THE GEOLOGICAL SOCIETY OF GLASGOW

Registered Scottish Charity No. SC007013

President: Dr Neil Clark

www.geologyglasgow.org.uk

December 2019 162/2

The new Queensferry crossing. John Brown of Arup will deliver a talk on the 9th January on the engineering geology underpinning the building of the new bridge.

In this newsletter:

- Lectures for December, January and February
- Membership Survey - responses and actions
- Excursion reports
- AGM agenda and papers

Lecture meetings

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

Details of the lectures for this session can also be found on the society's website at www.geologyglasgow.org.uk/lectures.

Thursday 12th December 2019

NOTE: to be preceded by a brief AGM commencing at 7:00 - with drinks/nibbles social afterwards

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

Thursday 9th January 2020

John Brown, *Arup.*

"The Engineering geology of the Queensferry Crossing"

Field mapping of the geology of the area along with inspection of rock cores recovered from below the seabed identified good quality rock across the Firth of Fort. Therefore all foundations bear on top of the rock, eliminating the need for expensive and time-consuming piling onto the hard rock that underlies the whole crossing.

The crossing is built on varied geology. An igneous intrusion, Beamer Rock Island, is a dolerite pinnacle, a very strong rock, which provided a suitable foundation to support the 210 metre high central tower.

The foundations for the North and South towers are founded on 25 to 30m diameter circular steel caissons sunk to the top of the bedrock some 40-50m below water level. Once positioned they were sunk into the seabed by a combination of precision dredging and ballasting with concrete to guide the caisson to its desired level and position. A thick concrete plug was then poured underwater within the cylinders to enable the construction of a reinforced concrete base for the foundations towers. The caisson approach is not that dissimilar to how 19th Century engineers approached the foundations that support the original Forth Bridge.

The geological information gathered prior to construction was translated into 3D numerical models to design the foundations. Each foundation excavation was rigorously inspected with remote camera domes developed to carry out detailed underwater inspections up to 50m below sea level. The engineering expertise of the designer and contractor enabled the delivery of a complex set of foundations in a safe and efficient manner.

John is an Associate with Arup and was the Designer's Site Representive for the construction project.

Thursday 13th February 2020

Dr Amanda Owen, *University of Glasgow*

"Understanding the spatial variability of sedimentary deposits"

Sedimentary systems are under the influence of a variety of process that can vary considerably in time (seconds to millennia) and space (from the grain to basin scale). this talk will examine the spatial variability in fluvial response to the Paleocene-Eocene Thermal Maximum (PETM). The PETM occurred ~56 Ma and was a geologically abrupt global warming event in which temperatures increased from 5-8°C over ~200, 000 years due to a global release in carbon, making it a close analogue to today's global warming trends. The PETM has been interrogated at a number of terrestrial and marine localities across the globe, however, the majority of these studies are not placed within a well-defined spatial and temporal context, with study often limited to single successions and the deposits that lie immediately above and below the event. It is imperative that background 'normal' conditions are understood in order for an assessment of response magnitude and extent to be made. Within this talk sedimentological observations from multiple PETM localities within the Bighorn Basin, Wyoming, will be presented within a newly defined quantified basin context.

Amanda's research focuses on understanding ancient fluvial deposits, more specifically trying to understand the heterogeneity and predictability of fluvial deposits over a variety of scales from the basin to pore scale. Her research is primarily field based, where she studies analogues (both ancient and modern) for application into the petroleum, minerals (uranium and cooper) and groundwater industries. Alongside applied research she also looks to understand the affect that external controls (such as climate and tectonics) have on fluvial systems as well as try and better understand vegetation response to changes in fluvial environments. Her work is conducted through collaborative links at the University of Aberdeen, University of New Mexico, University of St Andrews and Universidade Federal do ABC and through the industry-funded consortium Fluvial Systems Research Group.

Background reading: F

Owen, A. , Hartley, A. J., Ebinghaus, A., Weissmann, G. S. and Santos, M. G.M. (2019) Basin-scale predictive models of alluvial architecture: Constraints from the Palaeocene–Eocene, Bighorn Basin, Wyoming, USA. *Sedimentology*, **66(2)**, pp. 736-763. (doi:10.1111/sed.12515)

Future Lecture Dates for your Diaries

Thursday 12th March 2020

Professor Andrew Scott *Royal Holloway College, University of London*

"Burning Planet. The story of fire through time"

This is a Joint Celebrity Lecture with the Edinburgh Geological Society. Full details of the talk (and his books!) will be in the February newsletter and will be posted on the website when available.

Thursday 9th April 2020

Dr Jenny Collier, *Imperial College, London*

"The creation of 'Island Britain'"

Full details of her talk will be in the February newsletter and will be posted on the website when available.

Thursday 14th May 2020

Members' Night. Get in touch with Water Semple (Hon. Sec) if you are interested in giving a 15 min presentation or a table-top display/poster

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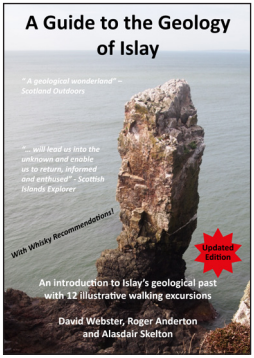
Residential Excursions 2020

Islay: Fri 26th – Mon 29th April 2020.

Leader: David Webster



Due to oversubsription of the 2019 trip we are running it again for those who couldn't make it - and for those who loved it so much they want to come again!. David will present his new talk on the links between geology and whisky (accompanied by a few drams!)

The geology of Islay is amazingly varied – 1800 Ma gneiss, Precambrian metasediments and fossil stromatolites, the famous Port Askaig Tillite (possible 'Snowball Earth'?), low grade metamorphic Dalradian rocks retaining original sedimentary structures, reactivated and reversed extensional faults, substantial mineralisation, 60 Ma igneous intrusions (opening of the Atlantic Ocean) and a large selection of Quaternary Ice Age features. We plan to visit key localities with the aid of "A Guide to the Geology of Islay" by David Webster, Roger Anderton & Alasdair Skelton.

Accommodation will be B & B in Bowmore; transport will be in shared cars.

For more details please email Maggie Donnelly at restrips@gsocg.org.

THE ROYAL PHILOSOPHICAL SOCIETY OF GLASGOW

SCOTTISH CHARITABLE INCORPORATED ORGANISATION (SCIO) CHARITY NO. SC015557

218th Lecture Series
7.30pm - 18 March 2020

Prof Tamsin Mather

Volcanoes from fuming vents to extintion events

ABSTRACT

BIOGRAPHY

Professor Mather is interested in volcanoes as both natural hazards and as key planetary processes which are vital in maintaining habitats for life. Her specific interests include the chemistry of volcanic plumes, the effects of volcanic emissions on the environment, and the physical structure and stability of volcanoes. She has also studied the emissions from an oil depot fire (Buncefield 2005) and is generally interested in the global mercury cycle, as well as other biogeochemical cycles.

LINKS

http://www.ox.ac.uk/news-and-events/find-an-expert/professor-tamsin-mather

https://en.wikipedia.org/wiki/Tamsin_Mather

All lectures take place in Lecture Theatre K3.25, John Anderson Building, University of Strathclyde, Rottenrow East, Glasgow G4 0NG.

