



# THE HIGHLAND GEOLOGICAL SOCIETY

Scottish Charity No. SC004427

August 2019

**Dear Members,**

Welcome to our latest newsletter detailing our remaining summer excursions and lectures of the winter season.

## 2019

25<sup>th</sup> August – *Glen More and Glenelg*, Dave Longstaff, HGS

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

### **Lectures**

9<sup>th</sup> October – *Adventures in the beauty of rocks*, Prof. Gordon Walkden, Professor Emeritus, University of Aberdeen

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

## 2020

15<sup>th</sup> Jan – *Scottish hydro power: Excavations in rock. The role of the Engineering Geologist*, Chris Ravey, Ravey Consulting Ltd

19<sup>th</sup> Feb - AGM followed by *New research into the Elgin Reptiles*, Dave Longstaff, HGS

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

## REMAINING SUMMER PROGRAMME 2019

**Sunday 25<sup>th</sup> August, *Glenelg and Glen More*, Dave Longstaff, HGS  
BOOKING ESSENTIAL**

*Meet 1030, Glenelg War Memorial NG 810 192.*

During the morning we can look at a Moine/Lewisian unconformity on the shore north of Glenelg and examine beautiful wave washed examples of Lewisian gneiss and cross-bedded Moine metasediments.

Moine guide: - Page 125-128, LOC 6.1 and LOC 6.2.

After lunch we will undertake a short climb up Cnoc More (1-2KM from Glenelg), and adjacent ridge, to examine exposures of “streaky” eclogite, marble and amphibolite.

Moine guide:- Page 138, LOC 7.1 A and LOC 7.1C

[http://earthwise.bgs.ac.uk/index.php/Moine\\_geology\\_of\\_East\\_Glenelg\\_and\\_Loch\\_Duich,\\_East\\_Glenelg - an excursion](http://earthwise.bgs.ac.uk/index.php/Moine_geology_of_East_Glenelg_and_Loch_Duich,_East_Glenelg_-_an_excursion)

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

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

*Meet at 1000 am at Museum Coffee shop on the Old Station platform, Strathpeffer.*

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 to book and for more information](mailto:sstyoung84@gmail.com) (sstyoung84@gmail.com)

**WINTER PROGRAMME 2019 – 2020**

Monthly lectures commence at 1930 pm and are held in the Millburn Academy on Wednesday evenings.

**9<sup>th</sup> October – *Adventures in the beauty of rocks*, Prof Gordon Walkden, Professor Emeritus, University of Aberdeen.**

Gordon writes: "Mankind has found utility, beauty and significance in rock for millennia. Sadly, over the last century as our understanding of rocks has blossomed, our aesthetic use of them has fallen away.

Marble, granite, slate and limestone, once great utilities and sources of ornamental wonder have lost their magic. Furthermore, scientists often find it necessary to disregard beauty in rock because it defies measurement and could bias impartiality.

Life is short, and retirement liberating. Impartiality is no longer my concern and I can now indulge in the beauty of the medium that has paid my career. This talk pursues the beauty of rock; how fortunes have been made and lost in its pursuit, how it has been used to enhance our world and how understanding rocks can actually add a new layer of beauty to their aesthetic appreciation".

**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 glaciogenic 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.

**15<sup>th</sup> January- *Scottish hydro power: Excavations in rock, The role of the Engineering Geologist* : Chris Ravey, Ravey Consulting Ltd.**

Renewable energy may be a hot topic at the moment, but it is far from being a new concept. During the 1950's and 60's, large teams of workers and engineers were involved with the design and construction of numerous complex and fascinating hydroelectric engineering schemes. As a result of these schemes, rainwater falling over 10% of the land mass of Scotland can now be used for the generation of electricity. With the recent surge of interest in renewables, including run of the river hydro schemes, this catchment area is only likely to increase.

