Down to Earth extra

Issue 117 September 2022

NEWS FLASH...

- **Final places available on Autumn 2022 trips!**
- **Iceland is filling up fast!**
- **More 2023 brochures released!**
- **Autumn courses revealed!**

If this fabulous rock formation was situated on the Dorset coast of England it would probably be the most photographed rock in the UK. However it happens to be at Portknockie on Scotland's Northeast coast so it is less well known.

It's called the 'Bow and fiddle rock' for obvious reasons and is composed of Dalradian quartzite. An otherwise pristine outcrop is somewhat soiled by guano, but you can't have everything!
(Image: Chris Darmon)

From the Editorial team...

How pure should science be to still be classed as science? Put another way, should we be prepared to mix art and science in an attempt to appeal to a new generation of young people?

We ask both of these questions as we have just returned following a most successful Summer School which was based at the University of Worcester. During that week we've seen geology combined with so many different media and in so many different settings, all of which seek to engage with a community of people who wouldn't normally class themselves as geologists, even less as scientists. Taken together they show the lengths we can (and indeed should) go to engage with people in ways that they can understand and want to engage with.

We enjoyed a number of fascinating evening talks during our Summer School. One was from geologist turned textile artist Georgia Jacobs who showed us how she uses a range of different media to replicate the colours and textures of rocks and the landscape. Her artworks can be seen at a number of different locations around the Abberley and Malverns Geopark. Her work has inspired others, including the ladies from several WI groups and also stitchers around the area to learn more about their local rocks.

We also heard from Zoe Jackson of the West Midlands Erratics Project who is using art workshops to engage with youngsters around Birmingham. Many years ago several media figures declared that 'rocks were boring'. Perhaps upon reflection they were right after all! Mixing art and science makes for a much more colourful scene. We can use art as a way in for kids. It's just down to us to ensure that at least some of them can then go on to appreciate them in a more adult way. At least the door has been opened a little...

Chris Darmon & Colin Schofield
The Down to Earth editorial team

See pages 6-9 for the full spectrum of our popular field trips and visits

news update

'New' Charnian fossil has been a long time waiting to be revealed - but it's been worth it!

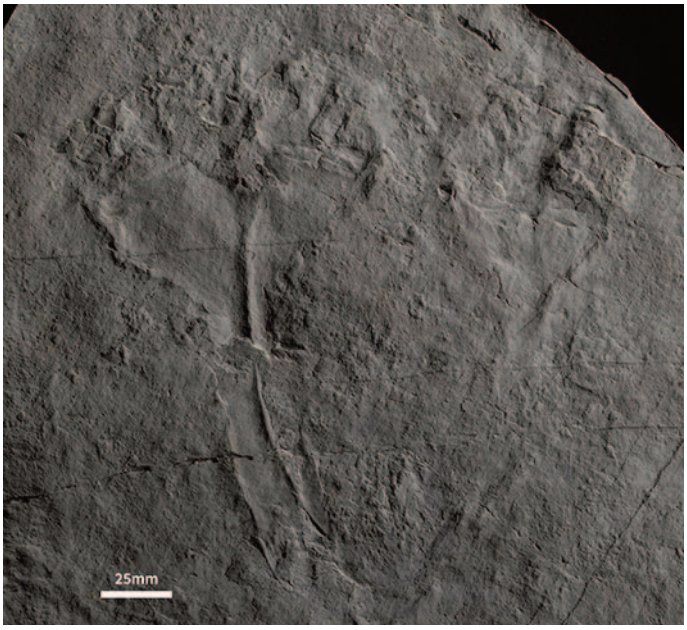
Ever since the first fossil was found in 1957, the world has been looking to Charnwood Forest in Leicestershire for the latest episode in the long running saga of this Ediacaran biota.

When the 15-year old schoolboy Roger Mason found *Charnia masoni* in an old slate quarry in Woodhouse, little did he know that more than 60 years later his old climbing ground would still be making history.

In 2007, Dr Phil Wilby and others from BGS spent over a week cleaning a 100 m-square rock surface at the old quarry with toothbrushes and pressure jets. They took a rubber mould of the whole surface and captured the impression of over 1000 fossils, and one stood out from the crowd.

