

The Edinburgh Geologist

Magazine of the Edinburgh Geological Society

Issue No. 45

Autumn 2005



**Incorporating the Proceedings of the Edinburgh Geological Society
for the 171st Session 2004-2005**

The Edinburgh Geologist

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Cover illustrations

Front cover

Looking back over Beinn Ghlas from Ben Lawers.
In the background can be seen Glen Lochay and Glen Dochart
behind which are the peaks of Stob Binnein and Ben More.

See article on *Mountain geology* on page 6.

Back cover

Musselband Ironstone from the drift at Craigpark Quarry, Ratho.
This photograph is chosen to complement *Geo-vineyards* (page 16)
and *More on Ironstones* (page 17), and is published with thanks
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Following on from last issue's report on the 1932 GA field trip to Ardnamurchan, **Ralph Watson** sent me a letter and some photographs that he took on that expedition! Another letter from Alyn Jones tells of his father's work for the Geological Survey at the same time in Morvern.

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other 'ironstone labels' that readers might find of interest. We then move on to look at ironstones in Scotland, whose presence was of such importance during the Industrial Revolution. This article has been researched largely through the Internet.

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The remainder of this issue is taken up with the Proceedings of the Edinburgh Geological Society for the 171st session. This number includes obituaries of former Fellows John Smith and Scott Johnstone, who died during the last session.

Editorial

Time for a change

As readers of the Edinburgh Geological Society's *Billet* will be aware, I have decided to pass on the editorial pencil. With this issue, No. 45, I will have edited a third of the complete series. In that time, the magazine has seen the transition from photocopied word-processed text to a desktop-published digitally-printed document. A year ago, issue no 43 saw the progression to a full-colour cover. I feel that I have made my mark on the magazine but the cosmetic changes in appearance do not mask what seems to me an underlying malaise. What is needed now is someone who can bring fresh vitality to the content.

Perhaps the fault is my own because I am no longer chasing folk for articles in the way I used to do. Whatever, the result has been that I have found myself writing more articles myself – and this issue is no exception. So the time has come for a change at the helm... and then I shall, of course, be delighted to be a contributor to the magazine (if I am asked!).

When I started my stint as Editor, I wrote an article entitled *The Edinburgh Geologist – the first thirty issues*. I have decided to reprint this, or at least the greater part of it, updating as I go along and adding a codicil. And I have called it *The Edinburgh Geologist – the first forty-five issues*.

I am pleased to be able to publish another of my new series *Mountain Geology*. Suzanne has written three of these now, all taken from work carried out for the National Museums of Scotland. This article is on the Lawers Range. By coincidence, just after

agreeing with Suzanne that she would do this, I found myself walking in those very hills. I took more notice of the geology and flora than I might otherwise have done!

The next article stems from two letters, one from Ralph Watson and the other from Alyn Jones, who asked in a covering note whether he was the only person who wrote to me! Well, no, he is not, but Alyn has certainly been a regular correspondent and I thank him and all the others who have written to me over the years. Ralph, not a member of the Society, is a 'new' correspondent, who sent me some amazing photographs that he took on that famous *Geological Association* trip to Ardnamurchan in 1932.

One of the long-running series that I have run is *Geo-Vineyards*. This was started when Cecilia Taylor sent me two labels that she had come across while in holiday in France — *Jurassique* and *Kimmeridgien*. At first I printed some tongue-in-cheek tasting notes, but the series has developed, thanks to the many correspondents who have kept their eyes open while on holiday (or even browsing shelves in the supermarket).

This issue's wine is an *Ironstone Vineyards Chardonnay* and the article is followed by another on ironstones, both those that are product names in the States and those that were so important in the industrial revolution in Scotland. As an example for fellow amateur geologists, virtually all this information was researched from pages on the Internet.

Editorial

While thanking all regular correspondents, I should make special mention of Angela Anderson, who has sent in a geological crossword for every issue that I have published since I first asked for it in Number 31 — regular as clockwork. I hope that she will continue to compile ‘rockswords’ for whoever takes over.

The final article is another from the series, *Poet's Corner*. Though this has seen a range of verse over the years, it was not new: past numbers have seen several poetic offerings, including some fine original verse as well as a number of brilliant parodies. With that, I feel that maybe I can conclude with a poetic offering of my own...

The time has come, the Editor says,
we've talked of many things—
Of why geology's devolved
and Sandy Rose's things,
Of why the Tertiary is no more
and whether worms had wings (?!).

Of periglacial Princes Street,
the BA's old annals,
Of Snowball Earth's appearance
and silver minerals,
Of Robert Chambers' birthday bash
and Agassiz and pals.

Of tables geological,
excursions and so on,
The rocky nature of 'the Ben',
and where the Picts have gone,
And here we talk of ironstones
(I could go on and on).

But here I'll stop— my journey ends,
- except to wish you well, my friends!

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The copy date for the next issue of THE EDINBURGH GEOLOGIST
is St David's Day, Wednesday 1st March 2006.

The Edinburgh Geologist

the first forty-five issues

*This is a revision of the article that I, as **Editor**, wrote for issue no. 31. The revisions, additions and amendments are in italics:*

The first issue of THE EDINBURGH GEOLOGIST was published in March 1977. It was the brainchild of Helena Butler, who became the first Editor. In that first issue, the aims of the magazine were set out as follows:

- to provide the amateur members with articles written at an appropriate level by the professional geologist and to carry news of current geological research;
- to allow amateur members to write about their own particular interests in geology, either in articles or short notes on specific topics;
- to serve as a general information bulletin in which special meetings, exhibitions, publications and social events may be announced.

With articles by Doug Fettes, David Greig, Nick Rock, Graham Smith and a lengthy discourse on the Southern Uplands by Euan Clarkson, the first issue set off to fulfil these aims. Looking back, it seems that professional geologists have generally been the most common contributors. In the first few issues, there appeared, in addition to the scientific articles, the first book review, a crossword and a poem!

The magazine was at first published twice a year and in Spring of 1979, the editorial team was expanded to include Andrew McMillan, who was able, by dint of being on the staff of the then Institute of Geological Sciences, to coax, cajole and otherwise

inveigle his colleagues into writing for the magazine. In Autumn 1980, the first issue in the present A5 format was published. Until then, it had been printed on rather more inconvenient A4. It is interesting to note that in 1990, the Scottish Journal of Geology decided to change their format from a handy bookshelf-height size to A4!

Autumn 1984 saw the first of a number of short articles entitled 'Strange Earth', written by Bill Baird. *Bill has kept these articles going over the years, the last before I took over as Editor ('Strange Earth 17: The Gibraltar Waterfall') being published in volume 29. Since then, Bill has written three more, the most recent ('Strange Earth 20: Pwdre Ser or Star Jelly') being published a year ago, in volume 43. This celebrated both the introduction of the new format and 20 years of Strange Earths.*

In Spring of 1985, Helena and Andrew bowed out of their editorial role to make way for the new team of Frances Lindsay and Lizzie Davenport. Helena had been at the helm for eight years, which is a record never since surpassed and in that time had seen her innovation evolve from little more than a cyclostyled broadsheet to a very creditable publication.

Unfortunately, the magazine then went through somewhat turbulent times. Frances and Lizzie, though producing two fine issues, found the editorship too daunting a task and in 1988, the job was taken

the first forty-five issues

over by Margaret Ford. Again, Margaret was unable to continue in the post and in Spring of 1989, volume 22 was published under the editorship of Clive Auton. In this issue, it was decided to incorporate the *Proceedings* of the Society into *THE EDINBURGH GEOLOGIST* and this has been the pattern ever since.

After a decision by Council that obituaries should be printed in the Proceedings, these were published at the end of the year rather than in the Spring edition. The waiting for reports at the end of the session has meant, however, that what has been termed the Autumn edition has become rather more of a Winter one.

