



# THE HIGHLAND GEOLOGICAL SOCIETY

Scottish Charity No. SC004427

**FEBRUARY 2019**

Dear Members,

Many thanks to everyone who has renewed their membership subscriptions for the coming year; if you have forgotten, Alan will in touch separately.

This is my final missive as I will stand down as Secretary at the AGM later this month but Dave Longstaff will keep you informed of the Society's activities. This newsletter gives details of an additional field trip in September and also information about the December meeting, which will take place on 11<sup>th</sup> Dec, not 4<sup>th</sup> Dec as stated in the last newsletter; please note that November's meeting date has also been corrected:

20<sup>th</sup> February – AGM and members rock night

27<sup>th</sup> March – *An introduction to the Geology of Eigg*, Dr Angus Miller, EGS and Geowalks

13<sup>th</sup> – 18<sup>th</sup> April – *Eigg* – self-led excursion

9<sup>th</sup> – 13<sup>th</sup> May – *Assynt*, Prof. Ian Parsons, Lochaber Geopark, and Dr Mike Simms, National Museums NI

16<sup>th</sup> June – *Building stones of Inverness*, Andy Moffat and Dave Longstaff, HGS

21<sup>st</sup> July – *Glen Feshie*, David Jarman, HGS

25<sup>th</sup> August – *Kintail and Rattigan*, Andy Moffat and David Longstaff, HGS

**22<sup>nd</sup> September** – *Strathpeffer*, Prof. John Parnell, University of Aberdeen

9<sup>th</sup> October – *Dinosaurs and Ice*, Alison Tymon

6<sup>th</sup> November – *An introduction to the glaciation of the Inverness area*, Jon Merritt, BGS

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

## **WINTER PROGRAMME 2019**

**20<sup>th</sup> February** – **AGM** and Members' Rock Night

Please come and support our Annual General Meeting – this is an important activity in showing that we continue to comply with Scottish Charity regulations. If you are interested in joining the committee, either as an office bearer or member, please contact Stephen (details at the end of the newsletter) for more information. As noted above, Alison will stand down as Secretary and although various members of the committee have volunteered to take on different aspects of the role, it would be a great help if a member could volunteer to become Secretary. Anyone willing to do so should contact either Alison or Stephen.

Following the AGM, mineralogist Michael McMullen will give a short talk entitled '*Over the sea to Skye ...a mineral collecting experience to Sgur nam Boc and Moonen Bay*'. Michael has collected zeolite minerals from these classic sites in the Palaeogene lavas and will bring some of his specimens along to illustrate his talk.

There will also be an opportunity for members to have help identifying specimens picked up somewhere along the line but now can't remember where or why!

**\* If you have a particularly interesting rock that you would like to share with your fellow members, please bring it with you! \***

**27<sup>th</sup> March** – *An introduction to the Geology of Eigg*, Dr Angus Miller, EGS and Geowalks (<http://www.geowalks.co.uk/index.html>)

The small Hebridean island of Eigg displays a fantastic variety of geology in a beautiful setting. Hugh Miller made some remarkable discoveries here in brief visits in the 1840s. The north and east coast of the island expose Jurassic sedimentary rocks with close affinities to Skye - as well as Miller's famous plesiosaur fossils, dinosaur bones have recently been discovered. While most of the rest of the island is Palaeogene basalt lava flows akin to Skye and Mull, the last known volcanic episode in this area created the unique pitchstone ridge of the Sgurr. A recent reinterpretation of its formation gives field parties plenty to speculate about!

\* Angus will also have copies of the 2016 guidebook for sale – details below \*

## SUMMER PROGRAMME 2019

**Saturday 13<sup>th</sup> – Sunday 18<sup>th</sup> April**, *The Isle of Eigg*, self-led

This excursion will be self-led but the recent publication of a new guidebook\* means that we will be able to put our time on the island to good use. The geology is varied (see Angus Miller's abstract above) and is readily accessible so it should be an interesting few days.