Dr Frankie Dunn from the Oxford University Museum of Natural History carried out the detailed study, using some of the latest techniques. He said: "This is very different to the other fossils in Charnwood Forest and around the world. Most other fossils from this time have extinct body plans and it's not clear how they are related to living animals. This one clearly has a skeleton, with densely packed tentacles that would have waved around in the water capturing passing food, much like corals and sea anemones do today. It's nothing like anything else we've found in the fossil record at the time."

So what is this creature? Frankie Dunn calls it a 'lonely little creature' and thinks that it originates in shallower water than the rest of the Charnian biota. "The ancient rocks in Charnwood closely resemble ones deposited in the deep ocean on the flanks of volcanic islands,



The fossil as revealed on the bedding plane (Image: BGS)

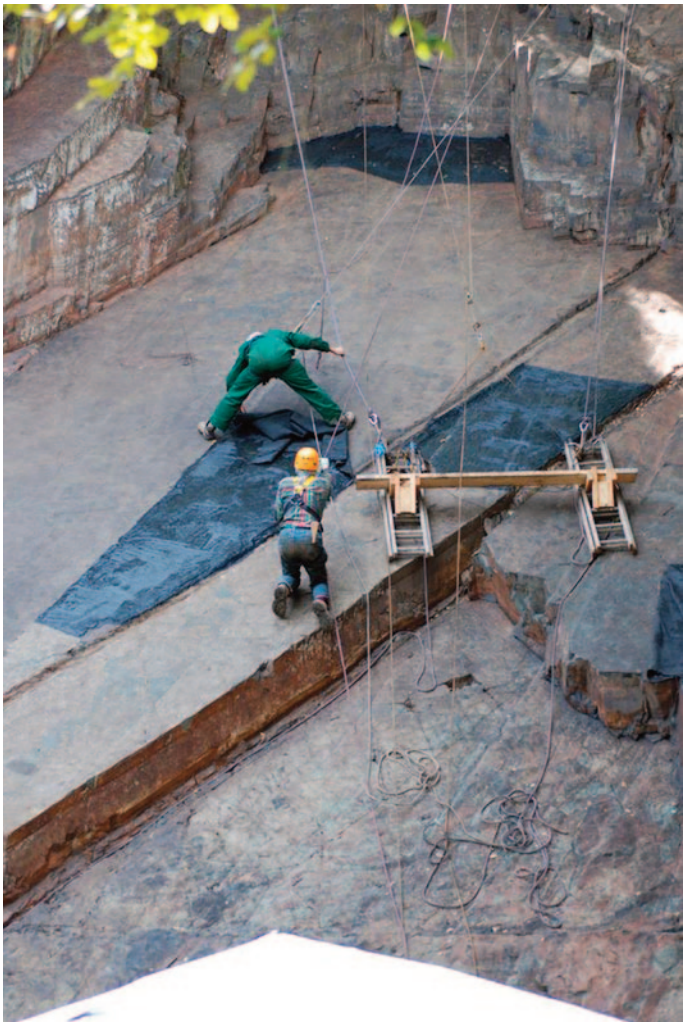
Down to Earth extra is designed & published by Geo Supplies Ltd., 49 Station Road, Chapeltown, Sheffield S35 2XE

Editor: Chris Darmon
Assistant Editor: Colin Schofield

Tel: 0114 245 5746 • FAX: 0114 240 3405
Subscribe for FREE: downtoearth@geosupplies.co.uk

much like at the base of Montserrat in the Caribbean today.

All of the fossils on the cleaned rock surface were anchored to the sea floor and were knocked over in the same direction by a deluge of volcanic ash sweeping down the submerged foot of the volcano, except one: the present fossil. It lies at an odd angle and has lost its base, so appears to have been swept down the slope in the deluge."