Clive kept the now tried and tested format and formula going for several years. Lack of copy meant that the publication had to become annual. One of the positive trends that emerged at this time was the introduction a larger number of shorter articles, rather than the more weighty contributions that were to be found in some of the earlier issues. There were also further poems, but alas no more crosswords.

After six years in the post, Clive handed over editorship to Andrew Highton, also of the British Geological Survey. Andy remained as editor until 1998, when he, rather gratefully I feel, handed editorship over to me.

In that first issue under my editorship, I said that I would try to resume the twice-annual publication, and I am glad to say that I have done so. The Society Billet has continued to carry news of meetings, field trips and social events, so the third of the original aims of THE EDINBURGH

GEOLOGIST is still dealt with on what is a more appropriate platform.

Since writing the original version of this article, there have been several articles written for amateur members by professional geologists, many of which have been by Phil Stone of BGS and Michael Taylor of the National Museums of Scotland (NMS). Latterly, Suzanne Miller of NMS has written three articles on mountain geology.

These form the start of a new series and one of the things that I introduced was the concept of series of articles. One of the most popular was that on geological nomenclature, What's in a Name? and this has attracted a number of writers of the second category: amateur members writing about their own interests. Perhaps chief amongst such contributors was former President, Peter Dryburgh.

I also mentioned that I was 'always happy to publish pertinent poetry' and this led to another series, Poet's corner, which has included several old verses, several new ones and even some 'real poetry'! Unless the new Editor reneges, I have suggested that this series has now reached the end of its natural life.

I was also provided with a series of crosswords by Angela Anderson and a collection of wine labels, the first sent in by Cecilia Taylor but many more having followed from other contributors. To these and all the people, both professional and amateur, who have sent in contributions over the last fifteen issues, I say a big thank you and I hope that you will support my successor with equal vigour.

Mountain Geology

The Lawers Range

*In the third article on Mountain geology, **Suzanne Miller** takes us to Perthshire and the Lawers Range, towering above Loch Tay.*

Introduction

Rising above the high Grampian tablelands, themselves deeply scored by glacial troughs, and sitting within the Grampian Terrane lies the Ben Lawers range of hills that includes seven peaks over 3000 feet. These mountains are linked by a 25km (16 mile) twisting ridge that only once falls below 800 metres.

Ben Lawers is the highest of the range of mountains dominating the skyline on the northern side of Loch Tay. At 1214 m (3984 feet) it falls just short of the magic 4000 foot mark. When accurate measurement showed it did fall short, a group of men spent one day in 1878 building a twenty-three-foot cairn designed to ensure it kept its head above 4000ft. This has not survived the passing years, although the remnants can still be seen, and in any case would not have counted towards the mountain's height even if it had. Nevertheless, Lawers is still the Central Highlands' highest mountain and from the summit (on a clear day) there are fantastic views over to Ben Lomond, Glencoe and the Atlantic in the west, to the high Cairngorms in the north and to the North Sea looking east.

The area (encompassing 3452 ha) was purchased in 1950 by the National Trust for Scotland (from the Mountainous Country Fund, formed by Percy Unna) and the neighbouring Tarmachan range was bought

by the Trust in 1966. In 1975 the area was designated a National Nature Reserve.

It is suggested in various texts that Ben Lawers takes its name from the Gaelic, 'hill of the *labhair* (loud) stream', though other sources quote a translation of 'hoofed hill'.

Geology

The area is underlain by quartz-mica schist, the varied character of which is reflected in the outcrops to be seen in stream-beds and on surrounding hill-sides, as well as in the natural stone used to construct many of the village buildings and walls. Originally a sequence, many kilometres thick, of fine-grained shallow marine sands, silts, muds, and limestones was deposited in discrete, fault-bounded basins. These sediments were subsequently metamorphosed during regional metamorphism associated with the Caledonian Orogeny. They are Dalradian Supergroup metasediments – part of the Easdale Sub-group which is a subdivision of the Argyll Group. These rocks consist primarily of fine-grained micaceous and garnetiferous schists, some locally graphitic, and pebbly quartzite. Metalimestones, although not extensive, provide important Dalradian marker horizons in addition to providing brown coloured, calcium-rich soils on which calcium-loving flora can flourish. Also within this succession, saline brines gave

The Lawers Range

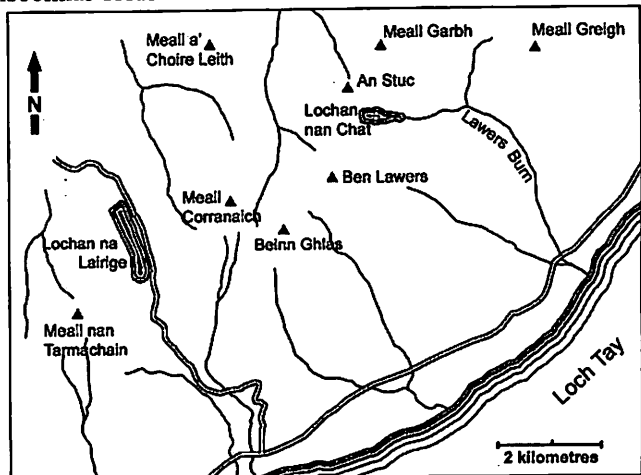
rise to a laterally persistent bed of sulphide, barite and vein mineralization – some of which is now commercially mined at Foss Mine, near Aberfeldy. The base-metal rich deposits are hosted in the Ben Lawers Schist.

The sequences of metasediments have been subjected to various phases of deformation and regional metamorphism. The deformation has resulted in complex structures with large-scale folding and faulting, with widespread inversion of the sequences. Early workers in the area had great difficulty in making sense of the geology of the Central Highlands with both Geological Survey and non-Survey geologists wading in to the debate. In 1892, Macnair, Curator of Natural History, Glasgow Museums and Honorary Secretary of the Glasgow Geological Society, endeavoured to establish a large scale structural framework, using the Loch Tay Limestone as a marker horizon. This then allowed the complicated isoclinal folds of the area to be traced along the fold axes and the multiple deformation events to be discerned.

It is now recognised that these rocks (and those representing the 'Caledonian Mountains') are the end result of a highly complex set of events, starting with the break-up of a large supercontinent, Rodinia, 750–600 million years ago, deposition of sediments into the Iapetus

Ocean that separated Laurentia (to which Scotland was attached) from Avalonia (to which England and Wales were attached) and ending with the closure of the Iapetus Ocean 420 million years ago. Closure of the ocean resulted in continental collision: the ocean disappeared and the sediments that had formed on the ocean floor and shelf became folded and metamorphosed. Melting of the deep thick crust led to the formation of magma, which forced its way up into the mountain belt – giving rise to both extrusive and intrusive igneous rocks across the Caledonian Terrane.

Evidence of this igneous activity can be seen throughout the Central Highlands although the only direct evidence in the Lawers area are the numerous metamorphosed dykes and sills that represent intrusion into the country rock. The metasediments of Ben Lawers lie within the epidote-amphibolite metamorphic facies (indicating temperatures of around 550° C and pressures around 9-10 kbar).



Sketch map of the Lawers Range

Mountain geology

Although within the Central Highlands, the harder more resistant rocks (e.g. quartzite) forms prominent peaks such as Schiehallion and Carn Mairg, the highest peak, Ben Lawers is formed of softer calcium-rich schists which are prone to landslips. The resultant richer limy soils and scree provide a haven for rare alpine and relict arctic flora.

Glaciation and topography

Lawers, together with Glen Lyon and Loch Tay, dominates the topography of the tract of land between Aberfeldy and Breadalbane which is considered to mark a transition zone between the more heavily glaciated Western Highlands and the less deeply scoured and eroded landscapes further east.