Non-members welcome

The John Anderson Building is in the pedestrianised area between Rottenrow and Rottenrow East.
Free car parking is available behind the building. From High Street enter Rottenrow East at the Barony.
Refreshments will be served at 9.00pm.

www.royalphil.org • 15 Lanark Street, Glasgow G1 5PY • info@royalphil.org

Fossil Grove – Update

The Trustees have agreed to spend some of their resources (previously earmarked for future developmental work) on urgent repairs to the Fossil House. The Trustees remain of the opinion that these should be the responsibility of the City Council - who are still the legal owners.

The internal humidity is close to 100% virtually all of the time and only a few of the lights work. As the photograph on the right shows the condensation drip lines from the roof are very prominent - and the water from the roof precipitates damaging magnesium salts along these 'tramlines'.

Historic Environment Scotland have committed significant resources to help the Trustees understand the salt types, clay mineralogy, water chemistry and have recently completed a comprehansive 'decay map' using a gridded methology overlain onto the laser scan imagary.

The Trust have appointed an electrician to install 12 new LED wall units which can be angled to provide ambient or feature lighting. This work was completed on 21st November.

The Trust have also appointed a contractor to install a number of louvred vents in the apex clerestorey and to clean the roof, repair any major defects and clean and repair the gutters. A specialist drainage contractor will investigate and clear the three blocked underground roof drains identified in a recent drainage survey.

We will continue monitoring temperature and humidity to assess the effect these repairs have on the humidity profile.

This year over 5,500 people (about 100 per day) visited the site when it was open (12-4 Sat & Sun Easter-October) - a third of them were children.

Excursion Reports

We have decided to include excursion reports and photographs in the newsletter - rather than in the Proceedings - which have now been discontinued. This means the reports will be more current and have colour photographs. We hope this will encourage participants to write up a short note of the trip as soon as its finished and submit it - with a few photographs - to the newsletter editor.

Day Trip to Two Mining Museums

Saturday 1st June 2019

Leader Iain Allison **Participants 18**

Report by Mina Cummings

Our party set off at 9am on a pleasant, dry morning. A great relief after three days of heavy rain. Iain provided an historical overview of the Mining industry and we set off first for the Shale Oil Museum in the Almond Valley Centre in Livingston. There we examined the exhibits at our own pace. Indoors were examples of the many things for which oil could be used, for example early rubber baby's dummies.

There were samples of different types of oil-bearing rock, much of the geological exhibits aimed at firing the interests of children but it worked just as well for us.

Rather alarmingly there were also exhibits of Paraffin heaters and advertising posters for Pink Paraffin which some of us could remember using. It was a bit disconcerting to find such familiar objects in a Museum.

Outdoors apart from a very nice tea room there are lots of exhibits and activities for children having nothing to do with geology but very interesting nonetheless. There are pigmy goats and a variety of ducks, two black swans and the biggest white rabbit we'd ever seen complete with its own house and gazebo.

The History of the Shale Oil industry presented by Iain is as follows: The modern mineral oil industry started in Scotland in 1850 when James Young was granted a patent for producing oil from coal and oil was produced from 1851 from coal, boghead coal(torbanite)and oil shale(lamosite). Liquid oil was first produced at Petrolia Ontario Canada in 1857 and at Titusville Pennsylvania USA in 1859. Mining occurred at Tarbrax in the south to Philpstoun in the north between Linlithgow and Kirkliston. When oil production ceased in 1963 there were 27 bings containing over 200 million tonnes of burnt shale which represents a volume of a cube with sides 900 meters – from the Gregory building to Kelvingrove subway station.

Geologically the layers of oil shale s occur in the Lower Carboniferous (Dinantian) between the Cementstone at the base of the Carboniferous and the Lower Limestone Group. The stratigraphy was divided into a Lower and an Upper Oil-Shale Group with

the boundary at the Burdiehouse Limestone. The Upper Oil-Shale Group is thickest around West Calder at about 850 metres and thins to the east and south. Production was mainly from the Upper Oil-Shale Group and yields ranged from 70-200 litres of oil per tonne of oil shale. This stratigraphic unit, from the base of the Clyde Plateau Lavas to the top of the Upper Oil-Shale Group, is now called the Strathclyde Group and within it the Upper Oil-Shale Group is now referred to as the Hopetoun Member. The Bings are also of considerable social and historic importance; Five Sisters and Greendykes are scheduled as historic industrial monuments. They are a focus of community identity in a population whose common culture of mining is slowly being eradicated by families of non West Lothian origin taking up residence in the many new housing developments in the county. As a consequence, the bings have potential as an educational resource at all levels because of the historical importance of the industry which created them (from paraffin to detergent), the ecological importance of their extensive flora and fauna (nature reserves and primary succession) and the geological importance of the Carboniferous sedimentary rocks from which they were mined.

Following our very enjoyable visit to Almond Valley we went to look at the Albyn shale Bing at Broxburn, a very impressive sight. The afternoon was spent at the National Mining Museum of Scotland at Newtongrange, south of Dalkeith.

The main story the guide told us was that once the coal came up from the pit, it was laid out on sorting tables for women to pick out the stones. New rules came out meaning that women were no longer allowed to do such work, so they were all sacked. Since they were completely uneducated and often widowed with several children, the law of unintended consequences meant starving women and children.

Once stones were removed, the load was weighed again and if the tallyman thought there were too many stones in the original bogey, pay was docked completely. Didn't take too long for a new worker to try hard not to have many stones in his bogey. Not such 'Good Old Days'

Arrangements had been made by Roy for us to have lunch together in the Museum cafeteria which was very much appreciated. We also had the privilege of witnessing the photo session for a wedding being celebrated in the Museum's function suite. We were all agreed that this was a very enjoyable trip and thanks were expressed in the customary way.

Residential Excursion to Anglesey

22-27 September 2019

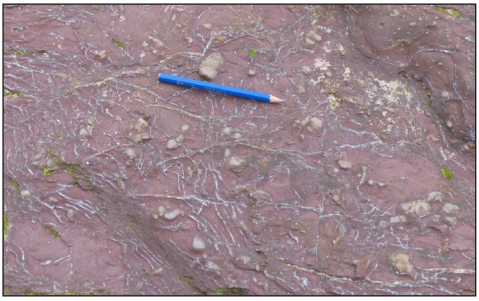
Leader: Chris Arkwright **Trip organiser: Maggie Donnolly**

Report by Bill and Anne Gray

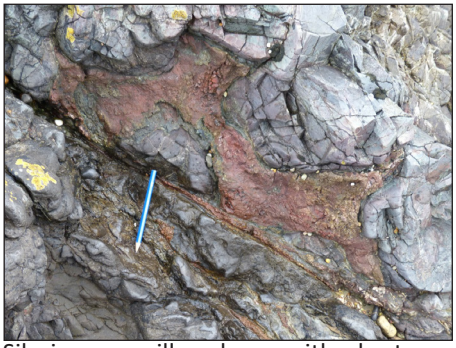
A selection of the photographs compiled by Bill and Anne Gray. A further narrative report and more pictures will appear in the next newsletter.

Chris introduces us to the complexity of the terranes of Anglesey.

Our first sighting of the rocks of Anglesey: the Carboniferous limestone strata of Castell Mawr, Red Wharf Bay



Mudcracks and cornstones in the Devonian ORS.



Silurian-age pillow lavas with chert, on Llanddwyn Island.

Two photos of the the beautifully-coloured melange of the Monian Gwna Group, formed during Cadomian Orogeny

Eye-catching folding and cleavage of Ordovician sandstone and mudstone, at Rhosneigr

Our group at the Holyhead Quartzite quarry of Breakwater Park, Holy Island.

