



THE GEOLOGICAL SOCIETY OF GLASGOW

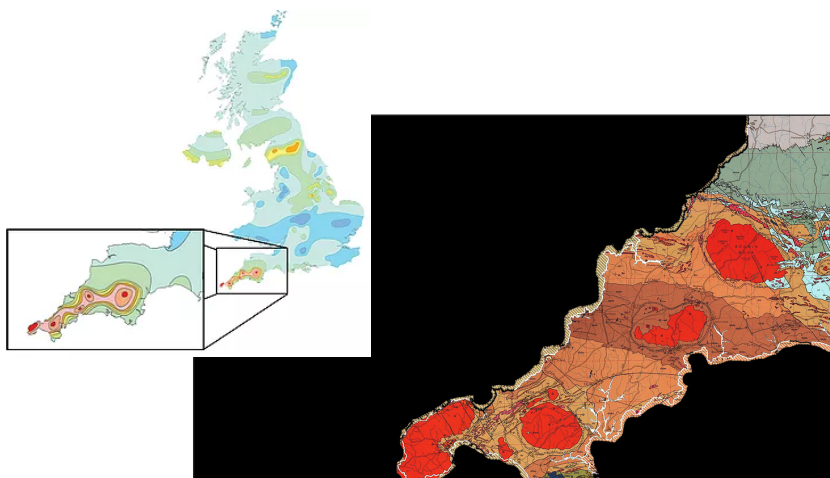
Registered Scottish Charity No. SC007013

President: Dr. Neil Clark

www.geologyglasgow.org.uk

September 2019

162/1



Heat flow map of the UK and a geological map of Cornwall showing areas of granite intrusions in red. Our November talk will be by Dr Peter Ledingham who will explain how the United Downs Deep Geothermal project is exploiting the energy reserves of these granites.

In this newsletter:

- Introduction to new session's lecture series
- Lecture details for October, November and December
- Membership Survey
- Geology Courses at Glasgow University
- Fossil Grove update

Introduction to the Lecture Programme 2019-20 (Session 162)

Welcome to Session 162! Hopefully we have arranged a set of lectures with different themes and topics that has something for everyone. Things may change but as we go to press this is what I hope will unfold.

First up on the **10th October** is Dr. Nick Schofield from Aberdeen University who is an expert in hydrocarbon exploration in volcanic effected provinces - particularly west of Shetland and Rockall.

On the **14th November** we welcome Peter Ledingham who is Managing Director of Geoscience Ltd. He is leading the development of the United Downs Deep Geothermal Project in Cornwall.

Our speaker for the **12th December** lecture will be Professor Gawen Jenkin from Leicester University who will give us a very topical talk on sustainable mining, particularly for gold. (This will be preceded by the usual **brief** AGM).

Into the New Year. On the **9th January** John Brown, a senior engineer with Arup in Edinburgh, will talk about the engineering geology of the Queensferry Crossing



We welcome Amanda Owen on **February 13th**. Amanda is a sedimentologist here at Glasgow University and her talk is entitled "Understanding the spatial variability of sedimentary deposits".

We will be hosting this year's Joint Celebrity Lecture on **12th March** with colleagues from the Edinburgh Geological Society. Professor Andrew Scott, from Royal Holloway College, University of London is an expert on the very topical subject of fire and the subject of his talk is the title of his book 'Burning Planet. The story of fire through time'.

On the **9th April** our speaker will be Dr Jenny Collier from Imperial College when she will tell us all about the breaching of the Dover Strait and the creation of "Island Britain".

Finally don't forget the usual Members' Night on **14th May**.

David Webster meetings@gsocg.org



Lecture meetings

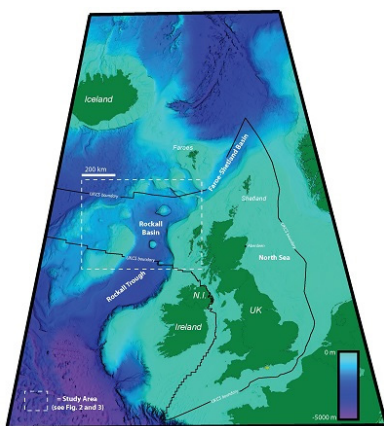
All lectures are held in the *Gregory Building, University of Glasgow, Lilybank Gardens, Glasgow G12 8QQ* (unless otherwise noted). Meetings commence at 7.30 pm.

