

THE GEOLOGICAL SOCIETY OF GLASGOW

Registered Scottish Charity No. SC007013

President: Dr. Jim Morrison

www.geologyglasgow.org.uk

February 2018

160/3



Fantastic exposures of the Port Askaig Formation in the cliffs on the Garvellach Islands. Come to the April lecture night to hear Dr Tony Spencer give the T. Neville George lecture on these rocks. (Photo D Webster)

In this newsletter:

- Lectures for March and April
- Residential and Day Field Excursions and Booking Forms
- AGM Report

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. For more information please contact the Meetings Secretary: meetings@gsocg.org

Thursday 8th March 2018

Dr Nicholas Tosca, University of Oxford

Re-animating the chemistry of Precambrian oceans: new perspectives on the environmental backdrop to early life

The Precambrian era, representing ~90% of Earth's history, witnessed some of the most critical biological milestones in the history of life. From the origin and evolution of prokaryotic and eukaryotic cells, to the advent of multicellular and complex animals, these transitions each irreversibly altered the course of biological evolution. But what role did the environment play in ushering in biological innovation? Answering this question requires that we understand how the details of climate and marine chemistry are written in the sedimentary rock record. We have used experimental, theoretical, and analytical approaches to unravel chemical and mineralogical clues in Precambrian rocks that, in turn, lend special insight into the chemical dynamics of Precambrian seas. We are discovering how chemical element cycles such as Fe, Si, and C were connected to one another, and how oceanography exerted a strong control on the availability of key nutrients in Precambrian seawater. Together, these results are painting a new detailed picture of the physical and chemical structure of Earth's most ancient oceans and how they set the environmental stage for the evolution of ancient microbial life.



Nick is a Fellow and Tutor in Earth Sciences at St Peter's College, Oxford and an Associate Professor in Sedimentary Geology. He has been a Fellow of St Peter's since 2014, appointed after a Lectureship in Earth Sciences at the University of St Andrews, and Postdoctoral Research Fellowships at Churchill College, Cambridge, and Harvard University. His research is focused on how Earth's climate has evolved through its early history and how this impacted biological evolution.

*Background reading: Tosca, N.J., Johnston, D.T., Mushegian, A., Rothman, D.H., Summons, R.E., Knoll, A.H. (2010) Organic carbon burial, clay mineralogy and redox evolution in Proterozoic oceans. *Geochimica et Cosmochimica Acta*, **74**, pp. 1579-1592.*

Thursday 12th April 2018

Dr. Anthony Spencer, Statoil (retired)

The T. Neville George Medal Lecture: Establishing the glacial record of the Port Askaig Formation (Cryogenian) in Argyll

The Port Askaig Formation (PAF) in the Garvellach Islands and Islay is ~1100 m thick and includes 47 diamictite beds, interbedded with siltstones, dolostones and sandstones. The succession in the PAF records a total of 76 climatically-related stratigraphic episodes: 28 glacial, 25 periglacial and 23 non-glacial episodes. The PAF occurs in a Dalradian succession that is many kilometres thick, as newly revealed by sea-floor mapping around the Garvellachs. Compared with other Cryogenian glacial successions around the World, the PAF is exceptional in its combination of formation thickness, the number of climatically-related stratigraphic episodes, and the considerable thickness of its host supergroup. These indicators of relative stratigraphic completeness suggest that the base of the PAF in the Garvellachs is a succession without a major break, supporting it as a candidate section for the base of the Cryogenian System (GSSP).

Study of the 'PAF' has a long history which started with MacCulloch (1819). It was the first Neoproterozoic glacial deposit to be identified (Thomson 1871) and the wonderful outcrops in the Garvellachs were first 'discovered' by Pitcher and Shackleton (1961), leading to my Memoir in 1971. Now a large team is working to prepare a new Memoir for 2021.