Indeed, this area may represent the contrast between the deeply dissected 'weather side' of Western Scotland, with its heavier precipitation both in the Pleistocene and at the present, and the drier, less fragmented massifs of the Eastern Highlands. The contrast is emphasised by the fact that the last major ice advance (the Loch Lomond Readvance) reached no farther East than this area. The outwash from the last ice front has been carved into a number of broad, flat terraces which in the Fortingall-Kenmore-Aberfeldy area have been an important factor in the land use of the region. Four major topographical aspects have been identified here which epitomise the broader valleys where fingers of lowland farming and settlement infiltrate into the mountainland.

The first of these is the alluvial floodplain and its associated river terraces where the

fertile soils support crops of oats, turnips and hay – all fodder for the livestock that graze these 'lowland' areas. The second facet, known as 'the braes', comprise the rocky benches and hummocky glacial drift which flank the valley floor and generally give poor grazing land. Rough grazing also characterises the third facet of glacially over-steepened slopes although this is now heavily covered in forestry plantations. The final facet of this landscape is made up of open plateaux and summits above the tree-line, where peaty soils supporting heather moorland are diversified by narrow outcrops of the Blair Atholl and Loch Tay Limestones that produce more fertile soils and support more luxuriant vegetation (Gauld & Robertson, 1985). The limestone exposures can also be picked out from abandoned limekilns and the sites of former shielings (the temporary summer dwellings of the crofters and their livestock during the practice of transhumance).

Flora and fauna

The influence of calcareous soils on mountain flora is no where better seen than at Ben Lawers. This Grampian giant is renowned for the richness of its Arctic-Alpine flora and few places in Britain can rival the unique range of arctic-alpine plants found here. In this case, the vital factor is not so much the limestones themselves as the calcareous Ben Lawers Schists and their associated epidiorite sills (Treagus, 1964), which have weathered into the basic minerals conducive to the growth of a calcicole (calcium-loving) flora.

The effect of the calcareous rocks on the soils and vegetation is obvious in the

The Lawers Range

bright green grassy slopes compared with the acid Grampian soils. Lawers is the perfect place to see rare alpine plants in season – over 130 different species have been recorded including snow pearlwort, alpine gentian and alpine forget-me-not and several different types of saxifrage. Alpine lady's mantle, roseroot, blaeberry and moss campion also grow in profusion on the high slopes. They are, however, protected species and must not be damaged. The area of the National Nature Reserve comprises a combination of bogs, marshes, water fringed vegetation and fens (14%), heath, scrub, maquis and garrigue (24%), dry grassland/steppes (38%), humid grassland/mesophile grassland (12%), alpine and sub-alpine grassland (10%) and broad-leaved deciduous woodland (0.5%). Ben Lawers has the most extensive development of Alpine and subalpine calcareous grasslands in the UK.

The presence of rich plant communities means that butterflies and moths can be found high up the slopes - green-veined white, small heath, small pearl-bordered and dark green fritillaries and small mountain ringlet.

There is a nature trail which is fenced to exclude sheep to allow the restoration of the vegetation where regeneration of trees, shrubs and herbaceous plants is progressing. Habitat restoration work is also planned for the Tarmachan area.

The beautiful songs of meadow pipit and skylark can frequently be heard in summer. The wheatear is another seasonal visitor,

conspicuous by its white rump and habit of calling from boulder-top perches. Other birds thriving in this environment include ravens, ring ouzels, red grouse, ptarmigan, dippers and curlews. Higher slopes are the haunt of birds of prey such as golden eagle, kestrel and buzzards.

Large herds of red deer roam wild on the upper reaches of the Lawers range and mountain hare can also be encountered. There have been occasional sightings of the Scottish wildcat, one of the most elusive creatures in the land.

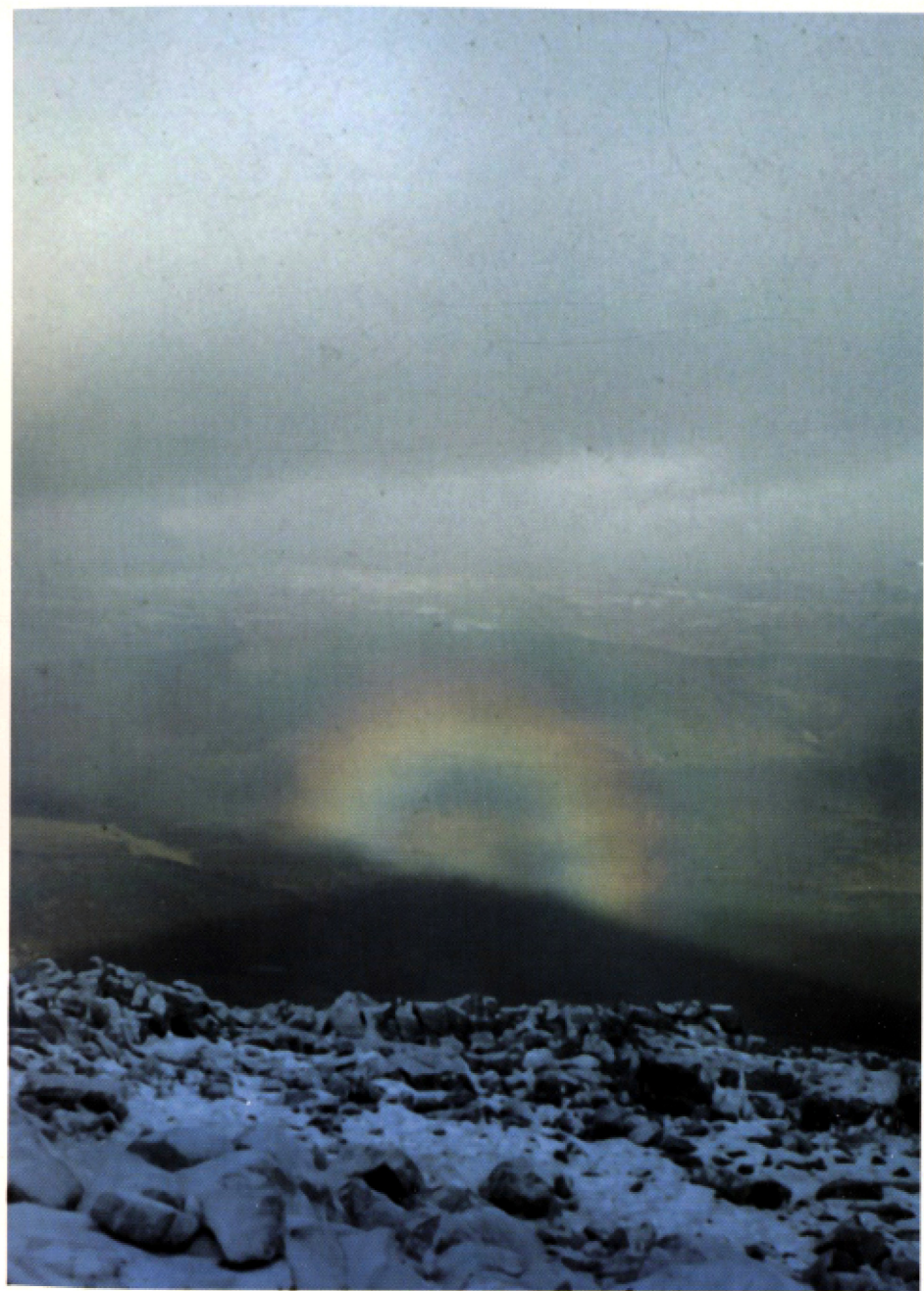
The Brocken Spectre of Lawers

The Brocken spectre (the enlarged and eerie shadow of a climber cast on cloud below) can sometimes be seen on the north side of the Lawers ridge when the mist is drifting through the corries but the tops are clear. This hill phenomenon was first noted on the Brocken Ridge in Germany (see inside back cover for a photo). More frequent is a single or double rainbow crossing the corries below the climber instead of above.