\* **This excursion is now fully booked** \*

Please email: Stephen Young if you wish to be put on a reserve list ([sstyoung84@gmail.com](mailto:sstyoung84@gmail.com))

\*Hudson, J.D., Miller, A.D & Allwright, A. 2016. *The Geology of Eigg*. Edinburgh Geological Society. ISBN-13: 9780904440164

Available from the EGS: <http://www.edinburghgeol.org/publications/geological-excursion-guides/#eigg>  
Price £7.50 for non-members; £6 for members.

**Thursday 9<sup>th</sup> May** – *The Stac Fada impact ejecta deposit and the Lairg Gravity Low: Evidence for a buried Precambrian impact crater in Scotland*, Dr Mike Simms, National Museums Northern Ireland

The Stac Fada Member was formed by a giant meteorite impact 1.2 billion years ago, but just a little of this ancient deposit now survives on the coast of NW Scotland. No impact crater has yet been identified but there is a remarkable correspondence between its location, as inferred from these coastal exposures, and the position of a 40 km diameter geophysical anomaly centred on Lairg, more than 50 km to the east. Comparison with other impact craters around the world suggests that the Lairg Gravity Low represents an impact crater at least 40 km in diameter, and possibly much larger, now buried beneath younger rocks. *Mike's talk will look at the evidence for the impact, and the people and events involved in unravelling this ancient catastrophe. Join us for what promises to be an interesting and lively event.*

**The talk will take place at 7.30 pm at the NWHG Rock Stop, Unapool** \***BOOKING ESSENTIAL**\*  
email: Alison Wright for more information ([a.j.wright00@aberdeen.ac.uk](mailto:a.j.wright00@aberdeen.ac.uk)).

**Friday 10<sup>th</sup> – Monday 13<sup>th</sup> May**, *Assynt*, Prof. Ian Parsons, University of Edinburgh/Lochaber Geopark  
This trip will be 3 full-days in the field (Friday-Sunday) with a half-day on Monday, depending on participants' availability. The group will be based at the Inchnadamph field centre but we will use the private rooms rather than the hostel dorms (<http://www.inch-lodge.co.uk/index.html>).

Mike Simms will lead an excursion to Stoer on 10<sup>th</sup> May providing an opportunity to discuss the formation of the Stac Fada Member in the field.

Please let Alison know **as soon as possible** if you plan to join this excursion so that we can make suitable arrangements with the field centre.

**Sunday 16<sup>th</sup> June**, *Building Stones of Inverness*, HGS members

*Meet at 10 am outside the Central Library, Inverness* – \* **BOOKING ESSENTIAL** \*

Further investigation by HGS members into the building stone used in Inverness has been complemented by historical notes provided by Susan Brooks from Inverness Museum. Join the group to see what progress has been made – there is an online tour produced by the museum and we hope ultimately to incorporate the geological information into this.

email: [Andy Moffat for more information](mailto:andy Moffat) (andymoffat\_rocks@hotmail.com)

**Sunday 21<sup>st</sup> July**, *Glen Feshie*, David Jarman, HGS

Join David for an in-depth look at the geology and geomorphology of the upper braided reach and glen head. We will also discuss the landscape origins of the Feshie (Glen, gorge, and upper basin) and environs, and focus on ‘why is the finest braided river in Britain here?’!

email: [David Jarman for more information](mailto:david.jarman914@virgin.net) (david.jarman914@virgin.net)

**Sunday 25<sup>th</sup> August**, *Kintail and Rattigan*, Andy Moffat and David Longstaff, HGS

This will be a day-trip to look at chrome diopside in Kintail and eclogite at Rattigan, both unusual green rocks!

email: [Dave Longstaff for more information](mailto:daveandkaren21@btinternet.com) (daveandkaren21@btinternet.com)

**Sunday 22<sup>nd</sup> September**, *Strathpeffer*, Prof. John Parnell, University of Aberdeen

Bitumen veins were formerly mined as ‘coal’ from Moinian metamorphic basement at Castle Leod, Strathpeffer, Ross-shire. Biomarker characteristics correlate the bitumen to Lower Devonian non-marine shales separated from the Moinian basement by a major fault. Bitumen veins are particularly orientated E–W, and may be associated with Permo-Carboniferous E–W transfer faults. Bitumen nodules in the Moinian basement, contain thoriferous/uraniferous mineral phases, comparable with bitumen nodules in basement terrains elsewhere. Formation of the nodules represents hydrocarbon penetration of low-permeability basement, consistent with high fluid pressure. This excursion will explore the emplacement of the bitumen and its relationship with the basement rocks.