The Professor Thomas Neville George Memorial Medal is awarded by the society "for excellence in palaeontology and/or stratigraphy". The award ceremony takes place at one of the society's lecture meetings and is followed by the T. Neville George Memorial lecture, delivered by the recipient. Neville George was Professor of Geology at Glasgow University from 1947 to 1974 and his main research interests were Carboniferous rocks and fossils, evolution, and geomorphology and palaeogeography. He was Dean of the Faculty of Science from 1951 to 1955, and played a key role in the planning and building of the Gregory Building, which opened in 1974 shortly after he retired. The 'TNG' medal was first awarded in 1982, and tonight, we honour Dr Anthony Mansell Spencer with the 24th award of the medal.

Tony has been a practising professional geologist since completing his PhD at Liverpool University in 1966 on the Port Askaig Tillite Formation in the Garvellachs and Islay. Whilst employed at the Geological Society of London researching Mesozoic-Cenozoic orogenic belts, he was the author of the 1971 GSL Memoir number 6 – an exhaustive treatise on the Port Askaig Tillite, which today remains the key reference for the stratigraphy of that area; and he also published another definitive paper on the stromatolitic carbonates of the overlying Bonahaven Formation.

A long and distinguished career in the oil industry then followed, first with BP and latterly with Statoil in Norway,



where he published and edited a large number of key papers, books and memoirs on the petroleum geology of the Arctic regions, the NW European continental margin and the North Sea. Throughout his career in the oil industry he maintained his interest in the Precambrian glacial story and published a paper on NE Greenland.

He retired from Statoil in 2012 after a career in petroleum exploration spanning 41 years and rather than just relaxing and enjoying retired life in Norway; he has turned back to his first love, the Port Askaig Formation. He spends a lot of his retirement in a remote and primitive bothy on the Garvellachs and is in the process of authoring several key papers on the area including a proposal for a 'Golden Spike' on the Garvellachs to mark the worldwide base of the Cryogenian Period of the late Precambrian – which if accepted would be only the second such 'spike' in Scotland (after Dob's Linn)

Further reading: SPENCER, A.M. (1971): Late Precambrian Glaciation in Scotland. Geological Society, London, Memoir 6, pp. 5-102.

Thursday, 10th May 2018

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.

Residential Field Excursions 2018

For further information contact Maggie Donnelly by email at restrips@gsocg.org

Raasay

April 27 – April 30 2018

Leader: Dr Brian Bell

Please note that this excursion is fully booked. Please contact Maggie Donnelly to go on the waiting list.

The Geology of Aberdeenshire – mountains, glens and coast

Fri September 14th to Mon September 17th 2018

Leader: Dr Con Gillen

Devonian lavas and sedimentary rocks; Highland Border Complex (with superb pillow lavas); Highland Boundary Fault; ORS/Dalradian unconformity; Dalradian structure and metamorphism; Caledonian and post-Caledonian granites, gabbros, migmatites, dykes and breccia pipes.

Itineraries:

Friday 14: half-day – Crawton (4 miles south of Stonehaven, on the A92, lunchtime); ORS (lavas and sediments); (Glasgow-Crawton 130 miles, 2.5 hours)

Saturday 15: full-day - Dunnottar Castle to Stonehaven - ORS/HBC/HBF/Dal

Sunday 16: full-day - Aberdeen area - granites, younger basics, migmatite, breccia, Dalradian

Monday 17: half-day - Ballater to Braemar - Grampian Group Dalradian, granites, skarns, glacial scenery. Return to Glasgow after lunch (100 miles, 2.5 hours)

Exposures are fairly easily accessible, with some longer flat walks and some ascents. Walking will be fairly easy on paths, but shore sections and grassy hill slopes could be wet and slippery. Good boots essential; and warm clothes, waterproofs etc., as usual. The two full days will be quite long, departing 9am, return 6pm. Packed lunches required on all days. We will probably need to rationalise car use on the Sat/Sun. Our leader will provide grid refs for each day in case people are travelling from different places, and will have notes and maps. Basically, though, the excursions are from the Aberdeen guide (Trewin, Kneller, Gillen, 1987) – now out of print but available online via the Aberdeen Geological Society. However, we hope to have copies of the relevant excursions.