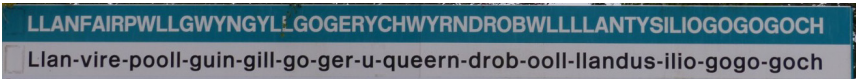
Highly folded green mica schist of the South Stack Group, used as building blocks at Breakwater Park, Holy Island

The folded schists of the New Harbour Group in situ at Treadur Bay

Hard hats at the ready for our visit to the Parys Mountain copper mine

We celebrate a wonderful trip - with thanks to Maggie and Chris

... and farewell to .....



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.

Dates: May 6 - Jun 1, 2020

Tutor: Michael Keen

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

Events from other geological societies

Edinburgh Geological Society: www.edinburghgeolsoc.org

- Wednesday 11 December, 6.30pm Fellows' Night
- Wednesday 8 January 2020, 7.00pm Bruce Levell, University of Oxford
- Wednesday 22 January, 7.00pm Roddy Muir
- Wednesday 5 February, 7.00pm Joint Lecture with the the Mining Institute of Scotland: Dr Claire Cousins, University of St Andrews
- Wednesday 19 February, 7.00pm Clough Medal Lecture Kathy Whaler, University of Edinburgh
- Wednesday 4 March, 7.00pm David Jarmin, Mountain Landform Research
- Thursday 12 March 7.30pm Joint Lecture with Geological Society of Glasgow: Andrew Scott, Royal Holloway, University of London
- Wednesday 18 March AGM 6:30pm, Lecture 7.00pm Dave McCarthy, BGS Marine

Aberdeen Geological Society: www.aberdeengeolsoc.org.uk

NOVEMBER

07 NOV — **JAMES CROLL – JOINER. JANITOR. GEOLOGIST. GENIUS?**
MIKE ROBINSON, ROYAL SCOTTISH GEOGRAPHICAL SOCIETY (RSGS)
6:30 pm - 8:00 pm · Lecture Theatre 1 - Meston Building

21 NOV — **TRASH TO TREASURE (UNEARTHED)**
RONNIE PARR, BP
6:30 pm - 8:00 pm · Lecture Theatre 1 - Meston Building

DECEMBER

05 DEC — **COPPER AND THE RISE OF THE ANIMALS**
PROFESSOR JOHN PARNELL, UNIVERSITY OF ABERDEEN
6:30 pm - 8:00 pm · Lecture Theatre 1 - Meston Building

FEBRUARY

06 FEB — **THE EVOLUTION OF THE HIGHLAND LANDSCAPE**
PROFESSOR DAVID MACDONALD, UNIVERSITY OF ABERDEEN
6:30 pm - 8:00 pm · Lecture Theatre 1 - Meston Building

20 FEB — **THE CO2 CHALLENGE AND WHAT IT CAN TELL US ABOUT THE EARTH: FROM STORAGE OF CO2 TO NATURAL ANALOGUES OF CRUSTAL CO2 DEGASSING**
DR CLARE BOND, UNIVERSITY OF ABERDEEN
6:30 pm - 8:00 pm · Lecture Theatre 1 - Meston Building

MARCH

05 MAR — **EXPLORING THE WORLDS ANCIENT BURIED VOLCANOS: FROM HYDROCARBONS TO CLIMATE CHANGE AND BACK AGAIN**
JOHN MILLETT, VBPR
6:30 pm - 8:00 pm · Lecture Theatre 1 - Meston Building

19 MAR — **MACRO TO MICRO-SCALE INSIGHTS INTO GRANITE PETROGENESIS, ROSS OF MULL GRANITE**
DR ADAM ZANIEWSKI
6:30 pm - 8:00 pm · Lecture Theatre 1 - Meston Building

APRIL

16 APR — **HENRY DE LA BECHE – 1816 TOUR OF SCOTLAND**
TOM SHARPE
6:30 pm - 8:00 pm · Lecture Theatre 1 - Meston Building

Highland Geological Society: www.spanglefish.com/highlandgeologicalsociety

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

15th January - *Scottish Hydro Power: Excavations in rock. The role of the engineering geologist,* Chris Ravey

19th February - AGM followed by *New research into the Elgin Reptiles,* Dave Longstaff, HGS (TBC) and *Ross of Mull granites,* Dr Adam Zanewski, University of Cork

18th March - *Ross of Mull granite,* Dr Adam Zaniewski, University College, Cork

Subscriptions

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

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

Note that the Scottish Journal of Geology is only sent to Ordinary Members and to those Junior members who pay an annual supplement of £6.25.

If you require to set up a Bankers Standing Order as your routine method for future payments (which is the Society's preferred arrangement), please notify the Membership Secretary. A form can be sent to you electronically or by post.

Cheques, made payable to Geological Society of Glasgow, should be sent to the Membership Secretary unless a Bankers Standing Order has been signed.

Membership Card: The membership card which you should have received not only gives information on the lecture programme, but can also be used to provide proof of membership when joining the University Library for example. To validate it you need to add your name and reference number, which is printed on the right of the mailing label used for the newsletter. or from the Membership Secretary.

Membership Secretary: Campbell Forrest, e-mail:- memsec@gsocg.org

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Articles for the Newsletter

We would like to include short topical article(s) in the Newsletter. Your field excursion memories, observations and photos are especially welcome!.

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 or the Newsletter Coordinator.

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

Geological Society of Glasgow
Annual General Meeting
Thursday 12th December 2019 at 7:00

Agenda

1. Welcome
2. Apologies
3. Approval of Minutes of the Annual General Meeting of Session 161 held on Thurs 13th December 2018 and any Matters Arising.
4. Membership survey
5. Reports
    a. *President's report*
    b. *Meetings Secretary's report*
    c. *Day Excursions Secretary's report*
    d. *Residential Excursion Secretary's report*
    e. *Librarian's report*
    f. *Publications Officer's report*
    g. *Proceedings Editor's report*
    h. *Scottish Journal of Geology Editors' report*
    i. *Website report*
    j. *Membership Secretary's report*
    k. *Strathclyde Geoconservation Group report*
    l. *Geodiversity: Argyll and the Islands report*
    m. *Treasurer's report*
6. Nominations and Election of Office Bearers
7. AOCB

AGM Papers and Reports

Item 3: Draft Minutes of the Annual General Meeting of Session 161 held on Thursday 13th December 2018

1. WELCOME

The President welcomed all present

2. APOLOGIES

Neil Clark, Matthew Staitis.

3. MINUTES

The minutes of the AGM of Session 160 which was held on 14th December 2017 had been distributed with the newsletter. These were approved by the assembled company. There were no matters arising.

4. REPORTS

Dr Morrison went through the reports of the various office bearers, copies of which had

been sent out to members in the newsletter prior to the AGM.

The reports were as follows: -

The President's report
Meeting Secretary's report
Day Excursions report
Residential Excursion report
Librarian's report
Publications Officer's report
Proceedings Editor's report
Scottish Journal of Geology Editors' report
Website report
Membership Secretary's report
Strathclyde Geoconservation Group
Geodiversity: Argyll and the Islands
Treasurer's report

Dr Morrison asked for any comments – there were none. He then thanked all Council Officers for the hard work and effort which they had expended during the Session.

