THE GEOLOGICAL SOCIETY OF GLASGOW

Registered Scottish Charity No. SC007013

President: Dr. Jim Morrison

www.geologyglasgow.org.uk

April 2017 **159/4**

© D Webster

Basalt columns near the Giant's Causeway. Come on the Antrim Excursion in September to see more!

In this newsletter:

- Lecture for April
- Member's night
- Excursions - Reminder
- Geological Society Library

Lecture meetings

All lectures are held in the *Gregory Building, University of Glasgow, Lilybank Gardens, Glasgow G12 8QQ* (unless otherwise noted). Meetings start at 7.30 pm. For more information contact the Meetings Secretary, David Webster: meetings@gsocg.org

PLEASE NOTE THAT SOME EDITIONS OF THE LAST NEWSLETTER CONTAINED AN INCORRECT DATE FOR APRIL'S LECTURE. IT IS ON THE 20TH APRIL NOT THE 13TH!. APOLOGIES FOR THE ERROR.

Thursday 20th April 2017

Professor John Parnell, University of Aberdeen

An Alternative Fossil Record: Evidence for a Deep Biosphere in Scotland's Past

Scotland has numerous fossil deposits of international importance for their contribution to understanding the evolution of life. However, the story of life on Earth is largely subsurface: only since the evolution of land plants in the last 10% of Earth's history has the locus of biomass shifted to the planetary surface.

Over the last two decades, the life sciences community has recorded a huge body of evidence for a global subsurface biosphere extending today to several kilometres depth. Scotland offers strong potential for the study of this deep biosphere in the geological record, using a range of evidence such as organic biomarker evidence for subsurface biodegradation; isotopic evidence for microbial colonization in the subsurface; metal concentrations in red beds attributed to bacteria; and preservation of microbial filaments in fracture-fill vein minerals. We will look at examples of this evidence from Scotland, and put them in a wider context of planetary habitat.

John is a Professor of Geology at the University of Aberdeen, with over 30 years of research experience on geological organic matter, covering topics from oil generation to the search for life on Mars.

Further reading: McMahon, S. & Parnell, J. 2014. Weighing the deep continental biosphere. *FEMS Microbiology Ecology*, **87**, 113-120.

PLEASE NOTE THE CHANGE OF LOCATION FOR MEMBERS NIGHT - IT IS NOW IN THE ALEXANDER STONE BUILDING IN UNIVERSITY GARDENS (Next to the Queen Margaret Union).

Thursday, 11th May 2017

Members' Night

Short presentations by members of the Society. Members' Night is an opportunity for

Society members to give short presentations or displays about their own interests and adventures in geology. If you are interested in presenting then please contact the Hon Secretary, Walter Semple, either by email at sec@gsocg.org or by using the form at the end of this newsletter.

Summary of Residential Field Excursions 2017

Full details and booking forms were included in the February newsletter. If you missed this then see the website. Further information and booking forms are available from the Residential Excursion Secretary, Maggie Donnelly - email restrips@gsocg.org

Lochaber

Dates: April 21 - April 24 and May 5 - May 8 2017
Leader: Jim Blair, Lochaber Geoconservation

The first weekend is fully booked, but places are still available on the second weekend.

The Causeway Coast and Glens

September 8 - September 11 2017
Leader: Dr Fiona Meade

A detailed itinerary for the excursion is on the Society's website. A booking form is available from Maggie.

Raasay

April 27 – April 30 2018
Leader: Dr Brian Bell

If you are at all interested in this trip, please let Maggie know as soon as possible. More details on the website.

Summary of Day Excursions 2017

Full details were included in the last newsletter and are on the society's website, however for more information and a booking form please contact Roy Bryce, email daytrips@gsocg.org

Saturday 3rd June. Kilewnan Burn and Dunmore from Fintry Village

Joint Excursion with the Edinburgh Geological Society followed by high tea at Fintry

Leader: Dr Con Gillen

Leaving Gregory Building at 9:00, return at 19:00, travelling by coach

Saturday 10th June. Tyndrum / Glen Orchy

We will visit the former lead mine and surrounding area

Leader: Dr Iain Allison

Leaving Gregory Building at 9:00, return at 18:00, travelling by coach

Saturday 24th June. Glasgow Museums Resource Centre

A guided tour of the Glasgow Museums Resource Centre

Leader: Ann Ainsworth

Own transport. Meet outside the GMRC at 10:15 Tour starts 10:30

Saturday 22nd July. Comrie including Highland Boundary Fault and Earthquake House

Contact metamorphism, diorite intrusions, slates, the HBF, earthquakes and cake around Comrie.