Accommodation will be in B & B and travel in shared cars.

Advance Notice: Islay: April 26-29th 2019.

We are in the early stages of planning a trip to Islay next year. Staying in the Port Charlotte Youth Hostel and/or B&Bs. Please email Maggie if you are potentially interested so we can get an idea of the accommodation and transport requirements.

Day excursions 2018

Excursion 5 is own transport, but all other excursions leave by coach from the Gregory Building, Lilybank Gardens at the times stated – please check the synopsis for details.

Please note that a deposit is required for each excursion. The deposit is set at a level to recover the anticipated costs of the trip. In addition, please be aware that any balance of costs will be recovered / refunded on the day of the excursion. Excursion 3 includes £10 to cover the cost of the high tea.

Members who choose to take their own vehicles will be still be asked to pay the full deposit as a contribution towards the overall cost of the excursion to the society.

Please complete the attached form, including details of who you would like us to contact in the event of an emergency.

Applications will be acknowledged to the email address you supply.

The attached form should be returned to Roy Bryce, email: daytrips@gsocg.org

Saturday 2nd June: Muirshiel Country Park

Leader: Dr Iain Allison

Leaving Gregory Building at 09:00

The Society is working with the Scottish Geodiversity Forum to get the geology of Muirshiel Country Park more widely recognised. On this excursion we will be looking at several sites around the Park including the area around the now disused barite mine and considering aspects of our industrial geological heritage.

Saturday 9th June: Glen Lednock

Leader Dr Simon Cuthbert

Leaving Gregory Building at 09:00

Last year we visited Comrie and the De'il's Cauldron waterfall where the River Lednock has incised a rock-cut gorge. We will continue our exploration of Glen Lednock including to the Comrie pluton to examine the igneous rocks themselves and their contact relations with the country-rocks. Comrie has some excellent opportunities for cake, and if we are not too long delayed on the rocks we may wish to explore these, too! The trip will involve a few kilometres of variably rough and boggy walking, sometimes quite steep for short intervals.

Saturday 30th June: Perth & Environs

Leader Dr Con Gillen

Leaving Gregory Building at 09:00

Joint Excursion with the Edinburgh Geological Society.

We will examine Devonian volcanic and sedimentary rocks (perhaps including the Stone of Destiny) and look at a variety of building stones in Perth City. We start with a walk up to Kinnoull Hill on a waymarked footpath. Then on to Quarrymill woodland park, with a flat walk of approx. 1km. Then down to the River Tay at Scone for a river walk 2.5km total on a flat path. Then Perth city centre for about 2km on pavements from St John's Kirk to Smeaton Bridge-Queen's Bridge.

This will be followed by a high tea at a venue still to be decided.

Saturday 18th August: Spireslack Quarry

Leader: Dr Graham Leslie

Leaving Gregory Building at 09:00

The Opencast coal site at Spireslack in East Ayrshire delivers a unique and stunning geological exposure. This site could be retained for a wide range of uses and re-developed during restoration to provide a rich visitor and/or learning experience of coal geology, the coal industry and a former way of life for previous generations of Scots.

The late 18th to mid-20th century industrial prosperity of Scotland and its urban development depended upon the extensive deposits of approximately 325 million year old Carboniferous coal, ironstone and oil shale. Imaginatively and constructively

restored, Spireslack could deliver a unique, natural rock laboratory for industry and university training and research. BGS is working closely with the Scottish Mines Restoration Trust to find ways of doing so.

Wednesday 22nd August: Scottish Universities Environmental Research Centre (SUERC) East Kilbride

Leader: Derek Fabel

Choice of two visits 10am or 2pm.