5. NOMINATIONS AND ELECTION OF OFFICE BEARERS

The list of officers coming up for election with nominees, proposers and seconders had appeared in the newsletter and on the overhead screen.

The President went over the list of those whose term of office comes to an end.

Positions were then filled as follows –

Position	Nominee	Proposed by	Seconded by
President	Neil Clark	W Semple	W Gray
Vice President	Brian Bell*	D Webster	W Gray
Vice President	Ben Browne*	W Semple	R Bryce
Vice President	Jim Morrison	B Bell	N Clark
Treasurer	Ian Veitch	B Browne	C Forrest
Meetings Secretary	David Webster*	M Donnelly	M Staitis
Junior Representative	Matthew Staitis*	D Webster	R Bryce
Minutes Secretary	Walter Semple	D Webster	M Donnelly
Newsletter Coordinator	David Webster*	Neil Clark	R Bryce
Ordinary Member (x3)	Vacant+		
Editor of SJG	Brian Bell*	M Donnelly	C Forrest
Editor of SJG	Colin Braithwaite*	M Donnelly	C Forrest
Independent Examiner	Ian Anderson*	M Anderson	W Gray

Notes:

* denotes retiring Officer willing to stand again

All nominees were successfully elected.

The President asked for applications from members to stand for election as Council members.

6. Accounts for the year ended 30th September 2018.

These Accounts as submitted were approved unamimiously.

7. Bank Resolution.

It was resolved that Ian Veitch be added to the list of authorised signatories to the Society's account with Royal Bank of Scotland.

8. There being no further business Dr Morrison then introduced Dr Roddy Muir, who addressed the Society on the subject of "Ben Nevis – a remnant of a Lost Volcanic Landscape".

Item 4: Membership Survey

1. Introduction

At Council meetings the concept of a membership survey was discussed and the question sets, timing and costs were subsequently agreed.

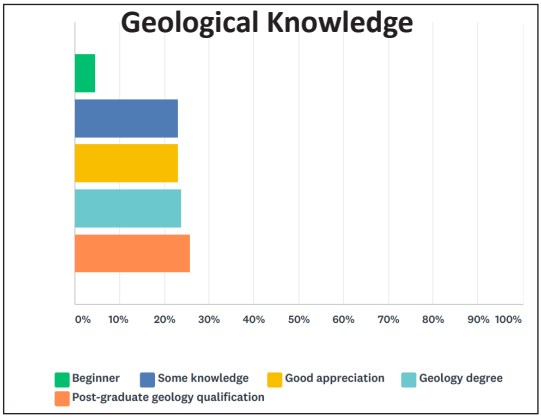
The survey was setup in SurveyMonkey – a well-known on-line survey tool – and a link to it distributed to the membership via the September newsletter and as a link in an email to members in early September. The newsletter also contained the survey questions as 'pull-out' allowing members to fill it in manually and post it.

By end October a total of 106 on-line responses had been entered and four hard-copies received – which were entered manually into the software. The total of 110 responses represents about one-third of the membership.

2. Summary of Results

Geological Knowledge: Only 4% described themselves as beginners and about 50% have a geology degree (or higher).

Length of Membership: Some 48% of the respondents have been members for over 10 years



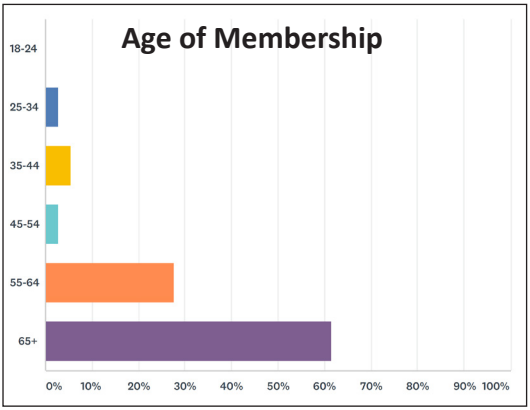
Age of Members: 62% of the membership are over 65 with a further 27% over 55. This is probably fairly normal for this type of society. No-one was under 24 – which is worrying.

Newsletter: 44% of the members receive the newsletter by post; many of these have email addresses in the mailchimp system and therefore also receive an on-line link. Many people prefer a hard-copy and probably read it more than the on-line edition.

The content of the newsletter is generally seen as ok. Members have noted that has been progressively improved since the A4 'billet' into the A5 booklet (designed by Simon)

which has been further upgraded recently with colour printing etc.

However, some members want it to be better – and a 'slicker' magazine style (like the Edinburgh Geologist, Down-to-Earth) was suggested, and to contain more geological news, 'big' geological stories and member articles. Also, more on geoconservation activities. Other suggestions included more obituaries and also a series on information about Council members.



Additionally, there was a suggestion that the Proceedings of the Society could be included in this potential magazine format – currently the main articles in the proceedings that are not included in the newsletter are the reports from members on the excursions.

Email Communications: This question confused some members. The newsletter is distributed four times a year by mailchimp with a link and the email usually contains other geological news, events, reminders about upcoming lectures etc. In intervening months, just the latter is included and there is not usually much communication during the summer. The term 'monthly' should have been 'regular'. Nevertheless, the communication is well received and members like to be kept in touch.

Lecture Programme: This is a core activity of the Society and the responses indicate that in general we are getting it right in terms of technical standard and many members come to the lectures (we should keep a record of numbers). The response to Question 1 about geological knowledge is apposite here as the audience is not dominated by beginners. More talks on weathering processes and mineral exploration requested. Also, a comment about getting same lecturers as other societies and to record lectures as webinars. Post-lecture arrangements could be reviewed and council members could wear name badges.

Public Outreach: The members agree that we should try and hold some advertised general-interest 'public' events/lectures – but not at the expense of the standard lecture programme. Possibly tie in with Science Festival. Needs to have clear aim (eg to promote membership, sign up for courses etc).Topics mentioned include Dinosaurs, Ice-Age, Fracking, Scenery, climate change, meteorite impacts, earthquakes, volcanos, sinkholes, metals in the modern world. Also some events aimed at younger generation.

Day Excursions: 37% of the respondents never go on a day excursion and there are about 15% who are regulars (go on most or all they can). Location doesn't seem too important and crucially the standard is at the right level. Leaders are praised for their clarity and enthusiasm. Some problems with terrain etc for less-able members (there is a suggestion that some trips could be specially setup for the less-able). Some issues re booking (oversubscribed) and whether non-members can attend

Residential Excursions: 76% of the respondents have never been on a residential excursion, but there are about 8% who are regulars (go on most or all they can). Location is not too important and crucially the standard is at the right level. Leaders are praised for their clarity and enthusiasm and the organisation of the trips is well regarded. Some problems with terrain etc for less-able members. Significant issues, however, about booking (often full). Improvement suggestions include running duplicate trips and to run longer trips to further away places.

General Improvements:

Some useful suggestions:

- More to encourage absolute beginners
- More advertising
- Society merchandise
- Younger members needed
- More joint activities with nearby societies
- Offer services to other groups
- New non-technical guides to Glasgow area geology
- More proactive with public
- Improved promotion of Fossil Grove
- Promote membership (eg forms available at lecture nights)
- School outreach
- Membership cards with name and number
- Name badges for Council members
- Go to a pub after lectures
- Better integration with Geoconservation Group
- Increased involvement of Glasgow University geological academic community

These ouputs were considered by a special meeting of the Council on 7 Novemer and by the full Council on 21st November. A summary of their discussions and proposed actions is shown below.

