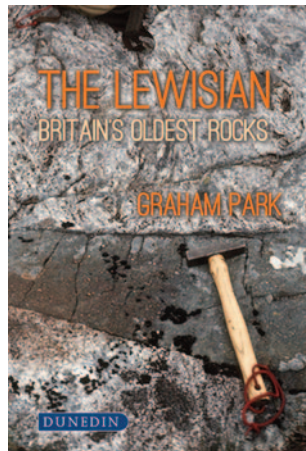
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An amazing bit of publishing - "The Lewisian"...

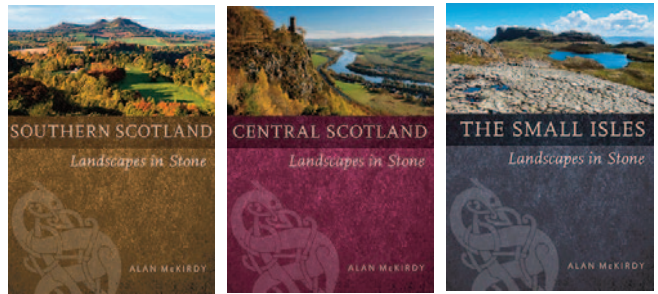
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Three new McKirdy titles from Birlinn...



Thanks to the talents of Alan McKirdy, formerly of Scottish Natural Heritage, we have a series of inexpensive guides to many parts of Scotland. Publishers Birlinn have now released three more titles in the series covering: *The Small Isles (Rum, Eigg etc.)*, *Central Scotland and Southern Scotland*.

The titles cost £9.00 each or £25.00 for all three (postage included)

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Great geo-adventures in 2022/3 begin here...

A spirit of adventure - members of a 2015 field group on the way out to Ailsa Craig, one of the lesser known Clyde Islands of Scotland.

(Images: Chris Darmon)



We have now run our first trips of the 2022 season and so far, everything has gone very well. We are now looking forward to filling the final places on Autumn trips, ahead of an exciting 2023 season.

We would welcome your enquiries for the trips listed opposite and will send you a booking form just as soon as each trip is released. If you wait for brochures to appear on our website, single places may already have gone.

**To view a 2022 brochure, go to our website at: www.geosupplies.co.uk or Tel: 0114 245 5746
Booking forms and 2023 brochures are only available direct from us.**

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Availability Autumn 2022 & early 2023...

- Berwick & the Borders - September 1-8
- Minehead, Somerset - September 14-21
- Malvern Hills - September 28-October 2
- Yorkshire Coast - October 10-15

2023

- La Palma, Canaries February 23-March 2
- Iceland, March 27-April 6
- Islay, Gigha & Mull of Kintyre, May 2-11
- Ayrshire Coast & Islands, May 12-19
- Isle of Wight, May 31-June 7
- Anglesey, June 11-16
- Ilfracombe North Devon, June 23-30

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- *We usually use comfortable small hotels and guest houses and all meals are included.*
- *You have the services of Chris Darmon and Colin Schofield as field leaders. Both are highly experienced and knowledgeable field geologists.*
- *During the current period, even if we have a minibus you will be able to use your own car if you wish.*
- *Dates shown in this listing are the start and finish dates.*

If you still have any questions or queries, don't hesitate to email us at: downtoearth@geosupplies.co.uk or tel: 0114 245 5746



Participants on a trip to the Wren's Nest National Nature Reserve where fossil trilobites can be found in the Silurian limestones.

The 2022 Residential Trip programme...

We're now into the swing of the 2022 field season with lots of people enjoying themselves on our trips. As you read this we'll already have been to Bude in North Cornwall and two trips to Northwest Scotland one to Raasay and the other to Assynt.

We still have vacancies on several trips this Summer and during the Autumn. For the latest vacancy situation email us at: downtoearth@geosupplies.co.uk or ring: 0114 245 5746



Don't worry, we don't bite!

All our educational classes and courses are friendly, informal and open to all.

**Come and join us!
If you have any questions - please ask us.**

Northeast Scotland July 20-27

This trip examines the coastline of Moray and Nairn, along with some of the inland outcrops. It's known to geologists as the 'kingdom of Dalrardia' because it's dominated by the metamorphic rocks of the Dalradian formation. That said, we'll also see sediments from the Old and New Red Sandstones and even a little Jurassic. Come and explore an area of Scotland that lies between Inverness and Peterhead, we promise that you will not be disappointed!



Bow Fiddle Rock on the Moray Coast of Scotland

University of Worcester Summer School August 13-20

Our annual summer school is beginning to feel a bit like the Tokyo Olympics! We first tried to run it in 2020 and then the University could not accommodate us in 2021, so we have finally made it in 2022! We are sure that it will have been worth the wait as we bring you a varied programme of field visits across the Midlands and Welsh Borders, from our base in Worcester. Accommodation at the University is mainly in en-suite single rooms. Come and join our group of more than 30 people as we explore the geology of the area.