Lectures usually last about an hour plus there is some time afterwards for questions and a vote of thanks. Tea and Coffee are then served upstairs where there is a chance to socialise, browse the books and publications for sale and talk to the speaker in a less formal setting.

Thursday 10th October 2019

Dr. Nick Schofield, University of Aberdeen

“Hydrocarbon Exploration in Volcanic Effected Basins”



The UK Rockall Basin forms part of the NE Atlantic margin and is truly a frontier basin. With only 12 exploration wells, all drilled between 1980 and 2006, it is one of the most underexplored areas of the UK Continental Shelf (UKCS). Of the 12 wells, 11 were dry holes and one, the Benbecula (154/01-1) well, discovered a sub-commercial gas accumulation. This low historic success rate, together with the harsh NE Atlantic operating environment and the lack of infrastructure have created a negative view of the exploration potential of the UK Rockall Basin. Exploration in the basin is perceived by the industry at large to be high risk and low reward. However, considerable advances

have been made in the understanding of Atlantic Margin geology since the last well was drilled in the Rockall Basin. Re-evaluation of drilling results in light of the current understanding of NE Atlantic Margin geology reveals that previous drilling efforts may have been hampered by a misunderstanding of the geological development of the basin and that viable untested plays may exist within the basin

Further reading: see <http://www.rockallbasin.com/>

Nick Schofield is a Senior Lecturer in Igneous and Petroleum Geology. He specializes in the seismic and field interpretation of intrusive and extrusive sequences in volcanic terranes and their interaction with hydrocarbon systems.



Thursday 10th November 2019

Peter Ledingham, Geoscience Ltd.

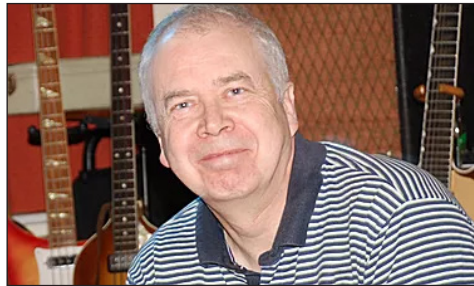
“The United Downs Deep Geothermal Power project”

The United Downs Deep Geothermal Power project is the first development of its kind in the UK. It is located near Redruth in west Cornwall and is part-funded by the European Regional Development Fund and Cornwall Council. Two wells have been drilled to intersect a target fault structure that, it is hoped, will provide enough natural permeability to allow circulation between the wells and the generation of between 1 and 3MWe.

Drilling began in November 2018 and was completed at the end of June 2019. The production well reached a depth of 5,275m (MD) and the injection well 2,393m (MD), and the project is now in its evaluation phase.

Peter will outline the geothermal resources in Cornwall, describe the development of the UDDGP project and give an update on progress.

Peter graduated in mining engineering from Camborne School of Mines in 1980. He is a founding member of Geoscience Ltd., which he joined following six years at the School of Mines engaged in the Hot Dry Rock geothermal research project. He has more than 30 years experience in geothermal engineering, well testing, reservoir engineering, experiment design and project management. He has worked



for the European Commission as an expert evaluator of geothermal project applications since 2007. He is a Director of Geothermal Engineering Limited, who hope to develop the first commercial geothermal power project in the UK. Away from the office Peter enjoys travel and sport, spending time with his children and grandchildren, and music. He is recently retired as the drummer in a Beatles tribute band.

Background Reading: see website at <https://www.uniteddownsgeothermal.co.uk/>

Thursday 12th December 2019: AGM followed by:

Professor Gawen Jenkin, University of Leicester

“Green gold? How to get metals out of the ground in a “green” and sustainable way”

We need mineral resources to underpin a good quality of life for the still-expanding population of planet Earth. Although we might ultimately develop a “circular economy” where all resources are recycled, this is a long way off and we will need to continue to extract minerals for many years to come. However, the mining industry is under a

variety of pressures, both geological and anthropogenic, which make it ever harder to operate economically. The industry needs to be moving to more sustainable operations, in particular reducing carbon emissions and ensuring it earns the consent of the local and global communities – the so called Social Licence to Operate.