Last year we had a very interesting lecture from Derek Fabel about how his laboratory undertakes precise and accurate measurement of isotopes in minerals and rocks. The procedures used to isolate and analyse isotopes involve isotope ratio mass spectrometry in a variety of forms depending on the isotopic system being utilised. Radiocarbon and surface exposure dating rely on being able to measure the abundance of extremely rare radioisotopes in the sample material using a technique called accelerator mass spectrometry. This tour of the laboratory will take you behind the scenes of extremely rare isotope metrology at SUERC to illustrate the complexity and effort involved in making these types of measurements.

Maximum of 10 people per tour so please advise if you would prefer to be on the 10am or 2pm visit. Meet outside the SUERC at 09:45 for the 10:00 start or at 13.45 for the 14:00 start (own transport).

Scottish Universities Environmental Research Centre (SUERC)

Rankine Avenue

Scottish Enterprise Technology Park

East Kilbride G75 0QF

Saturday 8th September: Bathgate Hills

Leader: Dr Con Gillen

Leaving Gregory Building at 09:00

We will start at Beecraigs visitor centre to see a dyke and Carboniferous Limestone. Next is Cairnpapple Hill and the Knock (lavas, sill, limestone and mineralization) via Witch Craig geology wall. Then on to Petershill Reserve (fossiliferous reef limestone). If there is time, we will also visit East Kirkton quarry to see oil shales and limestones (SSSI, no hammering or collecting). Return to Bathgate for toilets, then head home to Glasgow.

Leaflets: Petershill, Witchcraig Wall, East Kirkton, from EGS website.

News and Topical Articles

Hugh Miller Writing Competition

The second Hugh Miller Writing Competition was launched on 1st November. This unique competition is open to all, and invites prose and poetry entries from young people and adults inspired by the geology and landscape writings of Hugh Miller, and

the fossil discoveries made in Scotland over the past 30 years. For more information see <http://www.thefriendsofhughmiller.org.uk/index.asp?pageid=678640>

Report on Annual General Meeting

The AGM was held on Thursday 8th Dec 2016. Thanks were expressed to all Council Officers for their work during the recent session, and particularly to those who had come to the end of their term of office. The customary officers' reports were presented. Following the election / re-election of Council Officers, Council now comprises the following:

President	Jim Morrison
Hon. Secretary	Walter Semple
Vice President	Brian Bell
Vice President	Neil Clark
Treasurer	Ben Browne
Meetings Secretary	David Webster
Membership Secretary	Campbell Forrest
Excursions Secretary (day)	Roy Bryce
Excursions Secretary (residential)	Maggie Donnelly
Librarian	Bob Diamond
Asst Librarian and Hon. Archivist	Margaret Anderson
Minutes Secretary	Bob Diamond/Maggie Donnelly
Proceedings Editor	Mina Cummings
Publications Officer	Bob Diamond
Webmaster	Bill Gray
Web Consultant	Neil Clark
Website Coordinator	Emma Fairley
Newsletter Coordinator	David Webster
Junior Representative	Matthew Staitis
Editor of SJG	Brian Bell
Editor of SJG	Colin Braithwaite
Ordinary Member	Ian Veitch
Ordinary Member	Ann Ainsworth
Ordinary Member	Simon Cuthbert
Ordinary Member	Ian Millar

Ian Anderson was re-appointed as Independent Examiner. The AGM was followed by a lecture from Prof. Stephen Daly and the evening ended with the customary festive social.

Subscriptions

Thank you to all those members who have renewed their subscriptions for the current Session 160. There are still few members who have so far overlooked paying a subscription or who have paid a subscription that was not updated to the increased rates which applied from the start of Session 157. A separate note is included with this newsletter as a reminder to those members whose subscriptions are overdue or subject to an underpayment. Those who receive their newsletter by e-mail should already have received a reminder.

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 (4years) graduates : £6.25. (Junior members who pay a £ 6.25 supplement will also receive the Scottish Journal of Geology.)