Berwick & the Borders September 1-8

This trip includes a visit to the 'holy grail of geological time' at Siccar Point and lots of other amazing places. From our base at the comfortable Castle Hotel, we'll be taking in both coastal and inland locations from Northumberland and Berwickshire. Marvel at folded Carboniferous sediments at Scremerston, the granite scenery of Cheviot and volcanics at St Abbs. In short, there's something for everyone on this week. There are just a few vacancies remaining on this trip.



Lundy Island, home to the eponymous Tertiary granite

Minehead, Somerset September 14-21

The coast of North Somerset is the 'other' Jurassic Coast with similar geology to that of Dorset, but without the crowds! We'll be taking in the Devonian rocks of Lynmouth and the landscape of the Exmoor National Park. Take in the slower pace of life aboard a West Somerset Railway steam train as it travels between Watchet and Blue Anchor. Weather permitting, we'll also take a day trip to the fabulous Island of Lundy in the Bristol Channel where you can examine a Tertiary granite and marvel at the fabulous birdlife.

Malvern Hills September 28-October 2

Great Malvern is world famous for its spring water that flows from fissures in the Precambrian rock of the hills made famous by Elgar. Aside from these ancient igneous rocks there are also nearby exposures of Lower Palaeozoic limestones along with sediments from the Carboniferous and Permo-Trias. We'll also be including a trip along the Severn Valley railway to view Coal Measures and dunes.



Chalk cliffs and raised beach caves at Flamborough Head

The Yorkshire Coast October 10-15

This trip is based at the small North Yorkshire village of Hunmanby, just to the south of Filey. From our comfortable guest house base, we'll get to see Jurassic and Cretaceous rocks from Scarborough down to Flamborough. We'll also take in the fine Quaternary cliffs of Holderness and the unique inland scenery that is the Yorkshire Wolds. A great way to round off the 2022 field season!

You can view brochures for all of our trips at our website:

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Booking forms are only available from us at:

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Day Trips...

We're pleased to bring back a few of our ever popular day trips for 2022. These normally commence around 11.00 in the morning and end around 16.00 in the afternoon. Walking distances are moderate and should be within everyone's capabilities.

The cost is £10.00 per person. Currently we are ready to accept bookings on the trips shown below.

June 1 Wednesday, The Lickey Hills Country Park

This lovely site is on the south western edge of the City of Birmingham and is something of a favourite of ours. It's a great place to discover the relationship between the underlying geology and the landscape and topography of the local area.

The Lickey Hills were visited by Charles Lapworth with his students from Mason College (later Birmingham University) in the 1880s and you will discover that there's a curious connection with him to this day.

Meeting: Outside the visitors' centre at Lickey Hills Country Park at 11.00

June 22 Wednesday, Rocks of Charnwood Forest

Charnwood Forest in Northwest Leicestershire is a great place to study igneous and metamorphic rocks of the Precambrian. During this day we'll visit several different places and may also see a fossil. Don't worry that it's a Bank Holiday, we'll be avoiding the crowds!

Meeting: Markfield, Altar Stones at 11.00

July 6 Wednesday, Manifold Valley & Brown End Quarry, Staffs.

Away from the hordes of visitors that visit some of the honey pots of the Peak District lie some of the hidden gems that offer superb geology in some of the quieter spots. The Southwest Peak District is one such place.

We'll tour the amazing Brown End Nature Reserve before venturing up the Manifold Valley a little to see some of the local Carboniferous and its structures.

Meeting: Brown End Nature Reserve, Waterhouses (by cycle hire centre) at 11.00



Coal seam and fireclay at Saltwells NNR (Image courtesy of Twitter)

August 3 Wednesday, Saltwells National Nature Reserve, Dudley

Saltwells is one of the best geosites in the newly designated Black Country UNESCO Geopark.

Saltwells is a complex of 3 different geological sites, all designated SSSI, that include a former Carboniferous claypit, known as Doultons and also local coal bell pits and the unconformity with the underlying Silurian.

Meeting: Saltwells NNR car park, off Coppice Lane adjacent to Saltwells Inn at 11.30

We are always happy to talk to you if you have any concerns about booking a field trip especially if you have not been with us before. Just give us a call!

To enrol onto these Day Trips, or to find out more, go to our website, and enter the online shop: www.geosupplies.co.uk

Alternatively, please ring us on 0114 245 5746, where you can pay using any major credit/debit card.

The 2023 Residential Trip programme...

We're working on the assumption that whilst Covid will still be with us in 2023, we'll be able to travel pretty much unhindered. With this in mind, we're returning to our previous pattern of a trip to a warm country in February, followed by one to a cold one in March/April.