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Suzanne Miller works in the Natural Sciences Department at the National Museums of Scotland. She is currently convener of the Society's Publications Committee.



Brocken Spectre seen from the summit of Schiehallion [photo Andrew McMillan]

Ardnamurchan revisited – again



The 1932 GA excursion with Ralph Watson's motorbike and sidecar in the foreground



J. E. Richey (foreground left) and members of the 1932 GA excursion

Ardnamurchan revisited – again



J. E. Richey speaking with Arthurs Holmes (right) on the 1932 GA excursion. The unknown geologist behind is probably not getting any reception on his mobile phone.



An Ardnamurchan clachan - croft houses, 1932

Ardnamurchan revisited again

A few snaps from 1932

In May last year, I received the following letter from Ralph Watson. Ralph had been on the excursion in 1932 and had a few photographs!

*Anick Lodge
Hexham*

Dear Editor

I have just had a copy of 'The Edinburgh Geologist' issue no 44 passed to me by Dr Mick Jones of Wylam, a member of the Edinburgh Geological Society, as he thought I would be interested in your article on page 10 — Ardnamurchan 1932.

I was a student at Newcastle aged 22 and joined that very good GA excursion to Ardnamurchan. I took J.S. Tomlinson, also of Newcastle, to Kilchoan by my motor bike and side car.

I still have one or two photographs taken with a small V.P.K. camera showing J.E. Richey talking to members. Also one or two pictures of old croft houses near Kilchoan. Should any of these photos be of interest, I would be glad to get them copied and sent on to you.

I well remember Arthur Holmes and Doris Reynolds 'get together' which caused a lot of interest!

George Mackler was, like A. Raistrick, a lecturer in the Geology Department in Newcastle. I knew S. Tomkiew and think that the other P.G. Tomkiew was probably his wife.

With kind regards

Ralph Watson

As you can imagine, I replied that I would be delighted to have copies of the photos and Ralph had them copied and sent them to me. I have printed four which I think will be of the greatest interest.

Ardnamurchan revisited – again

In July I received another related letter —

Dunoon
Argyll

Dear Editor

The article on Ardnamurchan 1932 was of great interest to me as I had met at least nine of those named. In 1931, my father, R. C. B. Jones, was one of a number of Survey geologists who were mapping in Ardnamurchan and Morvern areas. He was working on the south side of Loch Sunart where there was no accommodation, so he and his father converted a furniture van into what would now be called a motor home and this was sited between Liddesdale and Laudale.

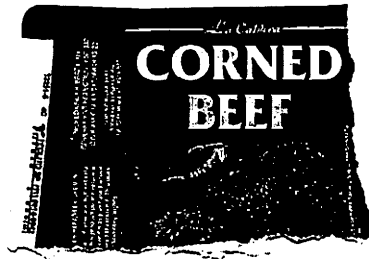
L. H. Tonks was at Lochaline, W. Q. Kennedy at Kin-gairloch and Murray MacGregor, Archie MacGregor, Jim Ritchie and J. Simpson were also in the district. As our campsite was away from most locals, there was usually a gathering on Sundays of many of these folk.

Bailey was known as 'The Bat' or 'Batty' as his middle name was Battersby. I always had the feeling that some of Highland papers were written a bit tongue-in-cheek to stir others to go and look for themselves. Both he and Archie MacGregor (and their wives) were always most hospitable to single members of the Survey and to myself as a student in Edinburgh.

As a variation on the Geo-vineyards theme, I came across the enclosed. 'La Caldera' is Spanish (and probably Portuguese) for a boiler or cauldron, which presumably accounts for its geological use.

Best wishes

Alyn Jones



Geo-vineyards

Ironstone Vineyards Chardonnay

Following on from Alyn's 'La Caldera' corned beef label, we move back to the original, Geo-vineyards. The label chosen for this issue, from Ironstone Vineyards, whose wine is now widely available in supermarkets, leads on to a discussion of other 'ironstone' products.



I bought this bottle in a local supermarket but the vineyard has been providing wines for the more serious market for some years. They have a very fine web site, which tells us the following story...

The story of Ironstone Vineyards started in the hands of John Kautz, a young row crop farmer from Lodi who saw the future in growing wine grapes in Lodi. With 12 acres in 1948, John quickly built an excellent reputation as a premium wine

grape supplier, amassing over 5,000 acres of grapes in Lodi and the Sierra Foothills and eventually becoming one of the top ten wine grape growers in California.

In 1988, John, his wife Gail and their children dedicated themselves to the creation of a wine of their own. While still maintaining grape sales to top wineries around the world, they brought award-winning winemaker Steve Millier aboard to launch Kautz wines, which would evolve into Ironstone Vineyards, a wine brand dedicated to the production of exceptional wines of unparalleled quality, outstanding value and everyday approachability.

In 1989, using dynamite, pick axes and shovels, a crew of miners carved through limestone and Calaveras Schist Rock on Gail's family ranch in Murphys, California and fashioned the site of Ironstone's wine aging caverns, which in the beginning, also served as the facility's first tasting room.

What is the wine like? Well, according to the web site, it has a crisp, mineral style, which I suppose fits in well with the iron stone provenance. Not that there seems to have been much ironstone mined in this part of California, the Sierra Foothills. The area of the Lodi Valley was, however, in the heart of California's 'forty-niners' gold rush country and the museum at the winery tells of this history as well.

More on Ironstones

from American products to Scottish rocks

*This discussion of ironstones follows on from the **Geo-Vineyards** article. First I take a quick look at other 'ironstone labels' and then move to look at ironstones in Scotland. This is written in the form of a history of the use of iron rather than stratigraphically.*

More 'ironstones' from the USA

As well as *Ironstone Vineyards*, the Internet provides a range of other Ironstone companies, ranging from banks to dog breeders. The *IronStone Bank* has offices in Arizona, California, Colorado, Florida, Georgia, New Mexico, Oregon, Texas and Washington. According to their marketing information, the IronStone name 'reflects their straightforward, rock-solid approach to banking — strength, durability and reliability'. *IronStone Ventures*, of Uxbridge, Massachusetts principally provides motorbike rider education courses throughout the state, but they also organize bike tours in Europe, Africa, and New Zealand, raise and sell upland game birds, maintain a hunting reserve and dog kennels and raise Shetland sheep for fleece and Nubian goats for milk!

IronStone Farm, founded in 1960 as a breeding and training facility for thoroughbred horses, in the seventies started using horses, a working farm environment and rural surroundings in the provision of therapy for individuals with physical, cognitive, and emotional disabilities. *Ironstone Partners Ltd* is a company in the global games field, created 'to pursue strategic and speculative games opportunities outside the remit of the current focus of the large games industry companies'. There are many others but *Ironstone Neapolitan Mastiffs* stands

out, purchasing their dogs from Italy and breeding them, and also breeding horses for dressage and reining.

Ironstones in Scotland

Let us start with a little pre-history. The principal remnants of the Neolithic period, before around 2200 BC, are barrows, brochs, cairns, stone circles and simple dwellings. Life changed dramatically with the immigration of the first metal workers from Europe, as evidenced by the increase in high-status objects such as gold jewellery and weapons made from copper and bronze. It seems likely that the British climate at the time was warmer than it is today, but just over 3000 years ago, coinciding with a series of cataclysmic volcanic eruptions in Iceland, the weather became much colder, wetter and more unpredictable. Crops failed, livestock died, and the people struggled to control enough natural resources to survive. Fortified hill forts appeared on prominent points in the landscape, possibly a sign that the people were forced to defend themselves and their livelihood from their neighbours. At around 750 BC, the working of iron, far superior and more plentiful than bronze, led to the collapse of the warrior class as more people were able to forge weapons. It also meant that the rest of the people, farmers, merchants, or craftspeople, living in tribal communities, had access to metal tools for ploughing, trading and creativity.