Scientists take a rubber mould of part of a bedding plane in the quarry back in 2007 (Image: BGS)

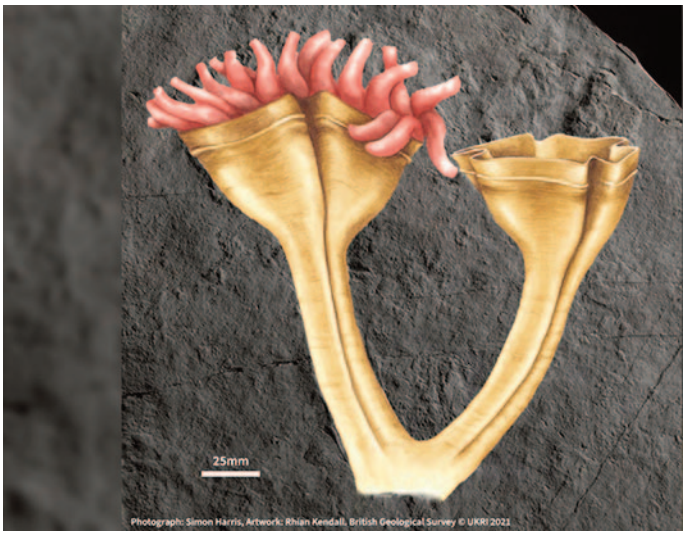
Geologists believe that the fossil represents the earliest known animal predator. The 560-million-year-old specimen is the first of its kind, but it is related to the Cnidaria group that includes corals, jellyfish and anemones living on the planet today.

The palaeontologists who discovered it have named it *Auroralumina attenboroughii* in honour of Sir David Attenborough. The first part of its name is Latin for 'dawn lantern', in recognition of its great age and resemblance to a burning torch.

Sir David Attenborough, who spent his childhood at home on the Leicester University campus where his father had a senior post, was delighted by the find:

"When I was at school in Leicester I was an ardent fossil hunter. The rocks in which *Auroralumina* has now been discovered were then considered to be so ancient that they dated from long before life began on the planet. So I never looked for fossils there.

A few years later a boy from my school found one and proved the experts wrong. He was rewarded by his name being given to his discovery. Now I have, almost, caught up with him and I am truly delighted.



This reconstruction by Rhian Kendall shows what we think Auroralumina attenboroughii looked like. (Image: BGS)

This find shines a light on the big picture of fossil evolution at what is a crucial time in Earth history. In particular the find focuses attention on exactly when modern groups first appeared. Dr Phil Wilby, palaeontological lead at BGS and himself involved in the discovery says: "It's generally held that modern animal groups like jellyfish appeared 540 million years ago, in the Cambrian Explosion, but this predator predates that by 20 million years.

Phil Wilby using a 3-D scanner on the fossil surface. (Image: BGS)

It's the earliest creature we know of to have a skeleton. So far we've only found one, but it's massively exciting to know there must be others out there, holding the key to when complex life began on Earth."

A. attenboroughii was dated at BGS's headquarters in Keyworth, Nottingham, using zircons in the surrounding rock. Zircon is a tiny radioactive mineral that acts as a geological clock: it assesses how much uranium and lead are present. From that, geologists can determine precisely how old the rock is.

Frankie Dunn again: "The 'Cambrian Explosion' was remarkable. It's known as the time when the anatomy of living animal groups was fixed for the next half a billion years.

Our discovery shows that the body plan of the Cnidarians (corals; jellyfish; sea anemones, etc.) was fixed at least 20 million years before this, so it's hugely exciting and raises many more questions."

The discovery has achieved great media coverage, including being on the BBC national news bulletins. The local authority, Charnwood Borough Council, issued a long press release withe the lead Councillor for business support Shona Rattray saying:

"This is such an exciting discovery and showcases how unique the Charnwood Forest area is. It is one of the reasons we launched *Discover Charnwood* as we wanted to help tell the fascinating story of the area and its breathtaking landscapes which were forged nearly 600 million years ago. People can see and experience that history for themselves in places like the Outwoods, Bradgate Park and Beacon Hill."

"Naming the discovery after Sir David Attenborough is so fitting as he is such an inspiring figure. We hope this latest news will help bring more visitors to Charnwood and support local businesses."

Where the fossil will be displayed has not yet been announced. We'll let you know as soon as we know.

The original paper can be read here:
https://www.nature.com/articles/s41559-022-01807-x

New impact crater may be linked to Chicxulub...

A new submarine impact crater has been identified 400km off the coast of Guinea West Africa and it may be a 'cousin' of the larger and more famous Chicxulub crater on the Yucatan Peninsula of Mexico.