3. Council Consideration of Survey outputs

The Changing Role of the Society

The Society has a long and distinguished history. In the past it has been closely integrated with the academic community. The current trend is away from this integration. The survey shows that half of the membership has a geology degree (or higher). The other half do not although nearly all of them have a good knowledge of geology. The demand for evening lectures and day and residential field trips remains strong and is at the heart of the work of the Society. There is an increasing public interest in geology and learning about the way the planet works. The future of the Society is likely to require not only meeting the wishes of the existing range of members but also informing and attracting a wider range of members of the public. This is a necessary activity for a charity and is expressed in the Society's Constitution. The traditional understanding that the Society is a "Learned Society" could make it seem less accessible That said, it is essential for the continued health of the society that it maintains a close relationship with the academic community.

Age of Members

The Survey results suggests planning for attraction of younger members, including school pupils, students and adults below retirement age.

Evening Lectures

The survey responses indicate general satisfaction with the lecture content as presently arranged. The suggestion that Council members should wear name badges was not well received. If there were a need for new members to meet Council members, this should be addressed by a more direct form of welcome.

Field Trips: Day and Residential

These are well supported. Where demand exceeds supply of places, the trip can sometimes be repeated. Non members should be welcomed. Any insurance issue preventing this needs to be investigated and resolved.

Newsletter and Proceedings

The publication of "Proceedings" should be stopped. Accounts of field trips were valuable and should be published in the Newsletter. Although production of the Newsletter in hard copy was convenient, it was not clear that it was worth the work and expenses of distributing it by post. The question is posed of whether we should aspire to a more expensive magazine format, and if the Society has the human and financial resources to do this.

Interaction with Academic Community

The work of the Society attracts a limited but enthusiastic number of the academic staff. Perhaps the work of the Society is not seen to be helpful to research and teaching. There is a need to establish ways to encourage a change. The Society provides opportunities for staff to present their work to an interested audience, at its evening meetings and in field trips. There should be discussions with staff members about how the aspirations of staff members might be assisted to the benefit of them and the Society.

Attracting Students

David Webster and Matthew Staitis have started arranging meetings between visiting lecturers and students. The Society should make it a policy to develop ways of welcoming and involving students. Offering slots at members night has already been done successfully and should be developed.

Activities for School Pupils

This has been done successfully at Science week and other events. This should be included in the Society's policies. One or Council members should be asked to investigate potential events and arrange activities.

Public Outreach

The suggestion of a public lecture for those without previous knowledge was approved.

There are other bodies who may welcome joint activities with the Society. Examples are the Hunterian, The Ramblers Association, The University of the Third Age and the John Muir Trust [including their Glasgow section].

These activities require to be resourced by Council members without whom they will not happen.

Geoconservation

The links with the Strathclyde Geodiversity Forum are important. There should be better communication with them to discuss and agree objectives and progress.

Recruitment Of Council Members

The success of these ideas depends on whether the Council can offer the necessary human resources to carry them out. It should help the president to encourage recruits to the Council if he can explain specifically why their contribution is needed.

Library

The library is an important resource. It has not been catalogued. It is mixed in with the library of the academic department. If it is to be useful it needs to have a user base, a catalogue, adequate storage and a system for recording borrowing of books including the necessary administration. It is for debate and decision whether the society has the resources and will to do what is required. Abandoning the library would be a pity. It may be that it could be run in partnership with another body which might have spearheaded administrative resources to operate a computerised system which was not likely to be frequently used. WS will enquire about suitable library software systems.

Membership Administration

Campbell Forrest and Roy Bryce are working to establish systems for reducing the burden of this work. This is most welcome. The necessary financial support should be provided. The benefit in providing membership cards should be reviewed.

Item 5: Reports

a. President's Report

Exciting things are happening in the world of geology in Scotland with the help of the Geological Society of Glasgow. There is a new Scottish Geology Trust that is about to be launched and is hoped to help promote and fund geological projects in Scotland. The famous 19th century Scottish geologist and author of Principles of Geology, Charles Lyell's notebooks were offered for sale and bought for Edinburgh University. There have been so many projects that the members have been involved in that only a few can be mentioned here. The Society has become more involved with community projects including the Societies' Day at Kelvingrove, activities relating to the visit of Dippy the Dinosaur to Glasgow, and the Westerton Gala Day which had an extra-terrestrial theme including a stall explaining meteorites, with the help of Dr Luke Daly (University of Glasgow), Matthew Staitis and David Webster.

The Membership Survey, organised by David Webster, was a great success and has provided information which will help us to improve the Society over the coming years. This feedback will be a core part of future meetings of the Council, which Members are encouraged to join.

Thanks to Maggie Donnelly and Roy Bryce, we have had a fantastic range of field trips,

which have been very well attended, including the joint field trip with the Edinburgh Society to Blairskaith Quarry. The trip to Islay was so popular, that we decided to return there in 2020 where priority will be given to those who were unable to attend the 2019 trip, thanks to David Webster as well as Maggie. You can keep up to date with the activities of the Society on our new updated website, as well as the social media pages on Facebook and Twitter. Thanks to Bill Gray and the Website Committee for the immense amount of work upgrading the website, it is now first-class.

The publications of the Society are undergoing changes too and we are consolidating the Proceedings into the quarterly Newsletter which we hope will make it a more interesting read. Due to limited access in the Geology Department, we are looking to rehouse many of the Society's books. Thanks to Bob Diamond and the rest of the Publications Committee for all the sterling work they have done.

The Society is also heavily involved in the conservation and preservation of Fossil Grove in Victoria Park. This unique internationally important geoconservation site has been at risk for many years. More recently, Walter Semple, Campbell Forrest, David Webster and others have become involved with the Fossil Grove Trust and have done a lot of work liaising with Glasgow City Council in order to develop a plan to improve this vital geological site on our doorstep.

We are always sad when distinguished members of the Society leave us, and we are particularly sad that both Ben Browne and Mervyn Aitken both passed away this year. I would like to thank all Council Members for their commitment, ingenuity and contributions to the Society and I look forward to working with them in the future. We are always looking for new members of the Council and there are positions available for ordinary Council Members. We welcome opinions, suggestions and any help with the various committees and activities of the Society. Please contact us if you might be interested in finding out more or becoming more involved in discussing our future direction.

Neil Clark

b. Meetings Secretary's Report

First up on the 12th October was Professor Alasdair Skelton of the University of Stockholm who presented a case study of metamorphic fluid flow from the SW Scottish Highlands (including Islay).

On 9th November we welcomed Professor Ian Alsop from the Unviversity of Aberdeen who gave an enlightening talk on earthquake induced soft-sediment deformation who used a case study from the Pleistocene of the Dead Sea area to give pointers as to what to expect and intert in ancient deposits.

Our speaker for the 14th December lecture was Dr. Roddy Muir from Midland Valley Exploration here in Glasgow who gave a fascinating and very well received talk about the Ben Nevis North Face Survey in his talk and described alternative model of ingneous activity to the traditional caldera collapse model.

Into the New Year. On the 10th January our President, Dr Jim Morrison, delivered his

Retiring Presidential Address entitled “A broader view of the Moine Thrust”.

We welcomed Dr Nick Fraser from the National Museums of Scotland on the 8h February where he told us all about the amazing variety of Triassic beasties. This was a joint lecture with the Glasgow Natural History Society.