At Leicester, we have developed an exciting breakthrough technology using ionic liquids that has the potential to revolutionise the processing of mineral ores to metals in a green and environmentally-friendly way. We have the potential to replace the use of cyanide in industrial gold extraction and the uncontrolled use of mercury by artisanal gold miners – one of the biggest sources of mercury contamination on the planet. Ultimately, the mine of the future, might not involve a hole in the ground or people going underground and have a considerably smaller impact on our environment.

The talk is aimed to be accessible for non-specialists



Gawen grew up in Cornwall surrounded by the legacy of what was once one of the richest mining areas in the world, and was fortunate to be able to study A-level Geology at the Humphry Davy Grammar School, Penzance. After his Geology degree in Nottingham he did his PhD in Glasgow on ancient geothermal systems in Connemara. He liked Scotland so much he stayed as a postdoc/research fellow for another nine years working at the Scottish Universities Research and Reactor Centre on isotope geochemistry and its application to mineralising and metamorphic processes.

Taking up a lectureship at Leicester in 1997 Gawen has taught Mineral Deposit Geology and Genesis and in 2009 was awarded a Distinguished University Teaching Fellowship "In recognition of his inspiring and imaginative teaching and his involvement in national initiatives which promote student learning in Geology." He has been Schools Liaison and Student Recruitment Tutor for Geology since 2003 and estimates he has given more than 300 talks on Open Days and school visits. Recently he has been an adviser to the exam boards for the new Geology A/AS and GCSE qualifications.

His research in geochemistry has continued on areas as diverse as arsenic in human toenails (and in earthworms), the "Snowball Earth" in Ethiopia, and natural CO₂ sequestration, as well as gold mineralisation in Scotland and the Solomon Islands and copper in Cyprus. Recently he has developed a new field of mineral processing in collaboration with Leicester Chemistry which forms the topic of this talk.

Background reading: Abbott AP, Al-Bassam AZM, Goddard A, Harris RC, Jenkin GRT, Nisbett F & Wieland M (2017). Dissolution of Pyrite and other Fe-S-As minerals using Deep Eutectic Solvents. *Green Chemistry*, **19**, 2225-2233, DOI: 10.1039/C7GC00334J

News and Topical Articles

Doors Open Day

As well as all the wonderful buildings open during the week of the Doors Open Day initiative there are some geological events you might be interested in going to see:

12th September 10-12. Building Stones of Central Glasgow. See the city from a new perspective on this tour exploring the geology and origins of the rocks cladding many of Glasgow's central buildings. Much of the stone used in the construction and cladding of the buildings in Glasgow was initially quarried in and around Glasgow before improvement in transport brought rock from further afield. This walk will discuss where the rock came from and also the geological age and environment which produced these rocks. Everyone on the tour will receive a booklet describing the walk. Meet at the Scott Monument in George Square.

22nd September 12-4 Fossil Grove, Victoria Park. Guided tours of the Fossil House and quarry area which houses a unique collection of fossil trees, formed 325 million years ago. This once vast forest eventually became the coal that powered Glasgow's industry. Marvel at this piece of ancient history in the beautiful surroundings of Victoria Park. No booking required.

Arran Geofest 2019

The annual Arran Geofest runs from 13-15 September this year.

email info@arrangeopark.co.uk or give them a call at 01770 830680.



Fossil Grove Update

Historic Environment Scotland have devoted much time and resources to aid our understanding of the state of the fossils and their conservation strategy. The Trustees are committing some of their funds to undertake priority repairs to the lighting, drainage and ventilation - which hopefully will be undertaken very soon and reduce the water damage.

Friends of Victoria Park are working hard to create a fernery in the old quarry adjacent to the Fossil House. There's a new bridge too.



Frame from time-lapse camera showing areas of condensation drips (red) and drips from roof leaks (yellow). Photo courtesy of Historic Environment Scotland.