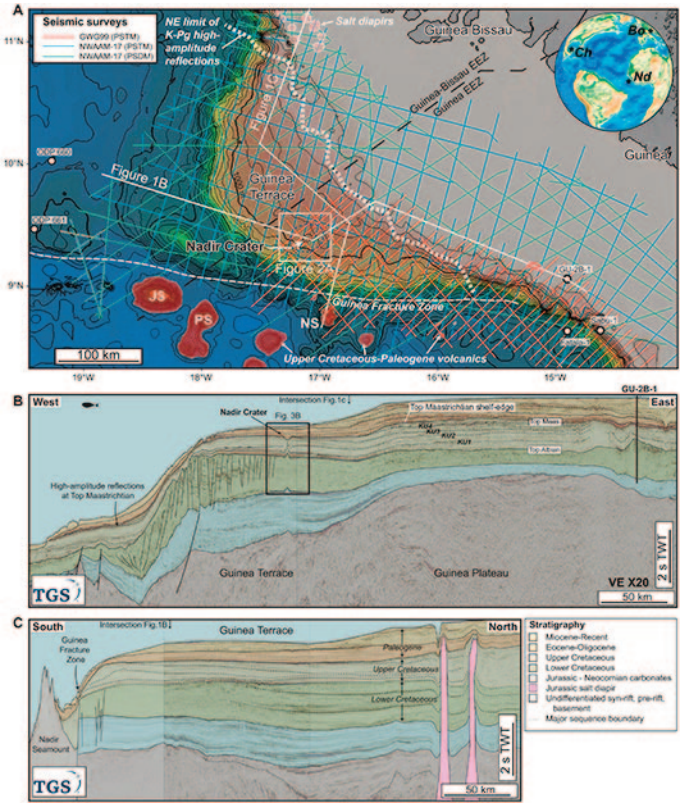
Dr Uisdean Nicholson, a geologist at Heriot-Watt University in Edinburgh, found the crater by examining seismic reflections from the seabed of the Atlantic.

"I've interpreted lots of seismic data in my time but had never seen anything like this. Instead of the flat sedimentary sequences I was expecting on the plateau, I found an 8.5km depression under the seabed, with very unusual characteristics. It has particular features that point to an asteroid. It has a raised rim and a very prominent central uplift, which is consistent for large impact craters.

It also has what looks like ejecta outside the crater, with very chaotic sedimentary deposits extending for tens of kilometres outside of the crater. The characteristics are just not consistent with other crater-forming processes like salt withdrawal or the collapse of a volcano."

Nicholson has named it the Nadir crater, after a nearby seamount. It is buried some 300 metres plus below the seabed and the team believes the crater was caused by a 400m-wide asteroid colliding with Earth around 66 million years ago - around the same time that the Chicxulub asteroid hit Earth and wiped out the dinosaurs.

But they'll need to drill into the seabed and collect samples to prove their theory. If confirmed, the crater will be one of less than 20 confirmed marine impact craters found on Earth.



Location map for the Nadir crater and also two others of similar age. Below are two of the seismic traces.
(Image: Courtesy of Science Advances)

The seismic data also indicates that the sediments impacted by the asteroid correspond with the Cretaceous-Paleogene boundary. However, there is some uncertainty because of the resolution of the seismic data.

If confirmed, this is the same age as the dinosaur-killing Chicxulub crater. The team believes the asteroid that created the newly discovered Nadir crater could have formed by the break-up of a parent asteroid or by a flux of asteroids at that time period.

Dr Sean Gulick, an impact expert at the University of Texas at Austin, said: "The Nadir Crater is an incredibly exciting discovery of a second impact close in time to the Cretaceous–Paleogene extinction.

"While much smaller than the extinction causing Chicxulub impactor, its very existence requires us to investigate the possibility of an impact cluster in the latest Cretaceous. Despite four billion years of impactors hitting Earth, only 200 have been discovered. It is thus exciting news whenever a new potential impact is discovered, especially in the hard-to-explore marine environment."

The discovery is reported in Science Advances.