Leader: Dr Simon Cuthbert

Leaving Gregory Building at 9:00, return at 18:00, travelling by coach

Saturday 29th July. Little Glen Shee, Dunkeld

Tay Nappe, Highland Boundary Fault and the Highland Border steep belt (or 'downbend'), and the 'flat belt'.

Leader: Dr Con Gillen

Leaving Gregory Building at 9:00, return at 18:00, travelling by coach

Saturday 19th August. Solway Coast - Southerness to Powillimount

Synsedimentary faulting, sedimentary structures and tectonics of the Carboniferous.

Leader: Dr Chris Burton

Leaving Gregory Building at 8:00, return at 19:00, travelling by coach

News and Topical Articles

The Society's Library.

Librarians: Dr. Chris Burton, Mrs. Margaret Anderson.

The Society's Library is a first-class geological resource, one of the best in Scotland, even in these days of internet access to vast amounts of data, and especially for the many publications not yet within the reach of Google!

Our library, open to all members, is thus a valuable doorway into a very wide range of geological information at all levels and on a worldwide basis. Furthermore, we share the space with the geological library of the School of Geographical and Earth Sciences which is also open to us. A small section belongs to the Department of Archaeology which is **not** open to us.

What's in the Library?

Our collection includes books, journals, geological maps and British Geological Survey Regional Guides and Memoirs - covering Scotland, England and Wales and Northern Ireland - all of which can be borrowed.

The Book Collection.

By far the largest proportion of the library is taken up by books arranged in sections by subject and, a technical note here, classified under a modified Library of Congress system, similar to that used by the University Library.

The two general sections are:

Section A. Introductory texts, geological dictionaries, biographies, history of Geology, geomaths, fieldwork manuals, etc.

Section C. This has always been of the greatest interest to members since it contains a vast range of field guides and regional geologies from Scotland to Antarctica - by way of most of the continents - although we are currently short of South America material!

The rest of the sections contain material specific to the subdivisions of the subject, containing detailed works for any who need a wider understanding of particular fields. However, there are always popular works to ease you into the subject and lead you further.

Section E. Geophysics.

Section G. Structural Geology and Tectonics

Section K. Mineralogy - minerals, where to find them and, at a more detailed level, texts on specific mineral groups.

Section M. Geochemistry.

Section P. Petrology - divided into Igneous Petrology, with a subsection on volcanoes, Metamorphic Petrology and Sedimentary Petrology.

Section S. Stratigraphy and Historical Geology, dealing with regions and all the geological periods from the beginning to the present.

Section U. Palaeontology - a very large collection dealing with all aspects of past life from bacteria through plants and animal groups to evolution and ecology.

Section V. Ecology - works on modern ecology and its application to past life and environments.

Section X. Economic Geology, Engineering Geology, Hydrogeology and Petroleum Geology. including some popular works on gold and precious stones.

Geological Survey Section. Here are the Regional Memoirs for the whole of the UK and the Sheet Memoirs for the majority of the Geological Survey One-Inch and 1: 50 000 maps.

The Map Collection.The Society's map collection is housed separately from the Library and contains a comprehensive coverage of onshore and offshore Britain. The map catalogue is on the Society's website. Maps can be borrowed on application to the LIbrarians on meetings nights.

The Journal Collection. The Society subscribes to a number of geological journals, some of which are housed in the library and immediately available. Others, for reasons of space, are housed remotely, but can be accessed on request.

The Library - where is it and how to use it?

The Library is in Room 320 (also labelled as "Conference Room") on the third floor of the Gregory Building and is open on meeting evenings from 7-7.30 pm, when the librarians will be present. On meeting nights signs are put out leading you from the entrance-hall, through the maze of corridors to the library - it's really quite easy!

Once in the Library the layout is as mentioned above and is yours to browse through, with help readily available from the librarians. Up to 10 items can be borrowed for a period of up to three months, subject to recall, and all borrowings must be entered on the Loan Book, together with your name and contact details.

Books belonging to the Society are identified with a library label and/or stamp, and can, if required, be taken into the field - but not, please, immersed in bodies of water! Books belonging to the School - identified by their own stamp - cannot be taken into the field. Book returns are best done on meeting nights, but can be done by post if necessary.