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

New Members

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

Liselotte Boergmann
Paul MacInnes
Charlie MacInnes
Stephen Moiser
Ann O'Connell
Suzanne Swinson
Margaret Sweeney

Courses at the Glasgow University Centre for Open Studies

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.

Date: Apr 25 - May 30, 2018

Tutor: Michael Keen

Geology of Cyprus

The aim of the course is to introduce the student to aspects of the geology of Cyprus with a focus on the Troodos Ophiolite and its plate tectonic setting. The nature of ophiolites will be explored. Recognition of common rock types and minerals from Cyprus. The role of field geology will be emphasised and the students introduced to various geological field techniques..

Date: Mar 24 2018 10-4

Tutor: Samuel Rice

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

Events from other geological societies

Edinburgh Geological Society www.edinburghgeolsoc.org

7th March Lorna Dawson, (James Hutton Institute, Aberdeen). Soil in criminal investigations: investigation and evaluation in current and cold cases

21st March Dr Brian Baptie, (BGS Scotland). Is earthquake activity increasing?

Aberdeen Geological Society www.aberdeengeolsoc.org.uk

8th March Dr. Robert Trice (Hurricane Energy). Basement Oil ! A new frontier for the UK?

23rd March Chris Fleet (National Library of Scotland). Scottish mapping history & the latest NLS interactive map services

19th April Prof Gordon Walkden (Aberdeen). Stories within rocks, a polished perspective.

Highland Geological Society www.spanglefish.com/highlandgeologicalsociety

21 March Ian Parsons, (Edinburgh University). Greenland: Geology from South to North.

Westmorland Geological Society www.westmorlandgeolsoc.co.uk

21 March Prof. Christine Pierce, (Durham University). Sounds from the subsurface – a geophysicist's view of the Earth beneath our oceans

Open University Geological Society www.ougs.org

14 March Field Trip to Kemnay Quarries, Aberdeenshire

May 25-27th Field trip to Glencoe

May 26th- June 2nd Field Trip to Skye -

Hon. Secretary: Walter Semple email: sec@gsocg.org
Newsletter Coordinator: David Webster email: meetings@gsocg.org

Booking Form for Day Excursions 2018

A non-returnable deposit is requested for each chargeable booking - even for those taking their own cars. **No bookings will be accepted without the deposit.**

A financial adjustment may be collected/refunded on the bus on the day.

All cheques should be made payable to: **The Geological Society of Glasgow.**

Please return your form with payment to: **Roy Bryce, email daytrips@gsocg.org**

Date	Excursion	Leader	Tick to apply	Deposit amount	Deposit enclosed
Saturday 2 nd June	Muisheil Country Park	Iain Allison		£20	
Saturday 9 th June	Glen Lednock	Simon Cuthbert		£20	
Saturday 30 th June	Perth & environs	Con Gillen		£30	
Saturday 18 th August	Spireslack Quarry	Graham Leslie		£20	
Wednesday 22 nd August 10:00	SUERC	Derek Fabel		none	
Wednesday 22 nd August 14:00	SUERC	Derek Fabel		none	
Saturday 8 th September	Bathgate Hills	Con Gillen		£20	
Total number of trips				Total	



Your Name (please print).....

Email

Address

.....

Phone number

.....

Emergency Contacts

In case of an emergency we may need to contact someone on your behalf, while you are on the excursion. Please provide details below.

Name of contact

Relationship

Phone numbers

.....

.....

Please complete this declaration:

I confirm that I have read and will comply with the Society's recommendations on field safety (overleaf).

Signed

Dated

Safety in the Field

Although geological fieldwork is a pleasurable activity, by its nature it may involve some risks. These can be minimized by observing sensible precautions. It is important that everyone undertaking fieldwork is alert to both the general and specific risks and can take responsibility for their own safety and for the impact this may have on the safety of others.

A general *Code for Geological Fieldwork* is published by the Geologists' Association.