More on ironstones

At first, the major source of iron were the bog iron ores, found mainly in upland areas of Scotland. These ores are typically associated with the oxidation of iron-bearing groundwater leaching iron from boulders in associated till. The iron ore was reduced for casting by fusion with charcoal in forgeries, which were known here as 'bloomeries'. But while the ore was to a certain extent an abundant resource, the charcoal required to smelt it was not so and the felling of the forests in the Lowlands was unmanaged. It is commonly assumed that iron smelting was restricted to the Midland Valley, but before the industrial revolution, there were ironworks on Loch Fyne, Loch Etive and Loch Maree. There was also an ironworks at the Lecht, though this was working a local vein of haematite rather than bog iron ore. The reason for the move from the Lowlands was quite simply that wood was more plentiful in the Highlands.

There was a spin-off for the Lowlands, however. As the inhabitants had used up all their wood, they had to look elsewhere for building materials and domestic fuel. The former came from stone and the latter from coal. It was now found that coal could also be used for smelting iron and was indeed more efficient, coke providing a greater heat than charcoal. In the middle of the eighteenth century, iron production moved back to the Lowlands, this time for good. The chief protagonists in the development were Dr. John Roebuck and William Cadell. The latter had tried, without success, to establish a manufactory of iron and appealed to the former for help:

The Doctor listened to his suggestions with interest, and embraced the proposed enterprise with zeal. He immediately proceeded to organize a company, in which he was joined by a number of his friends and relatives. His next step was to select a site for the intended works, and make the necessary arrangements for beginning the manufacture of iron. After carefully examining the country on both sides of the Forth, he at length made choice of a site on the banks of the river Carron, in Stirlingshire, where there was an abundant supply of water, and an inexhaustible supply of iron, coal, and limestone in the immediate neighbourhood, and there Dr. Roebuck planted the first ironworks in Scotland.

Industrial Biography; Iron Workers and Tool Makers, Nimble Wisdom.

What Roebuck and Cadell had pioneered was the use of 'clayband' ironstone, which was mined locally near Bo'ness. The 'claybands' comprise laterally persistent layers of flattened ironstone nodules occurring in shales often associated with coal seams. They were also found where the softer shales have been eroded on the coast. Throughout the Midland Valley nodules in the clayband ironstones occur up to 30 cm in diameter, dominantly of siderite and clay. They have an iron content of around 25% to 30%.

Soon ironworks began springing up all over the Midland Valley and with the invention of the hot blast furnace by J.B. Neilson, metal workers were able to use 'blackband' ironstone as well. This lithology, special to Scotland, occurs in the Carboniferous

coalfields of Lanarkshire and Ayrshire. The 'blackbands' are similar to the 'claybands', but contain up to 20% of carbonaceous matter as well as the siderite and clay. The use of this ore in hot blast furnaces meant that it was possible to use coal instead of coke, which reduced by one-third the consumption of coal per ton of iron and made Scottish iron manufacture very competitive.

The effects upon village communities such as Coatbridge and Cumnock make sombre reading. The 1799 Statistical Account for the parish of Coatbridge referred to it as having 'the appearance of an immense garden'. Seventy years later, it was reported that there was 'no worse place out of hell than that neighbourhood'. Yet, iron manufacture in the western part of Midland Valley was directly responsible for the creation of the shipbuilding industry on the Clyde. This developed in two stages: the adaptation of steam-power to shipping, which began in 1811, and the building of iron-hulled vessels, which came in 1818. The two strands coalesced in 1843 when Robert Napier launched the first iron steamship, the *Vanguard*, at Govan.

The latter part of the nineteenth century saw the development of the steel industry. The failure of Scotland to come to terms with this change, together with the control of steel production by the ship-building industry, is well documented. By the start of the twentieth century, Scottish iron-working was in a parlous state. Nevertheless, at the beginning of the Great War, the need for further iron and steel manufacture was identified and new sources of iron ore

were investigated. Amongst these was the Lower Jurassic ironstone of Raasay. This was mined during the war, but operations came to a close at around 1920. The ore is of particular interest geologically, comprising oöoliths dominantly of chamosite. The environment of deposition is shallow marine but with very little clastic input and it has been suggested that the formation represents a brief regressive phase coincident with a eustatic fall in sea level.

The end of the Great War saw publication of the reassessment of mineral resources in Scotland with the *Special Reports on the Mineral Resources of Great Britain* in the 1920s. No 11: *The Iron Ores of Scotland*, by Macgregor, Lee and Wilson is a good source of information for those who would like to know more.

The Second World War saw similar surveys carried out and Highland haematite ores and Island magnetite deposits were identified as possibly economic. It is unlikely that they are today.

Sources and further reading

The following web sites have been used in the compilation of this brief history and will provide readers with more information on Scottish ironstones:

www.archaeolink.co.uk

www.britarch.ac.uk

www.celticfringe.org.uk

www.doorsopendays.org.uk

www.nimblewisdom.com

www.scotsheritage.co.uk

www.undiscoveredscotland.co.uk

The Clough Medal

an update

*Issue No. 31 contained a list of all Clough Medallists. This is maybe a good time to give you an update of that list and at the same time, allow **Doug Fettes** to tell you something about this year's medallist, Nigel Trewin.*

The Clough Medal commemorates Charles Thomas Clough (1852-1916) whose life and work were described in an earlier issue of *THE EDINBURGH GEOLOGIST* (Land, 1995). In September 1934, Clough's daughter, Florrie, wrote to the President of the Society, Sir John Flett:

It would please my mother very much to do something to perpetuate my father's memory. She wishes to place £1000 in the hands of the Edinburgh Geological Society to provide an occasional award to promote the study of the Geology of Scotland and the north of England. She does not wish the award to be confined to Scotsmen.

Council decided to use these funds to create a medal. The dies were cast by Pilkington Jackson in 1936 and the medals, which are silver, were until 1990 struck by the Royal Mint. Since then, they have been struck by Alex Kirkwood & Son of Edinburgh.

On one side, the medal shows a bas relief bust of Charles Clough, encircled by the words *Charles Thomas Clough 1852-1916*. On the other side are the words *Clough Memorial Award for Research* encircled by *The Edinburgh Geological Society*. The name of the recipient, together with the date of the award, are engraved on the rim.

The original condition 'to provide an occasional award' meant that in the

beginning, the medal was awarded more or less every two years (the two exceptions being the three years 1936-39 and 1949-52). Since 1970, however, it has been awarded annually.

Another original condition, that it was presented to a scientist who has made a 'significant contribution to knowledge of the geology of Scotland and the north of England' was amended in 1997 to include 'a geologist working in Scotland or the north of England who has significantly advanced the knowledge of any aspect of geology'. This recognised the shrinking world of the late twentieth century, allowing Scotsmen (and northern Englishmen) who were working on the international scene to be considered.

The decision upon who should receive the medal rests with the Clough Committee, a committee of Council. Each year, Fellows of the Society are asked to nominate geologists and the committee meets to consider suggestions and then make a recommendation to Council.