Outside meeting evenings the Library is open - unless classes are being held there - from 9am to 5pm Monday-Friday, when books can be borrowed by entering your details in the Loan Book. This is kept in a wire basket on the shelf above the Mineralogy Section (put it back when you have done with it!).

We do not impose fines on overdue books, but we shall ask for reasons as to why they have not been returned!

The Library Catalogue is currently under revision and thus not currently available.

Chris Burton

Geodiversity and Geoconservation News

Margaret Greene explains what the Strathclyde Geoconservation Group is and what it does.

When we started up over 14 years ago we were called the Strathclyde RIGS Group – RIGS stood for Regionally Important Geological Sites – now the only remaining use of that acronym is the name of my dog.

We are a subcommittee of the Geological Society of Glasgow. There are a number of geoconservation groups around Scotland and we cover what is most of the old Strathclyde Region area. Geoconservation is the term we use to describe our efforts to publicise and conserve geodiversity. Geodiversity is the variety of rocks, landforms, sediments, soils and the natural processes which form and alter them.

This all sounds very dry but our group is far from dry and likes to get involved in all ways of spreading the geology word. You will have seen the information board we put in the lecture room where you go for coffee and a browse round the books. There you will find a number of the leaflets we have produced over the years. Our next ambition is to produce a leaflet on the Necropolis – the quarry there as well as information on the rocks used for some of the monuments.

Earthcaching is a new idea that has come to our attention and we are hoping to

encourage fresh earthcaches . Many of you are probably wondering what this is – you need a smart phone and an app to get into this – so you may be shuddering at the idea, but we need to use any tools we have to spread the geology word. There is an item on earthcaching in this newsletter if you want to know more!

We have guided walks round some of the excursions and the Building Stones walk is popular with geology groups and, at Doors Open week, with the general public.

We have had information stalls in parks around Glasgow as well as in the Glasgow Science centre.

Many of you go on this Society's summer outings to find out about Scotland's spectacular geology, but you know, there is geology all around you. Why don't you look up the Glasgow Geodiversity Audit which you can find on the Glasgow Council website (see poster on the back page of this newsletter) and you will find lots of bits of interesting geology in Glasgow, and the same can be said for all the other local authorities.

We are a very informal group and anyone can come to our meetings. The next one is being held in the Gregory Building on the 13th April at 7.30pm.
For more information contact Margaret by email at margaretgreene@btinternet.com

What is an Earthcache?

You may have heard about 'Geocaching' - which is an adventure game using Global Positioning System (GPS) - where users find hidden locations of actual items and 'log' them. Earthcaching is the concept of treasure hunting for the caches that the Earth has stored. Earthcaches do not use stored containers - their treasure is the lessons people learn about our planet when they visit the site.

An Earthcache is a special place that people can visit to learn about a unique geoscience feature. Earthcaches include a set of educational notes and the details about where to find the location (latitude and longitude). Visitors to Earthcaches can see how our planet has been shaped by geological processes, how we manage the resources and how scientists gather evidence to learn about the Earth.

How did it all start? In 2003 at a Geological Society of America conference, a member suggested that the Society become involved in geocaching. A meeting was then held with Geocaching.com along with some land manager partners, such as the US National Park Service to consider a program that would meet land manager issues as well as develop a way to teach the geocaching community something about Earth science. The first EarthCache was placed by in 2004 on a headland in New South Wales, Australia. Within the first year, more than 500 EarthCaches were published, and there are now well over 20,500 sites in more than 167 countries. Since the program started, more than 6.3 million people have logged that they have visited EarthCache sites, and the number is growing exponentially.

If you would like to develop your own Earthcache and share its educational value with others, follow the simple Earthcache guidelines on the Geological Society of America's website and submit their Earthcache Submittal Form for review and approval. Once your site has met the guidelines and is approved by GSA it is submitted into the wider Geocaching community through www.geocaching.com. When people visit the Earthcache they leave behind an electronic log of their comments about what they have learned from visiting the site.