Membership Survey

We want to know what you think of the Society!.We have set up an anonymous survey and hope that as many members as possible complete it. **Deadline end-October.**

About you

1. How would you describe your geological knowledge?

Beginner	Some knowledge	Good appreciation	Geology degree	Post-graduate geology qualification
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. How long have you been a member of the society?

Less than a year	One to Five years	Five to Ten Years	Ten to Twenty years	More than 20 years
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. What is your age group?

<input type="radio"/> 18-24	<input type="radio"/> 45-54
<input type="radio"/> 25-34	<input type="radio"/> 55-64
<input type="radio"/> 35-44	<input type="radio"/> 65+



Geological Society of Glasgow

How we communicate with you

4. How do you currently receive the newsletter?

☐ By post

☐ by email

5. What is your general impression of the newsletter?

<input type="radio"/> meets all my needs	<input type="radio"/> needs improving
<input type="radio"/> good, but could be better	<input type="radio"/> no good
<input type="radio"/> its ok as it is	

Any comments on the newsletter

6. How interested are you in the email we send out to members each month?

- ☐ Extremely interested ☐ Not so interested
- ☐ Very interested ☐ Not at all interested
- ☐ Somewhat interested

Any comments specific to the monthly email



Geological Society of Glasgow

The Lecture Programme

7. How often do you attend the society's lectures?

Never	Rarely	About once per session	Several in a session	Every one possible in a session
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. Does the subject of the lecture influence your choice of whether you attend?

- ☐ Always ☐ Rarely
- ☐ Usually ☐ Never
- ☐ Sometimes

9. How would you describe the general standard of the lectures?

- ☐ Too basic ☐ A bit too technical sometimes
- ☐ A bit simplistic ☐ Mostly far too technical
- ☐ Generally about right

Any general comments on the lecture programme?

10. Do you think the Society should organise some lectures aimed at the general public with little geological knowledge?

- ☐ Strongly agree ☐ Disagree
- ☐ Agree ☐ Strongly disagree
- ☐ Neither agree nor disagree

Are there any topics or specific speakers you would like?



Geological Society of Glasgow

The Excursions

11. How often to you go on the day excursions each season?

- ☐ Never ☐ Most of them
- ☐ Rarely ☐ All of those I possibly can
- ☐ Sometimes

12. Does the location of the excursion influence your choice of whether you attend?

- ☐ Always ☐ Rarely
- ☐ Usually ☐ Never
- ☐ Sometimes

13. How would you describe the general standard of the day excursions?

- ☐ Too basic ☐ Too technical sometimes
- ☐ A bit simplistic ☐ Mostly over my head
- ☐ About right

Any comments on the day excursions?

The Residential Excursion Programme

14. How many of the residential excursions do you attend each season?

- ☐ None ☐ Most
☐ A few ☐ All
☐ Some

15. Does the location of the excursion influence your choice of whether you attend?

- ☐ Always ☐ Rarely
☐ Usually ☐ Never
☐ Sometimes

16. How would you describe the general standard of the residential excursions?

- ☐ Too basic ☐ Too technical sometimes
☐ A bit simplistic ☐ Mostly over my head
☐ About right

Any comments on the residential excursions



General Comments

17. Any general comments on how the Society could be improved?

Notices

Subscriptions

Annual subscriptions for Session 162 are due from 1 October, 2019 at the following rates:-

Ordinary Membership	£25	Includes Scottish Journal of Geology
Associate Membership	£12.50	Eligible to those over 60, or spouses of Ordinary Members, or members of the Edinburgh Geological Society.
Junior Membership	£6.25	Eligible to those under 25, full time undergraduates, or recent (4 years) graduates. Scottish Journal of Geology is available on payment of a £6.25 supplement.

Method of Payment

Cheques, made payable to **Geological Society of Glasgow**, should be sent to the Membership Secretary unless a Bankers Standing Order has been signed. Please indicate the Member for whom payment is being made if not apparent from the cheque e.g. a cheque from 'Anyone' paying for a member 'Someone else'. Let the Membership Secretary know if you wish to pay your membership subscription by use of a bank transfer.

Members who currently pay by cheque

Please note that the membership card enclosed with this newsletter indicates our expectation that you intend to renew your membership subscription for Session 162. If you currently pay by cheque then please remember to send in your subscription to the Membership Secretary for Session 162.