email: [Stephen Young for more information](mailto:ssty young84@gmail.com) (sstyoung84@gmail.com)

## **WINTER PROGRAMME 2019 – 2020**

**9<sup>th</sup> October** – *Dinosaurs and Ice*, Alison Tymon (details to follow)

**6<sup>th</sup> November** – *An introduction to the glaciation of the Inverness area*, Jon Merritt, BGS

The coastal lowland flanking the southern shores of the Inner Moray Firth to the east of Inverness contains an excellent record of the retreat of a major tidewater glacier that flowed out of the Great Glen. Together with a flight of raised late-glacial marine shorelines, there is evidence of several glacial oscillations, including the ‘Ardersier Readvance’, which resulted in the tectonic disturbance of sediments. The area includes a diverse assemblage of glaciofluvial and deglacial features, including the Flemington Eskers and transverse moraine ridges. The hinterland contains a wide range of ice-marginal landforms and numerous sections in glacial material formed both during and before the last glaciation. The Middle Findhorn Valley contains a particularly impressive suite of landforms associated with ice-marginal ponding. The district contains a relatively long Pleistocene record, including two well-established interglacial/interstadial sites (Dalcharn and Moy) and the enigmatic rafted deposits of shelly clay and till at Clava, made famous in the 19th Century.

Jon Merritt, presently an Honorary Research Associate of the British Geological Survey in Edinburgh, has studied the Quaternary of the area for over 40 years. He has led numerous field excursions to the area for colleagues and the Quaternary Research Association.

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

Zircon is the most important mineral used by geologists for dating old rocks. Zircon almost always contains traces of radioactive uranium, and as these parent atoms decay, daughter isotopes of lead accumulate in the zircon, allowing the age of the zircon to be measured. Zircon typically occurs in silica-rich rocks such as granite, forming tiny crystals maybe a tenth to a twentieth of a millimetre long. In some metamorphic complexes, like the Lewisian of NW Scotland, repeated high-grade heating can generate successive generations of zircon growth, which can sometimes be separately dated, but the small size can make analysis and interpretation difficult, especially if rocks have stayed hot for a long time. Nevertheless, zircon accounts for almost all we know about the age of old parts of the Earth's crust such as the Lewisian.

In the 1960s, mineral collector Gordon Sutherland discovered very large (mm to cm-sized) pinkish zircon crystals in dark ultramafic rocks near Badcall. Ultramafic rocks do not normally contain any zircon so this occurrence was very strange and the geological context remained unexamined and unresolved for many years. However, Andy Moffat, who had known Gordon Sutherland, recently provided key information about these large crystals, allowing the original locality to be properly mapped, and investigated. During this work, similar giant zircons, also in ultramafic rocks, were found in Lewisian rocks in Iona and Harris. These occurrences represent a hitherto-unknown type of occurrence for zircon. We now believe that they are probably common, but have been missed, because people assumed there could not be zircon in such rocks. These occurrences have great potential for getting good isotopic dates in complex metamorphic rocks all around the world, and may also help explain the origins of giant zircons found associated with diamonds, in kimberlites from the Earth's mantle, shedding light on processes in the deep Earth.

#### **BEQUEST FROM THE ESTATE OF PROFESSOR NIGEL TREWIN**

The society has received a generous bequest from the estate of the Professor Nigel Trewin who died in October 2017. Nigel was a great supporter of our activities, giving talks and leading a number of excursions over the years. If you have any suggestions as to how the money might best be used please contact Stephen with your proposal.

#### **OTHER ITEMS OF INTEREST**

**Friends of Hugh Miller:** The latest edition of 'Hugh's News' is available at: <https://s3-eu-west-1.amazonaws.com/s3.spanglefish.com/s/27844/documents/newsletters/newsletterfebruary19.pdf>. Bob Davidson, the Chairman of the Friends, was awarded an MBE for services to palaeontology in the recent New Year's Honours list so have a look at their newsletter for more information.

#### **CONTACT INFORMATION:**

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