There are already more than 100 EarthCaches in Scotland, potential to create more, and to publicise them as a way for people to engage with Scotland's geodiversity. People from all over the world are involved in EarthCaching, some of them logging hundreds of caches and making special visits to new areas for the main purpose of visiting EarthCaches. If you are interested have a look at some local Earthcaches:

City Chambers
Glasgow Necropolis
Bellahouston Drumlin
Household Park, Nitshill
Linn Falls
Dumbarton Rock
Ardmore Point

For more information on Earthcaches see Margaret Greene or David Webster

Scottish Geodiversity Forum

The Scottish Geodiversity Forum is planning a Geoheritage Festival in October 2017 in conjunction with the 'Scotland's 50 best geosites' project. Lottery funding has been secured and the selection of the top 50 sites is underway. See the SGF website. The launch of the Festival will be in Dynamic Earth, Edinburgh on 14 October. A new and updated version of the Scottish Geodiversity Charter is in preparation. For more information about the work of the Forum go to scottishgeodiversityforum.org

Scottish
GEODIVERSITY
Forum

Notices

Subscriptions

We give a reminder that the annual membership fees of the Society for the new Session (160) which begins 1st October 2017 are as shown below. The annual fee comes payable on that date.

We encourage those few who have yet to make their annual subscriptions for the current Session (159) to do so.

The membership fees for the Society are as follows:

- **Ordinary Membership** (including Scottish Journal of Geology): **£25**
- **Associate Membership** (available to those over 60, or spouses of Ordinary Members, or members of the Edinburgh Geological Society): **£12.50**
- **Junior Membership** (available to those under 25, or full time undergraduates, or recent (4 years) graduates : **£6.25.** (Junior members who pay a £ 6.25 supplement will also receive the Scottish Journal of Geology.)

If you require to set up a Bankers Standing Order (which is the Society's preferred arrangement) as your routine method for future payments (payment for the next session's membership falls due on the 1st October), please notify the Membership Secretary, who can provide you with the appropriate form to arrange this with your bank.

Alternatively you can download this form from the membership section of the Society's website and follow the instructions given there.

Address changes: The Society maintains the only mailing list of Society members. If you are changing your postal address or your e-mail address, do not forget to let the Membership Secretary know by post, e-mail or telephone. Otherwise newsletters and SJG mailings will go astray.

Those who customarily pay by cheque can send a cheque payable to the Geological Society of Glasgow at the address below:

The Membership Secretary: Dr. R A Painter, e-mail: gsgmemsec@ntlworld.com

New Members

We extend a warm welcome to the following new members:-

Mrs F Raffaelli	Glasgow
Mr D N Raffaelli	Glasgow
Dr D Crouch	Glasgow

Events from other geological societies

Edinburgh Geological Society www.edinburghgeolsoc.org

9, 12, 15 April: 1-5pm Edinburgh International Science Festival: Siccar Point Excursion. Book directly with the Science Festival.

2 May: 10 am – 3 pm Visit to the National Museums Collection Centre at Granton and afternoon excursion to Wardie Shore

Other excursions - see the website

Aberdeen Geological Society www.aberdeengeolsoc.org.uk

2**7th April** Dr Neil Clark (University of Glasgow). The History of Scottish Gold.

Highland Geological Society www.spanglefish.com/highlandgeologicalsociety

12 April Professor Iain Stewart, Professor of Geoscience Communication, Plymouth University: "Living on the Edge - how 'tartan geology' has influenced geological thinking, past, present and future".

Westmorland Geological Society www.westmorlandgeolsoc.co.uk

See website for excursion details.

Open University Geological Society www.ougs.org

11 July - Rosneath and Loch Long. Iain Allison will be leading this trip to Argyll which deals with the upper Dalradian rocks immediately north of the Highland Boundary Fault where the grade of metamorphism is low and remnants of the rocks' sedimentary origins can be discerned.

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 Newsletter Coordinator.

David Webster

The Geological Society of Glasgow
e-mail: meetings@gsocg.org

THE GEOLOGICAL SOCIETY OF GLASGOW

Members' Night: Request to contribute

Thursday 11th May 2017:

Please use this form or email the following information to the Hon. Secretary

Title of contribution:.....

.....

.....

Name .....

Address .....

.....

.....

Telephone/Fax/email .....

.....

Please complete the details below:

I wish to make a presentation as follows (please tick box as appropriate):

- ☐ Oral presentation with Powerpoint slideshow or overhead projector
- ☐ Bench-top display
- ☐ Wall-mounted poster
- ☐ Lap-top computer "kiosk"-style slideshow (member's own laptop)

Please Note: Oral presentation speakers are requested to keep their talks to a **maximum** of 15 minutes *including* question time. In the event that more than four requests are received for oral presentations GSG Council will select those to be included in the programme; successful requests will be informed by e-mail or post by 1st May.