Additional information can be found on the Heriot-Watt University website:
https://www.hw.ac.uk/news/articles/2022/five-mile-asteroid-impact-crater-found-below.htm

You can also find out more on the Science Advances website:
https://www.science.org/doi/10.1126/sciadv.abn3096

in-house

This summer why not drop in to our shop and grab yourself a bargain?

We guarantee that if you call into our shop you'll always get our best prices! Why is this? It's because we don't have to pack and then post your items, adding to the profits of Royal Mail.

Off the shelf prices for BGS maps start at just £12.00 - that's a saving of £1.00 from our mail order prices. On many items your saving will be at least 10% - possibly even more. There are also some 'one off' bargains and end of range items.

See the panel below for our opening hours. We're on the northern outskirts of Sheffield, just 5 minutes from M1 Junction 35.

As university's get back into their fieldwork, prepare for shortages and yet more price rises...

We are continuing to experience high demand for some items of equipment, especially notebooks and compass clinometers. At this time of year we normally get universities ordering for the coming year's fieldwork. However, over the past two years during Covid, demand has been suppressed - but it has returned this year with renewed vigour.

All this is playing into an international market that is both price and supply volatile. If we have the item in stock, no problem, but if we are awaiting new supplies both price and delivery may be an issue.

Grab an achromatic lens whilst you still can...

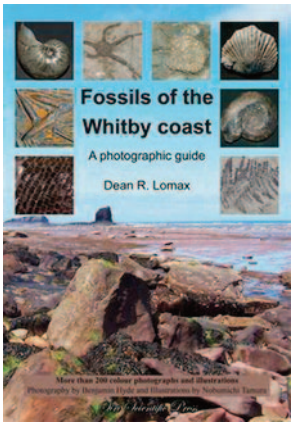
We've always been able to rely on steady sales of top quality Japanese Ruper style lenses. These small quality products are fitted with lenses that reduce the achromatism (colour fringes) that cheaper lenses give.

Retailing for around £40.00 including VAT these lenses offer good value, however we've just been informed by our supplier that we now have the last stocks as they have gone up so much that they are no longer going to import them into the UK.

Take our advice - grab one whilst you still can!

A photographic record of Whitby fossils...

We've had this book brought to our attention - it's not new but is good.



Softback, an excellent guide to fossil collecting in the Whitby area of Yorkshire.

£15.99 inc. postage
Buy online or ring us on:
0114 245 5746

Down to Earth readers welcome!
Just 5 minutes off M1 Jn 35 N. Sheffield

GEO SUPPLIES LTD.
49 Station Road, Chapeltown S35 2XE
Tel: 0114 245 5746 • www.geosupplies.co.uk
Open 8.30-4.00 weekdays and 9.30-1.00 Saturday

Callers always make savings!

get Down to Earth regularly...

If you've enjoyed reading this Down to Earth extra, you'll love our quarterly Down to Earth! It's a 32-page quality magazine in full colour that's packed with up to the minute geological news and articles. You can get your hands on this either in print or electronic formats. Why not request a FREE sample electronic copy of the current issue?

You can subscribe now for the remainder of 2022 and 2023 for just £18.00 for printed copies or £10.00 for it as pdf files, direct to your email. To subscribe, go to: www.geosupplies.co.uk or ring us on 0114 245 5746.

Down to Earth is published quarterly. Subscribe now for 2022/3 for just £18.00 in the UK. We'll send you the next 6 issues, to the end of 2023 and 6 back issues from 2021/2. For an additional £25.00 (UK only) we'll send you a parcel of back issues - around 50! Alternatively, take a 2022 e-subscription for £10.00. Additionally, all subscribers will get DtoE extra FREE each month.

HOW TO SUBSCRIBE - Go online at: www.geosupplies.co.uk • Tel. 0114 245 5746 and quote any major card • or send a cheque (payable to Geo Supplies Ltd.) to: 49 Station Road, Chapeltown, Sheffield S35 2XE

Down to Earth
'Earth science learning for all'

The learning zone

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

Ocean floor basalts on the west coast of Fuerteventura - more than 180 Ma. (Image: Chris Darmon)

We now have the final programme for field trips in 2023. Sadly, La Palma isn't a runner due to a lack of direct flights. We have reinstated Fuerteventura.