On the 8th March we welcomed Dr Bernard Besley, a consultant with Besley Earth Science Ltd, an expert in Carboniferous sedimentology and he delivered a very interesting talk on “Basin evolution in the Variscan foreland in southern Britain” - geology largely hidden beneath the Mesozoic cover and a bit different to the more familiar Scottish Carboniferous.

On the 11th April, in a change to the original programme, we were very grateful to Dr Iain Allison of the Society who stepped up to the plate without a lot of notice and gave a enlightening talk on Greenland. He covered aspects of the Archaean and early Proterozoic gneisses and, on Disko Island, their cover of Palaeogene volcanics and also the impressive glacial scenery and culture in west Greenland.

Finally, we had our usual Members’ Night on 9th May. The presentations were from:

- Jim MacDonald: “Coastal Dunes in North West Spain.”
- Matthew Staitis: “The ‘Blooms of Doom’- The effect of volcanic induced temperature and iron concentration increase on cyanobacterial growth, a possible analogue for the End Permian Mass Extinction.”
- Margret Greene: “Strathclyde Geoconservation Activities.”
- Bob Bower:: “What has sparked my interest in Geology and what I have learned so far.”
- Gary Hoare: Trearne quarry fossils (desk-top presentation).

David Webster

c. Day Excursion Secretary’s Report

The day excursions program started on 1st June with a trip to the Paraffin Young museum at the Almond Valley Country Park visitor centre followed by lunch then a guided tour of the National Mining Museum at Newtongrange. I had promised to arrange one excursion this year that could be enjoyed by members who had lost their enthusiasm for clambering over barbed wire fences and this very enjoyable and leisurely excursion was the outcome. There were 18 participants on the trip. Our leader on the day was Dr Iain Allison.

The next excursion was on 22nd June to Blairskaith Quarry. For the first time since I started organising these trips 5 years ago circumstances meant that I was unable to attend on the day. Bob Diamond very kindly offered to perform the admin duties on the day. Since this was our annual joint meeting and meal with the Edinburgh Geological Society, there can be some extra last minute changes to plans, but Bob coped admirably. On this trip there were 8 GSG and 18 EGS participants led by Dr Neil Clark.

Trip number three was a visit to the St. Abbs Head National Nature Reserve. I had worried that this was quite a long bus journey but it turned out to be a popular choice with 19 participants. We started and finished our trip at the excellent visitor centre

coffee shop. The excursion then followed a well made walking path with magnificent views both of the geology of the cliffs and out over the sea from the cliff tops. Many thanks to Dr Con Gillen for leading this trip.

The fourth field trip was on 27th July to inspect parts of the Ballantrae Complex. This is not called a Complex without reason, and Con had suggested that we would enjoy visiting a selection of sites along the coast. Unlike the museums visit, the paths we navigated were usually quite steep and slippery, so several of the party (including myself) decided not to attempt the descent to a couple of the exposures. Those that did brought us back some spectacular photos so we did not feel left out. Thanks again to Dr Con Gillen for leading this trip.

I have been struggling somewhat to find accessible places of geologic interest around the Glasgow area that we haven't already visited recently, so decided to offer one trip further afield this year in the hope that this would attract more people. On 17th August, 10 of us left for Threlkeld in the north of the Lake District. We were lucky with the weather and enjoyed excellent views over the landscape. This was followed by an excellent meal in the Horse and Farrier Inn. Many thanks to Dr Simon Cuthbert for his insights and local knowledge from previous trips.

I requested suggestions for places to revisit that we had not been to for a while, and the 2002 trip to Dalry and Saltcoats was mentioned by several people as well worth recreating. I contacted Dr Colin MacFadyen and he was kind enough to agree to dig out his old notes. On 7th September 21 of us set out on a cool but clear skied day to look for fossils in the Lynn Glen. The river was in spate but luckily Colin had some examples that he had found earlier. Next we drove down to Saltcoats for a walk along the coast culminating in a "find the fossil treestump" competition which attracted some local participation alongside our efforts.

As ever, could I thank everybody who joined us on the excursions, without your participation we would not be able to make these trips happen.

Roy Bryce

d. Residential Excursion Secretary's Report

1. **Islay** – Fri 26th to Mon 29th April 2019
Leader – Mr David Webster 21 participants
2. **Anglesey** – Sun 22nd to Fri 27th Sept 2019.
Leader – Ms Christine Arkwright, Open University. 18 participants

On Islay we stayed in various B & Bs in Bowmore and on field days used a 17-seater minibus plus one private car. The weather was mixed but the geology fascinating.
On Anglesey we stayed together in one hotel in Llanfairpwllgwyngyll (yes that town). We had booked (and paid for) a 17-seater minibus but the company actually provided a 27-seater coach – much more comfortable! The weather was good with some sunshine; again the geology was fascinating and so different from that of Scotland.
As on previous trips, volunteers were 'persuaded' to write a half day report, providing 6 reports for Islay and 9 for Anglesey.

Maggie Donnelly

e. Librarian's Report

There are a number of issues which need to be taken forward by someone (or a group) with the energy to undertake a quite considerable task.

1. What should be the collection and retention policy of the Library?

At present the Society's books and journals are intermingled with the Departments. Neither material is much used, but it does contain substantial amounts of valuable paleontological and Scottish geological material eg complete sets of BGS Scottish memoirs. There is a complementary complete set of Scottish Geological maps. Potentially this is of value to the membership but two issues would need to be resolved. Firstly, how would this material be publicised? and secondly, where would it be stored?

2. Although the immediate threat to the continued storage of our material seems to have abated, it is likely to be only a matter of time until the University asks us to remove our stock. It would be prudent to have a contingency plan in place for such a scenario.

Bob Diamond

f. Publications Officer's Report

Council has set up a Publications sub-Committee consisting of David Webster, Brian Bell, Margaret Greene and Bob Diamond. It has not met recently, but has identified the production of a new Glasgow Guide and a new Skye Guide as a priority. David Webster has done a great deal of work in identifying the possible sites for the new Glasgow guide. In order to restart momentum, and continue it there is a need for someone with time and energy to take a lead.

Online sales of the Madeira Guide still continue to provide a steady income. The book stock continues to decline, and it is doubtful if we should continue to stock anything other than Scottish field guides. The impact of Amazon and other online book sellers means that the purchase of 'commercial' books is probably uneconomic. Someone with ideas and energy is needed if this venture is to be continued. The present stocktaking and moving of books from store to upstairs is quite a disincentive to continuing with the service.

Bob Diamond

g. Proceedings Editor's Report

The proceedings were, as usual, printed by Panda Print wo have been serving us well for several years. Some were distributed by hand but most were mailed. Thanks go those who wrote extensive reports on the two residential trips and on the day trip to Muirsheil Country Park. Copies of these reports are now available in full colour on the website.

Mina Cummings

h. Scottish Journal of Geology Editors' Report

The final issue for 2019 is in page proofs and should be available in the near future. Papers are already published in 'Online First' on the journal website. This issue will

include a number of articles written by budding young authors, with help, where necessary, from the Editorial Board. This departure has been overseen by Heather Stewart and Martin Kirkbride and has been well received as doing something positive to promote new careers. However, we continue to suffer from a dearth of submisssions and remind readers that they do not need to be professional geologists if they have something to say about Scottish geology, the Board will assist them.

On our behalf GSPH also undertakes substantial additional editing. All references and order are checked. Symbols and equations are checked and any supplementary materials given direct links. Language, spelling and grammar are checked together with sentence inconsistency, figures and captions.