Field Excursions organized by the Society are conducted on the understanding that members and guests are aware of their general responsibilities. For its part, the Society, through excursion leaders, will issue specific warnings where conditions differ from those likely to be encountered by an active person of normal health during a weekend ramble in the hills. Participants are specifically asked to:

- (a) Inform the party leader in advance of the field excursion, in confidence, of any medical condition which may have a bearing on their own safety or on that of other party members.
- (b) Observe all safety instructions given by the party leader. Inform the leader if they wish to leave the party and inform him/her immediately of any illness or injury.
- (c) Provide themselves with warm and waterproof clothing (brightly coloured if possible), strong waterproof boots that provide some grip, and carry a small personal first-aid kit.
- (d) Carry a survival bag, whistle, spare clothing, and survival rations when working in remote or mountainous regions.
- (e) Wear a hard hat whenever there is a risk from falling objects. This is obligatory when visiting quarries, mines, building sites or road sections under construction and, in the interests of safety, members may wish to obtain their own.
- (f) Always wear impact resistant safety goggles or spectacles when hammering tough or splintery rocks, or using chisels. Never use a second hammer as a chisel. Beware of standing too close to others using either.
- (g) Take special care on steep slopes (e.g. scree slopes, cliffs and quarries); on muddy slopes and slippery shore-sections, and when working on roadside cuttings or exposures, particularly when construction is in progress. Be alert when crossing roads and railways, it is easy to get distracted. Check the times of tides, remembering that high winds may make them higher than you expect, and ensure that you are familiar with the exit points from coastal sections.
- (g) Obtain the permission of landowners or factors before entering property. Permission to collect samples may be required and special permits are necessary on Sites of Special Scientific Interest (SSSI's).
- (h) Avoid overhanging or unstable rock faces, especially during thaw conditions after a cold spell or after heavy rain. This is particularly important in quarries but also on some coastal cliffs where large sections may fall without warning.

Booking Form for Residential Field Excursion to Abderdeenshire Sept 2018

Name(s):	
Address:	
Landline Tel. No.	
Mobile No.	
Email:	

Accommodation: Please tick one box	<input type="checkbox"/>	Shared double room with spouse/partner B&B	To share with (if known):
	<input type="checkbox"/>	Shared twin room B&B	
	<input type="checkbox"/>	Single room B&B	
	<input type="checkbox"/>	I will make my own arrangements for accommodation.	

Travel: Please tick one box	<input type="checkbox"/>	I would be happy to take my car and give a lift to passengers State No. Passengers:
	<input type="checkbox"/>	I would be happy to take my car and give a lift to passengers on the field days. State No. Passengers:
	<input type="checkbox"/>	I would prefer not to take my car, but will do so if required. Ideally I would prefer to take a lift from someone else.
	<input type="checkbox"/>	I would like a lift in someone else's car.
	<input type="checkbox"/>	I will make other travel arrangements. (Please specify)

Do you have any special dietary requirements for breakfast? Please specify.

Emergency Contact Details:

If an emergency arises whilst I am on the excursion the Society may contact the following person(s):

Name:Telephone:.....

Name:.....Telephone:



Membership Please tick	<input type="checkbox"/>	I/we am/are a member/s of the Geological Society of Glasgow
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Declaration:
I/we confirm that I/we have read and will comply with the Society's guide to Safety in the Field (Page 12 of this newsletter)

I enclose a cheque (payable to Geological Society of Glasgow) for the deposit of **£30.00 per person**. Please tick box

or

Please email me GSG bank details as I want to make a bank transfer. Please tick box and email the organiser ASAP.

SignedPrint name

Date.....

Please note that the later you cancel the less likely it is that you will get all or part of your deposit back. Once the society has passed on your deposit to the hotel it is very unlikely that it will be refundable. If two people are sharing a room and one person cancels, it may in fact be necessary for that person to pay the full balance. You are strongly advised to buy travel insurance to cover you for any such losses.

When completed, please send this form and the deposit to Maggie Donnelly. email. restrips@gsocg.org

Members' Night: Request to contribute

Thursday 10th May 2018:

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

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