Brochures for most 2023 trips, are now on our website and we are accepting bookings. Iceland is already close to being full and several other trips are booking well. Our Autumn line up has been completed with the addition of Berwick which was postponed from 2022 due to a booking mix up.

To view a 2022 or 2023 brochure, go to our to website at:
www.geosupplies.co.uk or Tel: 0114 245 5746

Booking forms are only available direct from us.
Email: downtoearth@geosupplies.co.uk

Autumn 2022 & 2023...

- Minehead, Somerset - September 14-21
- Yorkshire Coast - October 10-15

2023

- Fuerteventura, February 27-March 6
- 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
- Summer School Sunderland - August 12-19
- Berwick & the Borders - September 6-13
- Isle of Man, September 23-30
- Guernsey, Channel Isles, October 7-14
- North Norfolk Coast, October 18-23

Early booking is advised, especially if you require a single room

Brouse online at www.geosupplies.co.uk or ring us on 0114 245 5746
Geo Supplies Ltd 49 Station Road, Chapeltown, Sheffield S35 2XE

If you haven't joined one of our residential field trips before, what can you expect?

- *Our residential field trips are suitable for adults of all levels of interest and geological knowledge.*
- *Our trips are friendly and informal and mainly comprise 15-20 people. Overseas trips are usually larger.*
- *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

The 2023 Residential Trip programme - already to rock and roll..

Bookings are coming in thick and fast for our exciting 2023 programme and Iceland has just two vacancies, both for single people who are willing to share a twin room. We can accommodate a single male and a single female.

We are currently working on the final programme for the Summer School in August 2023 in Sunderland and that will complete our line up for next year.

Fuerteventura, Canary Islands (7-nights) - February 23-March 2
Having abandoned our attempt to get to La Palma due to a lack of flights we've switched back to our original plan Fuerteventura. This is one of the lesser known Canary Islands and none the worse for that. What it lacks in present day volcanic activity it makes up for in fine scenery and rocks that date back to the Jurassic! On Fuerteventura we get a glimpse of the seamount stage in the building of the Canarian platform as well as the later stages of Miocene and Pliocene volcanics and associated sediments. This is a 'must' for anyone who has never explored this part of the Canaries.

Fabulous basalt columns on the rugged Fuerteventura coastline are just a part of the varied geology of this island.

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 Snaefelsnes 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 Vatnajokul Glacier. The highlight of the trip is a 2-night stay on the Westman Islands, that were almost destroyed in a 1973 eruption. ***This trip is now almost full - if you want to join us ACT 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!

Pillow lavas at Downan Point, a key part of the evidence for an Ordovician ophiolite complex in Southwest Scotland

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.
We are ready to take bookings for this trip NOW!

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. This 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!
Folded rocks and fabulous coastal scenery at Hartland Quay

Summer School, Sunderland (7-nights) - August 12-19 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.
Brochure and booking form are due shortly.

Berwick & the Borders September 6-13
As we were unable to run this trip in September 2022, we've put it into the 2023 programme. 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. We already have several bookings for these rearranged dates.
We are ready to take bookings for this trip NOW!

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

A Carboniferous dyke at the southern tip of the Isle of Man (Image: Manxgeology.com)

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 bares 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 stayed in twice before. It's on the NW coast in a quiet bay.
We are ready to take bookings for this trip NOW!

The North Norfolk Coast (7-nights) - October 18-23
There's not a finer place to round off our 2023 season than a visit to the North Norfolk resort town of Cromer. It gives us access to a unique coastline that takes in the Cretaceous rocks of Hunstanton, as well as some superb early Quaternary sediments that include a visit to West Runton that has yielded the most complete mammoth skeleton yet found anywhere in the UK.

This is also the best area in the UK to see evidence of the 450,000 year old Anglian glaciation with features that include ice wedges and an excellent esker. Finally, any visit would not be complete without taking a look at the rapidly disappearing coastline and how we are seeking to manage coastal erosion. All this and a great hotel right on the seafront!
We are ready to take bookings for this trip NOW!

Now it's over to you! We're happy to discuss any trip with you and to guide you in your choice. Advice is just an email or a telephone call away!

To obtain a booking form for any of these trips, please, email us at: downtoearth@geosupplies.co.uk or ring us on: 0114 245 5746.