If you would like to make future payments by Bankers Standing Order (**this is the preferred method of payment from the Society's point of view**), please advise the Membership Secretary when you send in your cheque for this Session. We will send you a Bankers Standing Order form so you can arrange to make future payments via your bank. Alternatively you can download a Bankers Standing Order form from the GSG website and forward the completed form to the Membership Secretary.

Members who currently pay by standing order

If you have an existing Bankers Standing Order payment should happen automatically on 1st October. However there are still a few members who have not notified their bank to update their existing Bankers Standing Order when we increased membership fees in Session 157.

Address changes

The Society maintains the only mailing list of Society members* and any changes should be communicated to the Membership Secretary.

* Labels for all mailings, including the Scottish Journal of Geology are produced by the Society from the membership record.

Gift Aid

Any subscription / donation made to a charity by an individual paying UK tax can be treated as a Gift Aid. This means that the Society can reclaim the tax you have already paid on amounts you pay to the Society as a subscription or donation. Currently we can reclaim 25p on every £1.00 paid, thus increasing the value of your subscriptions to the Society (e.g. we can reclaim £6.25 for a £25.00 subscription).

Many members have already signed up to Gift Aid which means that we have approximately an additional £900 pa available to support sponsorships that promote and spread interest in geology and geodiversity. Please contact the Membership Secretary if you wish to sign up for Gift Aid or if you are uncertain if you have already done so.

Membership Card

The enclosed card not only gives information on the lecture programme, but can also be used to provide proof of membership when necessary. To validate it you need to add your name and reference number. This number is printed on the mailing label used for this newsletter. The number will also be repeated on the label for the next newsletter or can be obtained from the Membership Secretary.

You can use the card to join the University Library. Proof of identity e.g. photo driving licence, passport, travel card, matriculation card (through an Adult Education Class) will also be required, in addition to the presentation of a membership card for Session 162.

Membership Secretary: Any queries regarding the above can be addressed to: The Membership Secretary: Campbell Forrest, email : memsec@gsocg.org

Courses at the Glasgow University Centre for Open Studies

Evolution of the Earth, life and environments

This is one of a pair of linked courses in Earth Science and is a modified version of the existing full-time undergraduate Earth Science module 1Y. The other course is Introduction to the Composition and Structure of the Earth. The two courses run in alternate years and can be taken in any order. Students who complete both of these courses will be eligible to progress to level 2 Earth Science courses subject to achieving satisfactory grades. This course covers geological surface processes, climate, economic and environmental geology, fossils, geological maps, and the geological history of Britain during the past 3,500 million years..

Dates: Sep 25 2019 - Mar 18 2020

Tutors: Michael Keen, Jonathan Doody, Pamela Rattigan

Geology in the Field

Field studies and examining rocks in the field are the basis of all geology. We will examine the geology and geomorphology of a series of areas within easy reach of Glasgow. There will be five full-day excursions by private car. Walking will generally be easy and no prior knowledge of geology needed.

Dates: May 6 - Jun 1, 2020

Tutor: Michael Keen

Geology and the landscape

This course explores the relationship between the landscape and the underlying geology, considering: surface processes of weathering and erosion; the type of climate; the effects of uplift and subsidence of the Earth's crust; the composition and structure of the rocks themselves; and the evolution of the landscape through time. Specific examples such as glacial terrains, deserts, and volcanic landscapes will be explored. The landscapes of Scotland will be described and we will consider the reason why mountains such as the Scottish Highlands exist. The course will be delivered through both lectures and practical classes.

Dates: Sep 26 2019 - Mar 19, 2020

Tutor: Michael Keen

Introducing Geology

Geology is the study of our planet, Earth. Earthquakes, volcanoes, climate, rivers, glaciers and life have all shaped the Earth during its 4.5 billion year history. We will examine these processes with examples from around the globe and you will get to explore the intricate and beautiful world of rocks, minerals and fossils. Scotland has some of the most diverse and accessible geology in the world, and you will see many examples in our classes. By the end of the course you should have achieved the basic skills to start exploring geology yourself.