*The following is a transcript of the address by Society President **Doug Fettes** when he awarded the medal to Dr. Nigel Trewin in March of this year.*

Our medallist for 2005 is Prof. Nigel Trewin of Aberdeen University. Nigel completed his first degree at Bristol University and went on to do a PhD at Keele working on

The Clough Medal

1935-36	Mr. David Tait	1979-80	Prof. Janet Watson
1938-39	Mr. Arthur Raistrick	1980-81	Dr. Brian Sissons
1940-41	Dr. Alexander Bremner	1981-82	Dr. Walter Mykura
1942-43	Mr. James Livingstone Begg	1982-83	Prof. Howell Francis
1944-45	Dr. Murray Macgregor	1983-84	Mr. Scott Johnstone
1946-47	Mr. James Wright	1984-85	Dr. Charles Waterston
1948-49	Dr. Robert Campbell	1985-86	Dr. Denys Barker Smith
1951-52	Dr. G.W. Tyrell	1986-87	Prof. Gordon Craig
1953-54	Dr. J.B. Simpson	1987-88	Dr. William McKerrow
1955-56	Mr. J. Selwyn Turner	1988-89	Prof. Tony Harris
1957-58	Dr. John Weir	1989-90	Dr. Douglas Peacock
1959-60	Mr. W.S. Bissat	1990-91	Dr. Ken Glennie
1961-62	Sir Edward Bailey	1991-92	Dr. Michael Gallagher
1963-64	Mr. J.E. Richey	1992-93	Dr. Euan Clarkson
1965-66	Prof. W.Q. Kennedy	1993-94	Mr. John Hull for BGS
1967-68	Dr. Archie MacGregor	1994-95	Dr. Henry Emeleus
1969-70	Dr. G.H. Mitchell	1995-96	Dr. Derek Flinn
1970-71	Prof. Frederick Stewart	1996-97	Dr. Ian Rolfe
1971-72	Dr. James Phemister	1997-98	Dr. Jack Soper
1972-73	Prof. Neville George	1998-99	Prof. Barry Dawson
1973-74	Dr. Dorothy Rayner	1999-2000	Prof. Brian Bluck
1974-75	Prof. Robert Shackleton	2000-01	Prof. Brian Upton
1975-76	Prof. Alwyn Williams	2001-02	Dr. Adrian Rushton
1976-77	Prof. Stanley Westoll	2002-03	Dr. Jack Treagus
1977-78	Prof. Brian King	2003-04	Dr. Ian Dalziel
1978-79	Prof. Martin Bott	2004-05	Dr. Nigel Trewin

the Namurian successions of the North Staffordshire basin.

He joined the staff in Aberdeen in 1968 and now holds a personal chair and is Honorary Curator of the Geological Museum Collections.

He is a sedimentologist with interests in palaeoenvironments and their associated palaeontology. His interest in clastic sedimentology, diagenesis and reservoir

quality, much of it related to the oil industry has taken him to several exotic locations. For example, his research on the Silurian sandstones of Western Australia has demonstrated, *inter alia*, the tracks of arthropods leaving the water and invading the land. And in the Falkland Islands, as part of a South Atlantic project related to offshore oil exploration, his work on the onshore Permian successions has demonstrated a direct linkage between

The Clough Medal

these rocks and the Karoo basin in South Africa. He has also worked extensively on the architecture of oil reservoirs in the North Sea and on fluid movement and the related effects of cementation during diagenesis.

In parallel with these studies he has worked extensively in Scotland where he has established himself as one of the leading experts on clastic sequences and in particular on the Old Red Sandstone. He has concentrated mainly on Caithness and northeast Scotland, publishing extensively on the fish beds, trace fossils and the palaeoenvironments of the basins. One of his major contributions has been as joint leader of the Rhynie research Group, which has been responsible for defining the Rhynie chert as a Devonian hot spring system comparable in modern terms to the hot spring systems of Yellowstone Park and New Zealand. Although limited in scales the Rhynie rocks have proved to be one of the most intriguing and important sites in Scotland with the fauna of the deposits recognized as the most diverse Early Devonian terrestrial/freshwater assemblage known. Work continues on these rocks with the Group establishing widespread international contacts.

Nigel has also another important string to his bow, namely as an editor. He was joint editor of the guides to Aberdeen and Caithness, but perhaps his major contribution in this field was as editor of the fourth edition of the *Geology of Scotland*. He was responsible for introducing a different format reflecting the evolving research approach to, and understanding of,

Scottish geology. The wider nature of the content not only demanded considerable oversight on the part of the editor, but required the coaxing and melding of 35 authors: a formidable but ultimately highly successful task. It is also notable that he was a major contributor as well as editor to these publications.

Nigel has maintained a remarkable publication record with well over forty publications in the last ten years, the great majority of which are contributions to the geological understanding of Scotland.

For this contribution and in recognition of his rôle as a senior research figure in Scottish geology it gives me great pleasure on behalf of the Edinburgh Geological Society to present Nigel Trewin with the Clough Medal.

President, Doug Fettes
March 2005

Reference

Land, David, 1995. Charles Thomas Clough (1852-1916), *The Edinburgh Geologist* No 28, pp 2-10.

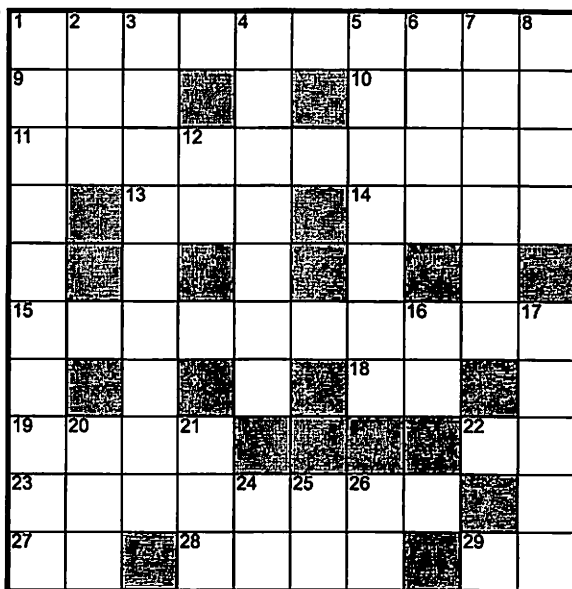


Rocksword puzzle no. 14

Here is the fourteenth Rocksword puzzle by **Angela Anderson**. For those who can't manage to solve all the clues, the answers to this puzzle are on page 24.

Clues across

1. Be mine lest Mesozoic index fossils are over (10 letters)
9. In eggs, oval or otherwise (3)
10. Not nuts (4)
11. A culinary clay (10)
13. In the front of a vehicle (3)
14. In a bestial airy den (4)
15. A stropky kind of tree fungus (10)
18. Third person singular male, also 16 down (2)
19. What the exciseman does (4)



22. Subconscious part of tridymite (2)
- 23 and 17 down. Magic side rise over a quiet feature (8,5)
27. The French (2)
28. If the ayes don't have it, who does? (4)
29. The singular royal (2)

Clues down

1. Resembling a bunch of grapes (10)
2. The first lady of the late afternoon (3)
3. Irk at veil over an ornamental syenite (9)
4. Renamed over a river bend (7)
5. This oil line connecting points of similar rock type (7)

6. Diminutive farewell (4)
7. Complete whole (6)
8. Scorches ear inside (4)
12. It's that old Egyptian sun-god again (2)
16. See 18 across
17. See 23 across
20. Employ us each inside (3)
21. One opposing yang (4)
24. Thus (2)
25. I am entirely in a personal pronoun (2)
26. To miss, to be in (2)

Poet's corner

We have two poems in this issue, both by Scotland's National Poet, Edwin Morgan. The first was published in 1979 and appears in his Collected Poems, published by Carcanet. The second was appeared a quarter of a century later, in Love and a Life, published by Mariscat. Both are printed here with permission of the agent, Carcanet Press Limited.

Trilobites

A grey-blue slab, tanned like a pigeon's wing,
stands on my record cabinet
between a lamp and a speaker.
Trapped in a sea of solid stone
the trilobites still almost swim;
the darker grey of their backs,
thumbnail-sized and thumbnail-shaped,
gives out a dull shine as I switch on the lamp.
I have eight of them; half are crushed, but
two are almost perfect, lacking nothing but the antennae.
My fingertip, coarse and loutish
tracing the three delicate rows of furrowed plates,
tries to read that palaeozoic braille
as vainly as the blast of Wagner at their ear
searches for entrance five hundred million years
and a world of air too late. But I would not trade
my family torn by chance from time
for Grecian urn or gold Byzantium.