View a brochure at: www.geosupplies.co.uk or contact us.

Autumn Zoom Courses...

We will be commencing our Autumn Zoom courses in the second half of October with the courses continuing until February of 2023.

We welcome everyone onto our Zoom courses whether you have studied with us before or not! If you'd like to chat with your tutor Chris Darmon before enrolling he'd be pleased to hear from you. Just call him during office hours on 0114 245 5746 or email: downtoearth@geosupplies.co.uk

Pretty colours make great geology! (Image: Wikipedia)

Yorkshire Geology (11-weeks) commencing October 24
This course examines the geology of Yorkshire from it's earliest rocks in the Ordovician through to the most recent glacial deposits of the Quaternary. It's an interesting journey through time that takes us from one bit of stunning scenery to another. There's the Carboniferous limestones of the Dales, the Millstone Grits of the Pennines and the Jurassic Coast of Whitby and Scarborough.

Cost: *Eleven hour-long Zoom sessions with electronic background papers £50.00 for one person or £70.00 for 2-people studying together. Printed background papers cost an additional £20.00. Zoom sessions are on Mondays at 2.00pm or 7.00 pm (it's your choice).*

Fossils for all (11-weeks) commencing October 27
After an introduction to fossils and fossil preservation this course goes on to examine a wide range of fossil groups. We'll be covering trilobites, ammonites, graptolites, corals and many more, including dinosaurs. This course is aimed at a wide audience, so even if fossils aren't normally of great interest to you, why not give them a try?
Cost: *Eleven hour-long Zoom sessions with electronic background papers £50.00 for one person or £70.00 for 2-people studying together. Printed background papers cost an additional £20.00. Zoom sessions are on Thursdays at 2.00pm or 7.00 pm (it's your choice).*

Steps Towards the Rock Face (12-units) commencing at any time to suit you.
This is our course that's designed as an introduction to all things geological! It provides you with a grounding in all the major branches of the subject including minerals, sedimentary, igneous and metamorphic rocks, fossils, plates tectonics, Earth chemistry and the history of the British Isles.

The course is run via a series of Units and associated Tasks (and answers) that you can access at your own pace. You have access to tutorial support online and via our learning site Moodle for a period of six months - all included in the price!

Cost: *Electronic materials £50.00, printed papers £75.00*

Autumn Virtual Day Schools...

Our virtual day schools take place on Wednesdays and commence at 10.30. They comprise three short Zoom sessions through the day, ending at no later than 4.30. They give you time to work on material at home and then to join in with a your fellow learners on Zoom. Cost: £20.00 per person or £25.00 with printed papers.

September 28 ***"The Lewisian rocks of North West Scotland"***
The Lewisian Gneisses are Britain's oldest rocks, dating back more than 3 billion years. This day school examines what we now know about these rocks and the forces that formed them.

October 19 ***"Charles Lapworth - an extraordinary geologist"***
Charles Lapworth was a self taught geologist who went on to become head of department at Birmingham University. Along the way he sorted out the geology of the Southern Uplands, names the Ordovician and got the Northwest Highlands of Scotland right!

November 2 ***"Arthur's Seat volcano in Edinburgh"***
It's probably Britain's most famous volcano yet it probably lasted a very short time. Discover much more about this volcano that sits on the doorstep of the Scottish Parliament.

November 16 ***"When deserts covered much of the British Isles"***
Of all the ancient environments that have existed in Britain;s past, it's the Permo-Triassic deserts that present us with so many mysteries. Why are the rocks red? What are the trademarks of an ancient sand dune? What lived at the time?

November 30 ***"George Barrow and his metamorphic zones"***
George Barrow set about trying to understand metamorphic rocks across large swathes of Scotland. The zones he gave us still provide the basis on which we classify and recognise those rocks to this day.

December 14 ***"Mount Vesuvius"***
Of all the volcanoes that have existed in the Mediterranean, none is more enigmatic than Vesuvius. It is a dramatic past, but perhaps its best 'fireworks' are still to come! We promise you a 'Christmas cracker' of a day as we explore Europe's most famous volcano.

An evening in...