However, as with any major long-term asset, the safety and lifespan of these schemes is reliant on stringent inspection and maintenance regimes, including over 500km of tunnel and aqueduct, and many large rock faces. Inspections of large rock faces and unlined tunnels through rock are undertaken by engineering geologists experienced in the assessment of rock slope and tunnel stability. If required, the engineering geologist will recommend and design suitable risk reduction measures, and will work closely with a specialist contractor during implementation of any works.

Engineering Geologist Chris Ravey has been working with the SSE hydro engineering team for over 17 years, primarily inspecting unlined rock tunnels and rock faces, and providing practical

advice on maintenance issues and remedial works design. In recent years, Chris has worked with smaller renewable energy companies at the planning and construction stages of run of the river hydro schemes. In this lecture, Chris plans to share his experience of work as an Engineering Geologist within the hydroelectric industry by presenting a variety of projects undertaken in some very interesting, very scenic, and sometimes unusual locations.

**19<sup>th</sup> February – AGM followed by *New research into the Elgin Reptiles*, Dave Longstaff, HGS**

Currently Dr Davide Foffa (NMS) and postgrad student Emily Keeble (Bristol University) are working on recently made CT scans of some of the Elgin reptile fossils. Over the next few months Elgin museum should see the results of their research and Dave will describe the new findings.

**18<sup>th</sup> March - *Ross of Mull granite*, Dr Adam Zaniewski, University College, Cork (details to follow).**

**HGS, OTHER ITEMS OF INTEREST**

HGS has agreed to support, together with other Scottish geological societies, the formation of The Scottish Geology Trust

<https://www.scottishgeology.com/introducing-scottish-geology-trust/>

And, also, we have agreed to contribute £100 to the appeal to save Charles Lyell's notebooks.

<https://www.ed.ac.uk/giving/save-lyell-notebooks>

With Skye dinosaur fossils and footprints (and a Pterosaur) becoming ever more prominent in the public eye Scottish Natural Heritage have recently signed a new fossil collecting code specific to Skye.

<https://www.nature.scot/landforms-and-geology/protecting-our-geodiversity/codes-researchers-and-collectors/fossil-collecting-skye>

Not an HGS event but Andy Moffat will be leading two Inverness Building Stones tours, 27<sup>th</sup> and 29<sup>th</sup> August. Event is free but booking essential.

<https://www.eventbrite.co.uk/e/urban-geology-gems-a-geological-walking-tour-of-academy-street-inglis-street-high-street-tickets-65027375631?aff=ebdssbdestsearch>

Older HGS members may have fond memories of attending O.U courses at Kindrogan Field Centre. Recently the field centre has been put on "strategic hold" with fears that it is being earmarked for closure and subsequent sale, something which it has been suggested may be contrary to a previous agreement. Members who are concerned at this development may wish to write to their MSP, or the Field Studies Council, to express their concern.

<https://www.field-studies-council.org/centres/scotland/kindrogan.aspx>

**NW Highlands Geopark** have two forthcoming events which may interest our members.

27<sup>th</sup> August. A talk by Alastair Mitchell on historical geology maps.

<https://www.nwhgeopark.com/event/historical-geological-maps-with-alastair-mitchell/>

17<sup>th</sup> September. A book launch by Alan McKirdy, Landscapes in stone-Northern Highlands.

<https://www.nwhgeopark.com/event/book-launch-northern-highlands-by-alan-mckirdy/>

The NW Highlands and Lochaber Geoparks are both offering geotours in their respective regions, details can be found from the following links: -

**NW Highlands Geopark Geotours**

<https://mailchi.mp/e91e700f5ab8/geotours-2840933?e=22b8c68ac2>

**Lochaber Geopark Geotours**

<https://lochabergeopark.org.uk/geotours/>

Other Scottish geological societies' field trips can be accessed with these following links: -

**Edinburgh Geological Society field trips**

<https://www.edinburghgeolsoc.org/excursions/>

**Glasgow Geological Society field trips**

<https://geologyglasgow.org.uk/events/category/excursions/>

**Open University geology field trips**

<https://ougs.org/scotland/events/>

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