In the past year Maarten Krabbendam has found it necessary to give up his place on the Board because of commitments to his real work. His efforts both as an editor and referee have been much appreciated over the years. In his place, covering the same general fields, we have welcomed Romesh Palamakumbura.

Our partnership with the GSPH continues to bear fruit. A new feature is the exposure of the Journal in the Lyell Collection, of which we form a part, on Social Media, with combined subscriptions now of over 20,000. There are continuing concerns regarding Open Access. Our publishers operate the hybrid system that benefits the SJG. However, there is official pressure to move exclusively to Open Access but concerns as to how this can be financed when it currently costs an estimated £1,800 to publish a single article. There is a suggestion that it will become impossible for Gold standard OA to publish in what are referred to as hybrid journals, while at the same time failing to fund publication in wholly OA titles. The Geological Society (London) and Geoscience World (California) are in discussion, and a solution may be some way off, but these facts underline our dependency on these larger organizations that currently offer 46 Journals >2,000 Books and 4 million reference records. We would be unlikely to survive without this backing as most of our authors do not have independent funding.

Colin Braithwaite

i. Website Report

The website continued to be an important platform for promoting the society during Session 161. The Lectures and Excursions sections publicised the society's current activities to members and non-members alike, while the News section contained items of general geological interest as well as ones of immediate relevance to the society. A new set of extracts from the society's proceedings for significant anniversary years (150 years ago to 25 years ago at 25 year intervals) was added to the Anniversaries page of the Archive section, thanks to the efforts of the society's honorary archivist, Margaret Anderson.

A major upgrade to the website took place during Session 161. The original website was launched in January 2011 and given a minor upgrade in 2014. The main purpose in carrying out the new upgrade was to produce a "responsive" site which adjusts its display to suit the type of device that is being used to view it, and the upgraded

site looks a lot better on phones and tablets than the previous site did. The upgrade involved a lot of work in the design and prototype stages, which lasted from September 2018 until July 2019. This process involved extensive discussions between the society's website group and the website developers, Red Paint. The new site was launched on 1 August 2019. Following the launch, many teething problems were discovered, most of which have now been resolved.

The new website has a radically different appearance from the old one and has several new features. The Local Rocks map now has a zoom facility and has an additional interactive feature that allows one or more of the different rock types (sedimentary, igneous, metamorphic) to be highlighted. There is also an events calendar that displays the events taking place during a particular month and allows any of these to be selected to allow the details to be seen.

In previous years, the website report has contained a breakdown of traffic to the site and a comparison of the current year with the previous one. This is not possible this year because the website traffic was disrupted during the preparation and testing of the new website. I hope that it will be possible to reinstate this feature next year.

In addition to the website, the society continues to use its Facebook page and Twitter account to engage with the public. The Facebook page contains features of general geological interest as well as information about the society and its forthcoming events. The number of followers of the page has increased over the last year from 93 to 143. The most responses to a post occurred in April, when 457 people interacted with the post on the Lochaber Geopark. The 19 events advertised on the page over the last year reached 11,000 people, with 331 responses. The post that reached most people was the one on the "Should we bring dinosaurs back to life?" discussion at Kelvingrove, with over 9,500 reached and 264 responses. The majority of those considered "fans" were in the 25-34 age bracket, with the 55-64 age group coming a close second. There were almost equal numbers of women and men among the fans. The same could be said for our followers too. If you have a Facebook account, or use other social media, please "like" and share any society posts that you find particularly interesting.

The society's Twitter account (@GeolSocGlasgow) continues to gain in popularity and now has 61 followers, almost twice the number that it had a year ago (31). If you have a Twitter account, please follow us and retweet any of our tweets that you like.

In my role as Webmaster I am assisted by three society members who join me in the website working group: Neil Clark, Maggie McCallum and Maggie Donnelly. This group meets regularly to discuss the development of the website and has been especially busy in the past year with the website upgrade. I am grateful to all three for their continuing support.

The website requires a continuing input of news items and event details to keep it fresh and topical. I am grateful to society members who have provided such material in the past and encourage all members to continue to send relevant articles and information to web@gsocg.org.

Bill Gray

j. Membership Secretary's Report

Membership number appears stable, but includes a number of lapsed/defunct members. These are quite difficult to detect due to the fairly high proportion of "late" payers and the high proportion of members (34%) who do not pay by standing order.

Considerable effort will be made during Session 162 to "clean up" this number. Terminations and deaths recorded were 12.

	At end Session 161 (30 Sep 2019)	At end Session 160 (30 Sep 2018)
Honorary Members	5	5
Ordinary Members	253	253
Associate Members	70	70
Junior Members	19	18
Institute Members	3	3
TOTAL Members	350	349
New Members	13	18

Campbell Forrest

k. Strathclyde Geoconservation Group Report

On 16th February SGG had a stall in Kelvingrove Museum as part of 'Dippy' Information Day. A5 fliers were produced for that day, they cover: The Whangie, The Highland Boundary Fault at Balmaha, Campsie volcanoes and lava, Glasgow Necropolis, New Lanark, Glasgow Drumlins and Havoc Hole at Dumbarton. The fliers and other leaflets were available and a number of SGG members discussed the geology of the surrounding area with members of the public.

Our next 'Dippy' day was on 6th April. This was an 'activity' day which was held in the Educational Room of the Museum. A wide range of 12 different activities was on offer; one of the favourites was gold panning for which we have to thank Sarah Arkley from BGS. Another favourite was identifying various dinosaurs; there was also a quiz about Dippy with a prize of an egg containing a small dinosaur for the correct entries.

Over the summer M Greene was forwarded a number of queries which came in to the GSG mail, these included a request to find out what quarry the sandstone of the enquirer's house came from - and another quarry related question from a couple who were involved in an art project called "Erratic Drift" https://www.facebook.com/erraticdrift/.

D Webster put the North Lanarkshire Geodiversity Audit, written by Paul Carter PC and Mike Browne MB and typed by A Drummond and B Balfour, in the February GSG Newsletter. The NLC Geodiversity Action Plan is now on the NL website again due to the efforts of PC and MB. The script for a new leaflet "North Lanarkshire Rocks" has been passed to Laura McCrory, biodiversity officer at NLC, who is hoping to help with layout and printing. This is still pending.

B B has also been typing up their audit reports of sites in South Lanarkshire, namely Calderglen Country Park and Rotten Calder, East Kilbride Expressway to the River Clyde. Once MB has added photos etc, the documents will be submitted to the Biodiversity Officer of South Lanarkshire.

500 copies of the booklet on the geological trail in Glasgow Necropolis were printed. The Friends of Glasgow Necropolis received a number of them and Glasgow Cathedral has received approx 200.

SGG was asked to look into the fact that there is no geology in the Lodge (formerly the David Marshall Lodge) above Aberfoyle, run by Forest and Land Scotland (FLS). This resulted in a number of members of SGG meeting with Mike Keen in the Lodge on 13th August to discuss a variety of proposals. There has been encouraging correspondence with FLS and at present we are in the process of gathering a small display of rocks relating to the geology around Aberfoyle as well as putting together information sheets on a variety of geological subjects e.g. the Highland Boundary Fault and the slate quarries.

In September SGG was involved in the Doors Open event with a walk round the Building stones of Central Glasgow on the 18th and Allison Drummond was present at the Fossil Grove for its Open Day on 22nd September.