Please return this form to:

Walter Semple, Honorary Secretary,
The Geological Society of Glasgow,
c/o School of Geographical & Earth Sciences, Gregory Building, University of Glasgow,
Lilybank Gardens, Glasgow, G12 8QQ,

or email: sec@gsocg.org

Glasgow's Geodiversity

K Whitbread[1], S Arkley[1] and D Craddock[2]

[1]British Geological Survey, [2] Glasgow City Council

You may not consider a city the best place to see interesting geology, but think again! The city of Glasgow was, quite literally, built on its geology – it may even have been named after one of its rocky features. The geological history of the Glasgow area can be read in the rocks and sediments exposed within the city, from the streams to the buildings and bridges.

In 2013 the British Geological Survey conducted a Geodiversity Audit of the City of Glasgow for Glasgow City Council to identify and describe the best geological features in the city area.

Here we take you on a tour of some of the sites....

Fossil Forests

In Carboniferous times, forests of Lycopod 'trees' grew on a swampy river floodplain. In places the stumps of Lycopods, complete with roots, have been preserved. At Fossil Grove, a 'grove' of fossilised Lycopod stumps was excavated in the Limestone Coal Formation during mining. The fossils were preserved in-situ on their excavation in the late 19th century, rather than taken to a museum – one of the earliest examples of 'geoconservation' in the world!

Another fossil stump, originally found in a mine in Nitshill, can be seen standing in Household Park.

Quarrying and building stone

Sandstones in the Carboniferous sedimentary rocks in the Glasgow area were commonly quarried for building stone. Many former quarries have been infilled, but the 'dressed' faces of worked sandstone, with 'tool' marks still visible, can be seen in some road cuttings, such as the one below in the Upper Limestone Formation at Possil Road.

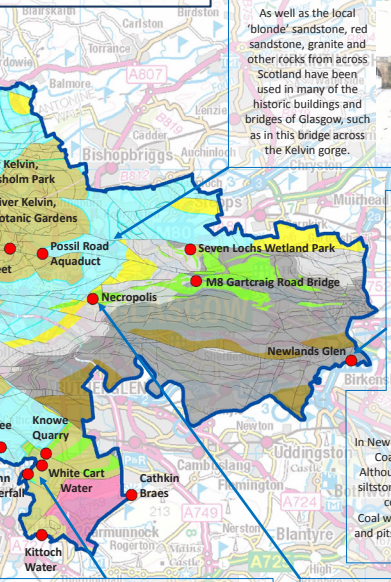
As well as the local 'blonde' sandstone, red sandstone, granite and other rocks from across Scotland have been used in many of the historic buildings and bridges of Glasgow, such as in this bridge across the Kelvin gorge.

Fossil leaves and stems in siltstone

Coal fragment

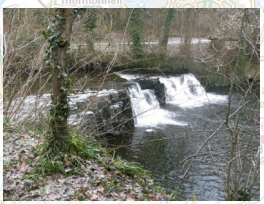
Newlands Glen

In Newlands Glen, rocks of the Scottish Middle Coal Measures Formation can be seen. Although mostly made up of sandstones and siltstones, these rocks contain numerous thin coal seams and lots of plant fossils. Coal was worked underground from collieries and pits throughout much of the Glasgow area during the 19th century.



Levern Water

The Levern Water runs through a former mining area. Waste rock from the underground mines has been deposited around the river and landscaped to form a park. The 'contact' between the man-made deposits and the underlying glacial sediment (till) can be seen along the river.



White Cart Water

Along the picturesque river in Linn Park, sedimentary rocks of the Carboniferous age Limestone Coal Formation can be seen.

At Linn Waterfall, the sedimentary rocks have been intruded by a resistant microgabbro sill which forms the waterfall that gives the park its name (right, top). Hexagonal columns can be seen in the sill at the falls, similar to the columns at the Giant's Causeway in Northern Ireland. Downstream of the waterfall the river runs in a deep gorge. Landslips along the gorge walls indicate that the steep gorge is unstable but also produce good exposures of the sandstones and siltstones that were once deposited by ancient rivers (right, bottom).

Glasgow's Necropolis

The Necropolis sits on a hill formed by a resistant microgabbro sill, dated at 273 million years old. An early name for the hill was the Grey Rock, after the dull colour of the crags. The Grey Rock was an important religious and military site prior to the 6th century, and developed as a cemetery during the Victorian Period. One interpretation of the name 'Glasgow' is 'the place of the grey rock' suggesting the city may have been named after this prominent geological feature.

Find more information about Glasgow's Geodiversity at www.glasgow.gov.uk/geology and www.bgs.ac.uk