Dates: Sep 25 2019- Nov 27 2019

Tutor: Simon Cuthbert

Identifying and managing geological challenges in civil engineering

This course will introduce the role and responsibilities of an engineering geologist working in the civil engineering industry. You will find out how engineering geologists apply their geological knowledge, skills and experience on civil engineering projects to identify, investigate and risk assess geological and geotechnical hazards and how they work with other specialist civil engineering colleagues to reduce or eliminate geological risks.

Date: Sat Feb 8 2020

Tutor: TBA

For more information and to book see: www.gla.ac.uk/study/short/book/category/167

Calling all Poets!

Heriot-Watt University is offering a one-week poetry residency to be held in the academic session 2019-2020.

This is an exciting opportunity for a talented poet to spend time at Heriot-Watt's beautiful Edinburgh Campus and share the University's work through poetry.

This is a joint initiative with the School of Energy, Geoscience, Infrastructure and Society (EGIS), alumni association the Watt Club, the Intercultural Research Centre (IRC), the Lyell Centre and partners British Geological Survey (BGS).

The poet will be expected to review aspects of the school, University and Lyell geoscience activities, participate in a geoscience field trip, gain perspective on HWU heritage and global impact, be involved with student and staff poetry-in-practice sessions, give a talk to the alumni association and be suitably inspired to write a number of poems celebrating the University's work in this area.

Remuneration will be £1200 plus reasonable expenses for a week residency in Edinburgh. For further information or to express interest, please contact Professor Patrick Corbett, University Poet 2019. Applications should include a CV and should be made by 30 September 2019.

<https://www.hw.ac.uk/news/noticeboard/2019/applications-for-poet-residency-open-now.htm>

Society website upgraded

The society's website has been upgraded to make it more readable on different sizes of display. New features include an interactive geological map and an events calendar.

It now works better on devices like smartphones, tablets etc. Give it a look!

go to: <https://gsocg.org/>

AGM Notice

The AGM of the society will be held, as usual, immediately prior to the December lecture on Thursday 12th December at 7:30. Annual reports from Council officers will be presented along with the annual accounts of the society. Election of officers will also feature. We are always looking for members to join the Council - as ordinary members so if you are even remotely interested please contact any Council member. The next newsletter (due in mid-November) will contain all the reports and papers.

Society Website and Facebook Page

Don't forget that the website and facebook pages contain up-to-date news and events as well as any last-minute changes to lecture programmes, excursions etc..

Mailchimp

We use the Mailchimp app to send out news updates and links to the newsletters by email. If you currently receive the newsletter by email link and would prefer a printed copy then please let the membership secretary know. Likewise if you get a printed copy but would prefer an electronic (pdf) version. You you are on the email list you can unsubscribe at any time by clicking on the link in the last email you received, and likewise if you currently don't get emails from the society but would now like to then please let Campbell know.

Events from other geological societies

Edinburgh Geological Society: www.edinburghgeolsoc.org

Wed 9th Oct:

Wed 23rd Oct: see website for details

Wed 6th Nov:

Wed 20th Nov:

Aberdeen Geological Society: www.aberdeengeolsoc.org.uk

No information to date, see website for updates

Highland Geological Society: www.spanglefish.com/highlandgeologicalsociety

9th October - Adventures in the beauty of rocks, Prof. Gordon Walkden, Professor Emeritus

6th November - An introduction to the glaciation of the Inverness area, Jon Merritt, BGS

11th December - Giant zircon crystals from the Scottish Lewisian: new insights from old rocks, Dr John Faithfull, Hunterian Museum, University of Glasgow

Articles for the Newsletter:

We would like to include short topical article(s) in each Newsletter. If you have news of a recent event or discovery, opinions on geological matters, or wish to let people know about aspects of geology in the Glasgow area or the wider world, then please send your article to the Hon Secretary.

The Newsletter of the Society is published four times each session. The September issue contains an overview of the session's lectures with details of the autumn lectures. The November edition includes the AGM papers, officers' reports and details of the spring lecture programme. In February we publish the excursion programme and a final edition in April contains any updates on the excursion programme and information about Members Night.

Hon. Secretary: Walter Sample

email: sec@gsocg.org

Newsletter Coordinator: David Webster

email: meetings@gsocg.org