A series of evening talks with background materials. Enrol for them all, or just the odd one or two, it's up to you! Wednesday evening at 7.00pm via live Zoom. Cost: £10.00 each or £32.00 for all 4.

October 26 ***"An evening in El Hierro"***

November 9 ***"An evening in the Himalayas"***

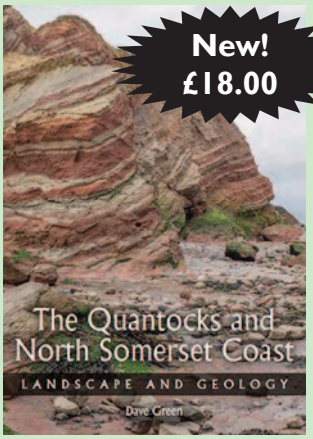
November 23 ***"An evening in the Rockies"***

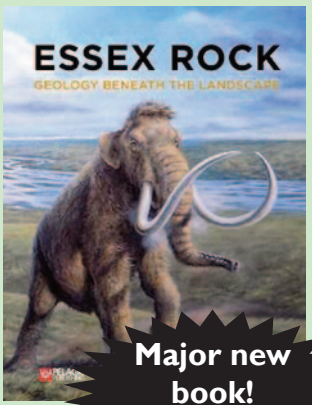
December 7 ***"An evening in the Bahamas'***

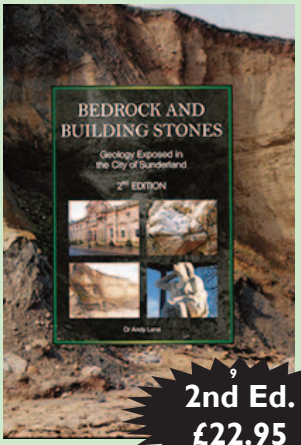
To book or find out more email us at: downtoearth@geosupplies.co.uk or ring us on: 0114 245 5746

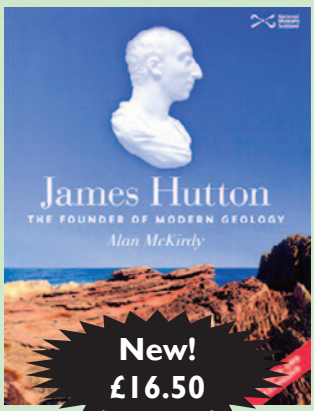
GEO Featured books for September 2022

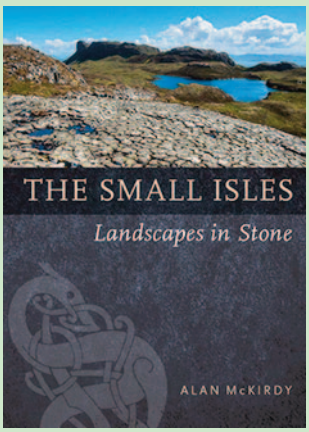
In each issue we are pleased to be able to introduce you to a range of featured books. Where they are being offered at reduced prices, these will be current to the end of September 2022 provided that stocks are available. Please note, all prices include UK postage.

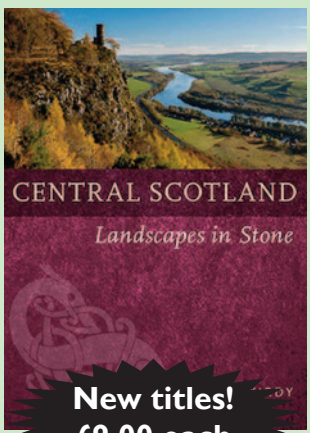


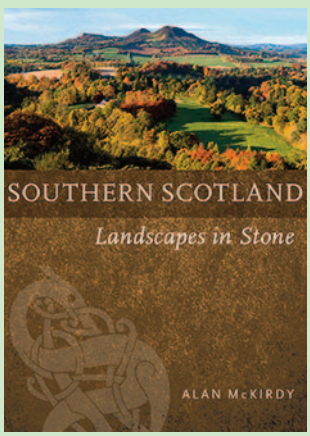












The book of the year!

Buy all 3 titles for £25.00!

Order online at www.geosupplies.co.uk or ring us on 0114 245 5746
Geo Supplies Ltd 49 Station Road, Chapeltown, Sheffield S35 2XE