Margaret Greene

l. Geodiversity: Argyll and the Islands Report

The GAI AGM was held in March 2019 on Luing at the Atlantic Islands Centre. The meeting was joined by Seonaid Leishman from Strathclyde Geoconservation group. Following the meeting there was a short excursion to Ardinamar to discuss the mineralisation associated with the Tayvallich Volcanics, metamorphosed to epidiorite schist/metabasite. A variety of common minerals were noted, but the exposures were too fractured and faulted for useful conclusions to be drawn. The locality is known for its manganese minerals as well as more common minerals including galena, chalcopyrite and sphalerite. In WW2, the area is reported to have been assessed by Canadian miners for its potential for manganese ore extraction, but the only signs are small trial adits.

In September Historic Environment Scotland in association with the Rockfield Centre in Oban held a public event called Stonefest intended to stimulate interest in natural stone, including the resurgence of skills associated with working stone. GAI and the Luing History Group provided specimens and exhibits for a display of slate working history on Luing. A visit to Luing by HES indicated they were interested in the potential for small scale slate working for conservation work, with associated skills training. This remains to be taken further.

A*lastair Fleming*

m. Treasurer's Report

1. The results for the year show that expenditure exceeded income resulting in a deficit of £3,193. This was anticipated and has come about because of planned expenditure of £4,403 on a major upgrade to the website.

THE GEOLOGICAL SOCIETY OF GLASGOW

Income and Expenditure Account for year ending 30th September 2019

			Session 161 2018 - 2019		Session 160 2016 - 2017	
Income						
1. Subscriptions						
Received during year			6564		6580	
Deduct paid in advance this year			-50		-181	
Add received in advance last year			181	6695	324	6723
2. Investment Income						
National Savings				167	132	132
3. Gift aid				0		1185
4. Publications	In house	net surplus	250		112	
	Moine Guide	revenue	187	437	75	187
7. Saturday excursions		net surplus		285		97
8. Week end excursions		net surplus		31		48
9. Donations (coffee collections & personal)				438		275
10. Bank Charges net refund				0		25
Total income				**8,053.00**		**8672**
Expenditure						
1. Meetings incl speakers expenses, etc			866		1582	
Room Hire			3687	4,553	3663	5245
2. Publication and postage of Proceedings				502		535
3. Strathclyde Geoconservation				0		0
4. Library and Down to Earth				320		270
5. Affiliation fees				40		40
6. Insurance				213		202
7. Website	Maintenance		338		374	
	Upgrade		4403	4,741	54	428
8. Admin costs - postage, stationery, etc						
Newsletter				584		788
Miscellaneous				9		5
Membership Secretary(including new software)				212		329
Treasurer				72		58
9. Presentation for long service				0		200
Total expenditure				**11,246.00**		**8100**
Deficit fot the year				**-3,193.00**	Surplus	572

2. After deducing the deficit Members' funds are £17,427. In addition, we have Restricted Funds of £8,356 and an Endowment Fund of £59,171.
3. Membership income is down very slightly at £6,695. There is no gift aid income this year as the claim has not yet been submitted and processed. However, the income of around £1,000 will be included in the following year.

THE GEOLOGICAL SOCIETY OF GLASGOW

Balance Sheet as at 30th September 2019

			Session 161			***Session 160***	
			2018 - 2019			*2017 - 2018*	
Members' Funds							
Balance as at 30/09/2018			**20,620**				
Add Surplus for the year			(3,193)			*Surplus 572*	
Members' Fund as at 30th September 2017				**17,427.00**			
Restricted Funds	TN George fund		340				
	less engraving costs		0	340			
	Brian Bluck fund at 30/9/18		8,000				
	less prize 2019		500	7,500			
	Conoco-Phillips fund		1,350				
	less share to other societies		834	516			
Total non endowment Funds				**25,783**			
Represented by							
Current assets							
Cash at Bank							
Royal Bank of Scotland		6,539				*9636*	
Less due to endowment fund		882	5,657				
National Savings Income Bond			12,000			*12000*	
National Savings Investment Account			4,307	21,964		*4140*	*25776*
Cash in hand							
Publications Officer				22			
Weekend Excursion sec				165			
Stock of Publications	In house			2,608			*2854*
	Moine Guide part of stock held by Nat Mus Scot			1,007			
Add Debtors	Room Hire in advance			483			
Less Liability				26,249			
	Subs paid in advance		50				*181*
	Outstanding payments		416	466			
Net assets				**25,783**			

Endowment Fund			
Investments			Balances
Value at 30.09.18			59,466
Loss in value in the year			(295)
Value at 30.9.19			**59,171**
Income			
Balance at 1 October 2018			1,778
Income for the year		3,083	
Sponsorship			
to Strathclyde RIGS	200		
to Scottish Geodiversity Forum	125		
to Friends of Hugh Miller	50		
Total Sponsorship		375	
Surplus for the year			2,708
Legacy from Nigel Trewin			1,000
Balance at 1 October 2018			**5,486**

4. Publication income is well up at £437 due to good sales of the Madeira and Moine guides, and there are surpluses on both the Saturday and Residential excursion accounts.
5. Excluding the website upgrade overall expenditure is down £1,077 on last year with savings in a number of areas.
6. The Conoco Phillips fund was set up to award a prize to the top pupil in the Geology Higher. As there is no longer such a Higher, we have agreed with Conoco Phillips that the balance on the fund can be shared between the 3 Scottish Geological Societies to be used for suitable purposes.

7. The Endowment fund which was set up last year has generated income on the year of £3,083 of which £375 has been spent on awards. Together with the surplus from last year there is an income balance of £5,486 to be used as appropriate.
8. The balance on the Endowment Fund is £59,171 down by £295 on last year due to market movements. This is not a concern as the investments are long term and are achieving the objective of generating endowment income.

Ian Veitch

Item 6: Council Elections

The positions that have come up for election are listed here along with the proposed nominations:

Position	Nominee	Proposed by	Seconded by
Secretary	Walter Semple*	M Cummings	N Clark
Archivist/Asst Librarian	Margaret Anderson*	W Gray	N Clark
Proceedings Editor	Post discontinued		
Librarian/Publications Officer	Vacant		
Webmaster	Bill Gray*	C Forrest	M Cummings
Website Consultant	Neil Clark*	I Millar	J Morrison
Ordinary Member+	Simon Cuthbert*	M Cummings	W Semple
Ordinary Member+	Mina Cummings	M Anderson	N Clark
Editor of SJG	Brian Bell*	N Clark	W Semple
Editor of SJG	Colin Braithwaite*	N Clark	W Semple
Independent Examiner	Ian Anderson*	N Clark	W Semple

Notes:

* Denotes retiring postholder willing to stand again

+ The Council can have up to six ordinary members. Currently there are four. If you are willing to join the Council as an ordinary member then please get in touch.

Retirees:

Jim Morrison has stood down as Vice President. **Bob Diamond** has stood down as Librarian/Publications Officer

Continuing Officers:

The following continue in office: **Neil Clark** - President, **Brian Bell** - Vice President, **Campbell Forrest** - Membership Secretary, **David Webster** - Meetings Secretary and Newsletter Coordinator, **Roy Bryce** - Day Excursions Secretary, **Maggie Donnelly** - Residential Excursion Secretary, **Ian Millar** - Ordinary Member, **Ann Ainsworth** - Ordinary Member