Edwin Morgan, 1979

Jurassic

I have a dinosaur egg in my cupboard, hard, heavy,
fused to the rock it haunts
Someday Mark will have it and tempt its Jurassic
chirp with his shazams and taunts.
Love laid the egg even in those armoured times
when the bellows and vaunts
Of the laithly saurians belted out their ancient
unlaithly wants —
(And tenderly our own dear crocodile conveys her
squeaking brood in jaws no buffalo daunts) —
Some malice surely must
Have sent the deadly dust
That smothers what the pregnant earth gigantically
flags up and flaunts.

Edwin Morgan, 2003

While the Editor is sure that the verse published in the last fourteen issues of THE EDINBURGH GEOLOGIST has not exhausted the wealth of poetry with a geological slant, he feels that the time has come to draw a line under Poet's Corner as a series. More geo-poetry may however be published if and when readers submit material.

Solution to Rocksword puzzle No. 14

Clues across

1. BELEMNITES
9. OVA
10. SANE
11. TERRACOTTA
13. VAN
14. LAIR
15. OAKLEATHER
18. HE
19. DUTY
22. ID
- 23, 17D. ASEISMIC RIDGE
27. LE
28. NOES
29. WE

Clues down

1. BOTRYOIDAL
 2. EVE
 3. LARVIKITE
 4. MEANDER
 5. ISOLITH
 6. TATA
 7. ENTIRE
 8. SEAR
 12. RA
 16. HE
 17. RIDGE
 20. USE
 21. YIN
 24. SO
 25. ME
 26. IS
-

Proceedings of the Edinburgh Geological Society for the 171st Session 2004-2005 No. 35

Membership

The total membership of the Society at 30th September 2005 was (with last year's figures in brackets) 543 (543) comprising:

Honorary Fellows	6 (5)	Senior Fellows	51 (47)
Corresponding Fellows	9 (9)	Family Fellows	38 (39)
Distinguished Fellows	2 (2)	Glasgow Associates	11 (10)
Life Fellows	13 (14)	Junior Associates	11 (8)
Ordinary Fellows	402 (408)		

Changes in membership from session 2003-2004 are summarised here: 1 Honorary Fellow (Dr C H Emeleus) was elected during the year. 22 Ordinary Fellows were elected while 21 resigned, were removed from the membership list or moved away. 6 Ordinary Fellows were transferred to Senior Fellowship and 1 Family Fellow resigned during the year. Fellows deceased during the year are listed below.

Deaths

It is with regret that we record the deaths of Life Fellow G S Johnstone and Ordinary Fellows Mrs J E C Durie, Mr A Lawrence and Dr J S Smith. In addition, former Senior Fellow W K Buchanan died shortly after resigning during the year.

Mrs Durie joined the Society in 1974 and lived in Ardrishaig in Argyll. Her son, David, advised us of her death in November 2004.

Andrew Lawrence joined the Society in 1961. He died on 3rd September 2005 in Dunfermline and is survived by his wife Betty and daughter Sarah.

Kerr Buchanan joined the Society in 1974. He died on 4th January 2005 in Colinton after a short illness. He is survived by his wife Rita and children Lesley and Alan.

Fuller obituaries for John Smith and Scott Johnstone follow.

Obituaries

Dr John Smith

John Smith, senior lecturer in the Department of Geography and Environment, died on 20th October 2004, shortly after his formal retirement. Born in Aberdeen, he was a larger-than-life and much-loved character, the whole of whose working life was spent in the University of Aberdeen. After a brilliant undergraduate career in Aberdeen, he embarked on a PhD on coastal evolution in the Moray Firth and soon thereafter was appointed to the university staff.

While he maintained an interest in coastal geomorphology throughout his career and inspired numerous students with his lectures on it, archaeology and local history became absorbing interests. Teaching, at all levels, intra-mural and extra-mural, was his forte. His presence and personality would grab the attention of his audiences, and his liveliness and humour would retain it. A convivial colleague, John was the quintessential individual scholar. His students, colleagues and friends recall him fondly and miss him greatly. Above all, he was a family man; he is survived by his wife Gillian and son John.

Sandy Mather (University of Aberdeen)

Scott Johnstone

George Scott Johnstone was born on 30th October 1922 in Glasgow and died on 9th May 2005 in Edinburgh. He was a field geologist whose knowledge of the Scottish Highlands, their landscape and the geology that underpinned them was probably second to none. He always considered himself very fortunate that his professional interests were so closely complemented by his love of mountaineering, ski-ing and photography. He was an integral part of, and supervised the great wealth of Highland Survey work in the decades after the war. It was this work that formed or was the basis of many of the major advances in Highland geology that we see today.

He joined the Geological Survey at Edinburgh in November 1946 and worked briefly in the coalfields before moving to the Highlands. In 1963 he became District Geologist of the Highland Unit and oversaw the primary survey work in the West Highlands. The size of the challenge facing the unit was immense – not only was the area among the physically most demanding and remote in the Highlands but of the geology Kennedy had said, “nobody will make sense of the ground east of Morar”. It is to the credit of Scott’s enthusiasm and leadership that the unit was able to unravel the stratigraphy and structure of these complex successions.

While this work was in progress Scott also led the substantial contribution to the development of many of the Highland hydro-electric schemes, including those at Morar, Loch Tay, and Sloy. He embraced and fostered co-operation with the universities before it became commonplace. He supervised collaborative projects with Liverpool University in Perthshire and the Great Glen and he encouraged work with Aberdeen University that resulted in a long and fertile period and saw the publication of several maps and memoirs for NE Scotland. He also oversaw the collaboration with Imperial College that resulted in the first comprehensive coverage of the Outer Hebrides.

His extensive survey activities gave him a wide understanding for Highland rocks, and made him a natural author for the third edition of the *Grampian Highlands* regional guide, which was published in 1966. Following this publication he developed collaborative links with the Swedish and Irish Surveys, which in part led to his strong support for, and input into the Mineral Reconnaissance Programme work on stratabound sulphides.

He retired in 1982 but was joint editor of a new edition of the *Northern Highlands* regional guide which was published in 1987, and a major contributor to the fourth edition of the *Grampian Highlands* regional guide published in 1989. In addition, after his retirement he served as a member of the National Trust's Countryside and Nature Conservation committee until 1997. He was a member and held various offices in the Geological Society of Glasgow and the Edinburgh Geological Society and was President of the latter from 1979 to 1981.

He had many interests mainly associated with the outdoors. He was a member of the Scottish Mountaineering Club (SMC), contributed to a number of publications in an editorial capacity and was author of the SMC *District Guide to the Western Highlands*. He also lectured widely on geology and mountain photography.

During nearly forty years of working in the Highlands, he mapped or supervised work throughout the stratigraphic spectrum across the mainland and in the Western and Northern Isles. His focus was very much oriented to geology in all its aspects. As a colleague and friend he will be remembered for many things, pithy and sometimes earthy sayings to describe most situations, a man who wore his heart on his sleeve and who was not driven by personal ambition or gain but by a genuine love of Scottish mountains and their geology.

He is survived by his wife, Molly, and their three sons.