Highlights of the year include, a 10-night visit to Iceland and a trip to see the site of recent volcanic activity on La Palma. As for the rest of the programme, we're taking in top localities like Anglesey, Ilfracombe and some of the smaller islands off SW Scotland.

Not all of the trips shown below are ready to book right away, but some are, so our advice is to get in touch with us NOW to register your interest. Then, as soon as the brochure is ready, you can book! This is especially important if you are looking for a single room as these are always available in limited numbers.

La Palma, Canary Islands (7-nights) - February 23-March 2

We want to be amongst the first people to take a look at the geology after the 2021 volcanic eruption! Whilst the island is most definitely open, certain roads and trails are currently closed, but they are being worked upon and everyone is keen to see the tourist trade back to where it was. Currently there aren't a lot of flights from the UK, aside from TUI, but that is expected to change in 2023.

Iceland, beyond the Golden Circle (10-nights) - March 27-April 6

For 20 years from 1997 we took groups almost every year to Iceland, but have not been since 2017. So why are we returning? Tourism has undergone something of a revolution and whilst the country is still expensive, it does offer decent value for money. Crucial for us, as geologists, there's been a recent volcanic eruption and finally we still have the services of our fabulous guide and driver Ingi! We'll be taking in the area around Reykjavik, including the Snaefellsnes Peninsula and Mount Fagradalsfjall, the site of the most recent eruption. We'll also travel along the south coast to Vik and then onto the Vatnajökull Glacier. The highlight of the trip is a 2-night stay on the Westman Islands, that were almost destroyed in a 1973 eruption. *We are ready to take bookings for this trip NOW!*

Islay, Gigha & Mull of Kintyre (9-nights) - May 2-11

This 3-centre trip takes in a group of islands and mainland Mull of Kintyre that are dominated by metamorphic rocks from the Dalradian. These varied rocks (along with others) are all set in some beautiful countryside. We'll also visit the island of Jura with its famous Paps made from quartzite. All this and even an unusual Carboniferous coalfield! A great trip for anyone looking for variety in landscape and geology. *We are ready to take bookings for this trip NOW!*

Ayrshire Coast & Islands (7-nights) - May 12-19

We break new ground on this trip as we take in the varied geology of the island of Great Cumbrae and the Ayrshire coast around Largs. The second centre is Girvan from where we can take in the amazing geology of the Ballantrae Igneous Complex and, weather permitting, take a trip to the granite island of Ailsa Craig. *We are ready to take bookings for this trip NOW!*

Anyone booking for both the above Scottish trips gets the intervening night's accommodation free of charge.

The Isle of Wight (7-nights) - May 31 - June 7

Often called 'the dinosaur isle' the Isle of Wight has some of the country's most recent geology. There are fine exposures of Cretaceous and Tertiary rocks, that give us some fine coastal scenery.

Places like the Needles, Alum Bay, Shanklin and Ventnor will all be taken in. All this and some fine Alpine structures, including vertical beds! We'll be getting around using the island's intensive bus network, including open top double deckers!

We are ready to take bookings for this trip NOW!

Anglesey, North Wales (5-nights) - June 11-16

The island of Anglesey, or Ynys Mon in Welsh is home to some of the finest geology in the UK. Rocks range in age from the late Precambrian to the Carboniferous and include examples of sedimentary igneous and metamorphic types. The island's geology is celebrated as a geopark and comes with lots of explanatory boards.

Ilfracombe, North Devon (7-nights) - June 23-30

We last visited this area about 4 years ago and found it be quite amazing. We want to re-visit some of those places, but also take in so much more! The rocks come from the Devonian and Carboniferous, but they show some amazing structures. We'll visit places like Hartland Quay in the west along to the Valley of the Rocks at Lynton in the East. We'll also venture south onto Dartmoor to take a look at the granite and the varied minerals. Seaside resort that give us access to a stretch of coastline that takes in some rich and varied geology.

We are ready to take bookings for this trip NOW!

Summer School, Sunderland (7-nights) - August dates tbc

Our annual Summer School for 2023, takes us to the coastline of Tyne and Wear and Durham with some excellent geology from the Carboniferous and Permian, with sedimentary and igneous rocks. Inland we will be taking in Weardale and Teesdale and visiting some great places along the way. All of this and the great friendship of a summer school, set in a hall of residence at Sunderland University.

Isle of Man (7-nights) - September 23-30

If you've never been to the Isle of Man to study geology before, you have been missing a treat! There's igneous, metamorphic and sedimentary rocks in great variety, along with mineral and even a few fossils! Crucial evidence for the closure of Iapetus Ocean can be found here, along with pillow lavas and limestone from the Carboniferous. For those more interested in recent deposits, there's also some of the UK's finest Quaternary in the north of the island. All this and our favourite hotel, the Welbeck!

We are ready to take bookings for this trip NOW!

Guernsey (7-nights) - October 7-14

The Channel Islands have a rich and varied geology that bears little or no relation to the geology of England. In the case of Guernsey there are ancient metamorphic and igneous rocks, some of which go back more than 2 billion years. There's also evidence for an orogeny, known as the Cadomian, that occurred in the late Precambrian. We have secured the excellent Peninsula Hotel that we've visited twice before. It's on the NW coast in a quiet bay.

We are ready to take bookings for this trip NOW!

In addition to this list, we are also looking at trips to:

- The Yorkshire Dales
- Cromer

To express an interest in a trip that's shown as 'ready' email us at: downtoearth@geosupplies.co.uk or ring us on: 0114 245 5746.

For other trips contact us and we'll put you on a list to receive the brochure and booking form as soon as it's available.



Featured books for June 2022

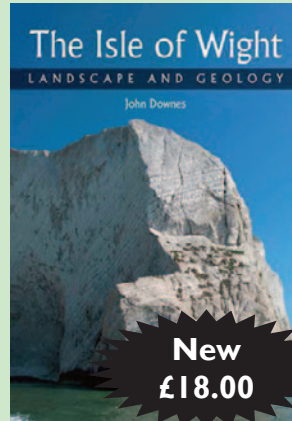
In each issue we are pleased to be able to introduce you to a range of featured books. Where they are being offered at reduced prices, these will be current to the end of May 2022 provided that stocks are available. Please note, all prices include UK postage.



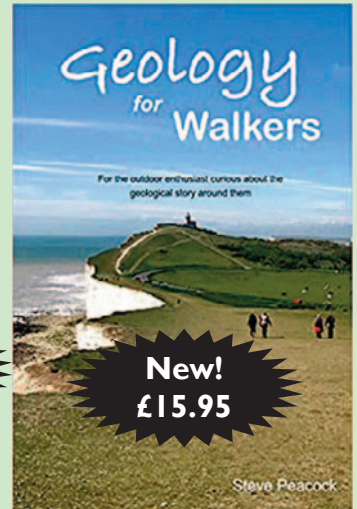
New
£18.00



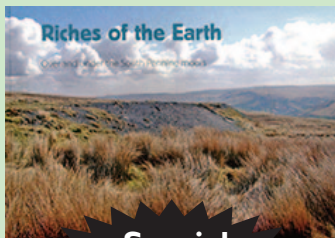
Just out!
£20.00



New
£18.00



New!
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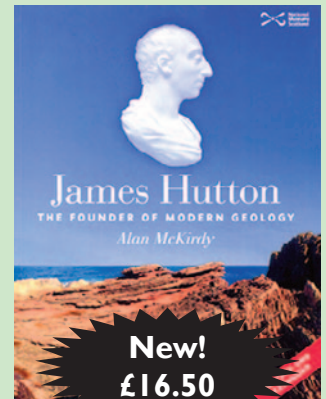
Special
£6.00
£7.95 for 2



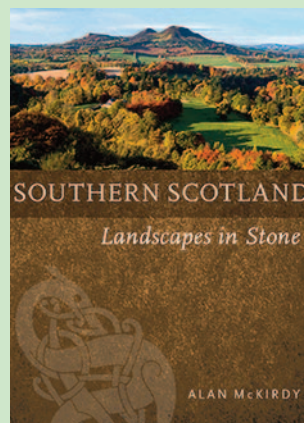
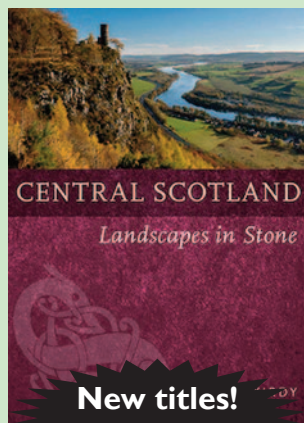
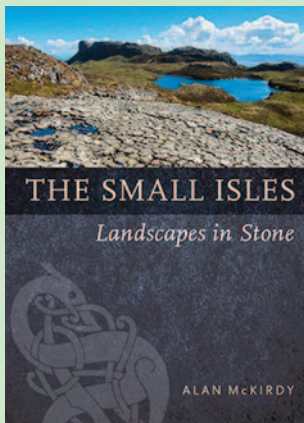
New!
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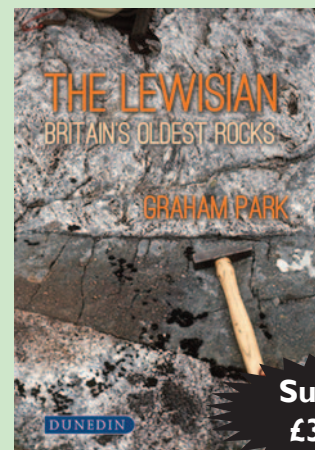
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