Doug Fettes

Proceedings 2004-2005

Council elected 24th November 2004

President: Douglas Fettes

Vice-Presidents: John Mendum, Robert Reekie,

Honorary Secretary: Mike Dean

Honorary Treasurer: David Gould

Membership Secretary: Christine Thompson

Excursions Secretary: Robert Reekie

Lectures Secretary: Don Mallick

Assistant Secretary (Billet/week excursion): Caroline Paterson

Assistant Secretary (weekend excursion): Ian Jackson

Assistant Secretary (Web site): Diane Mitchell

Assistant Secretary (RIGS): Angus Macpherson

Proceedings Editor: Alan Fyfe

Librarian: Bob McIntosh

Publication Sales Officer: Ian Jackson

Scientific Editors: Emrys Phillips, Suzanne Miller

Ordinary Members of Council: Sarah Arkley, Ian Gray, Suzanne Miller,
Charlotte Vye (two vacancies)

Trustees: William Harper, Ian Hogarth, Ian Rolfe

Independent Examiner: L H Stewart, Dalgliesh & Tullo, Chartered Accountants

Business Council held seven meetings during the session, discussing a number of issues including:

- an increase in membership subscriptions
- insurance for Society excursions and RIGS activities
- publications sales policy
- participation in future Scottish Geology weeks
- preparation of publicity material for events and open days
- reprinting the Membership Roll and Laws of the Society
- redesign of the Billet, at the same time reducing costs

Proceedings 2004-2005

Lecture Meetings were held as follows:

- | | |
|-------------------|--|
| 13th October 2004 | Dr A G Leslie (BGS Edinburgh): Arctic insights into the Caledonian structure of Scotland |
| 27th October | Mr J Wilson (Minerals Consultant): Rock caverns, renewable energy and sustainable development |
| 10th November | Dr A G Cairns-Smith (University of Glasgow): The mineral origins of life |
| 24th November | Dr J Evans (NERC Isotope Geology Laboratory): You are what you eat: isotopes and migration (followed by the Annual General Meeting) |
| 8th December | Dr D Evans (University of Glasgow): Glacial landsystems: reconstructing glaciers and ice-sheets using modern analogues |
| 19th January 2005 | Fellows Night |
| 2nd February | Dr R Strachan (University of Portsmouth): Caledonian collision tectonics along the Laurentian margin |
| 16th February | Dr D J Fettes (President's Address): The cornerstone of Europe: the Outer Hebrides revisited |
| 2nd March | Prof D Siveter (University of Oxford): Cambrian wonders of the Chengjiang Lagerstätten from China; the flowering of early animal life |
| 16th March | Prof N Trewin (University of Aberdeen): Terrestrial and freshwater ecosystems in the Early Devonian of Scotland (Prof Trewin was awarded with the Clough Medal at this meeting) |
| 30th March | Prof R G Park (University of Keele): Lewisian terranes and early Proterozoic plate tectonics |

The **Clough Medal** was awarded to Professor Nigel Trewin of the University of Aberdeen in recognition of his outstanding work on the stratigraphy and palaeontology of the Devonian rocks of the Orcadian Basin and the Rhynie Outlier.

Proceedings 2004-2005

Publications

The *Scottish Journal of Geology* volume 40 part 2 and volume 41 part 1 and *The Edinburgh Geologist* numbers 43 and 44 were published during the year. No new publications were produced this year, though several are in preparation.

Field Meetings were held as follows in 2005:

14th-21st May	John Mendum, David Stephenson. Doug Fettes & David Gould: Banffshire Coast (week excursion)
28th May	Con Gillen: Bridge of Allan and Dumyat
8th June	David McAdam: Haddington building stones (evening)
18th June	Brian Upton: Eildon Hills
22nd-24th July	Joan Walsh & Colin MacFadyen: Firth of Lorne (weekend excursion)
6th August	Clive Auton & Emrys Phillips: Loch Lomond Readvance (joint excursion with the Geological Society of Glasgow)
27th August	David McAdam: Belhaven Bay
10th September	Lyall Anderson: Carmyllie Quarries
24th September	Murchison House (British Geological Survey) open day
25th September	Bob Reekie: Leith building stones (evening)

Lothian and Borders RIGS group

No new *Regionally Important Geological Sites* have been designated this year though several have been proposed. Work has continued with the production of interpretive posters and site information leaflets; two leaflets (*Belhaven Bay* and *Craighleith*) were published during the year. The group has put on displays at three fairs and at the BGS Open Day. The RIGS Group officers were Mike Browne (chairman), David McAdam (secretary) and Angus Macpherson (treasurer). Mike Browne was also elected as Chairman of the UK RIGS group.

Accounts

A summary of the accounts for the year ending 30th September 2005 follows:

REVENUE ACCOUNTS FOR THE YEAR ENDED 30th SEPTEMBER 2005

General Publications Clough Mykura Total
2005 2004

INCOME	£	£	£	£	£	£
Gross income from investments	1,624	472	454	133	2,683	2,558
Net gain (loss) on disposal of investments	277	81	77	22	457	(229)
Bank interest	142	41	40	12	235	201
Subscriptions	7,302	-	-	-	7,302	7,237
Tax recoverable on Gift Aid	899	-	-	-	899	946
Legacies and donations	375	-	-	-	375	502
Social evening	(90)	-	-	-	(90)	92
Sales of publications	-	3,096	-	-	3,096	3,799
TOTAL INCOME	9,864	3,690	571	167	14,292	16,312
EXPENDITURE						
<u>Administrative Costs</u>						
Printing, Stationery, Postage	257	-	-	-	257	257
Insurance	326	-	-	-	326	494
Fund management charges	470	-	-	-	470	470
Miscellaneous	81	-	-	-	81	188
Printing publicity sheet & certificates	228	-	-	-	228	-
Independent Examiner's fee	658	-	-	-	658	646
	2,020		-	-	2,020	2,055
<u>Direct Charitable Activities</u>						
Lecture costs	2,324	-	-	-	2,324	2,737
Printing of billets	1,885	-	-	-	1,885	1,810
Postage of billets and Ed' Geologist	718	400	-	-	1,118	1,408
Award and Medal expenses	-	-	103	-	103	91
Excursions	1,278	-	-	-	1,278	961
The Edinburgh Geologist	-	1,580	-	-	1,580	1,481
Scottish Journal of Geology Vol 41	-	4,500	-	-	4,500	4,500
Grants made	330	-	300	-	630	950
	6,535	6,480	403	-	13,418	13,938
<u>Cost of Publications sold</u>	-	3,260	-	-	3,260	2,660
TOTAL EXPENDITURE	8,555	9,740	403	-	18,698	18,653
SURPLUS (DEFICIT) for year	1,309	(6,050)	168	167	(4,406)	(2,341)

BALANCE SHEET AT 30th SEPTEMBER 2005

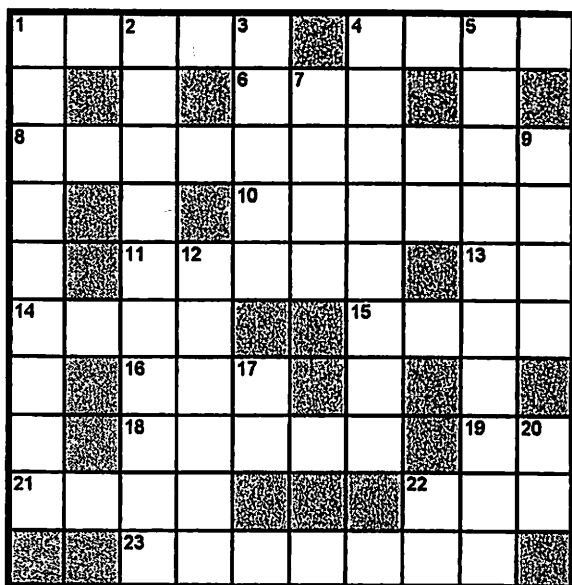
	2005		2004	
	£	£	£	£
<u>FIXED ASSETS</u>				
Investments at Market Value		65,324		61,068
Tangible assets		-		-
		<u>65,324</u>		<u>61,068</u>
<u>CURRENT ASSETS</u>				
Stock of publications	28,975		31,871	
Other stocks	388		465	
Debtors and prepayments	735		1,994	
Bank accounts	12,387		10,955	
	<u>42,485</u>		<u>45,285</u>	
Less				
CREDITORS REPAYABLE				
WITHIN ONE YEAR				
Sundry	1,022		2,441	
Scottish Journal of Geology Vol 41	4,500		4,500	
	<u>5,522</u>		<u>6,941</u>	
<u>NET CURRENT ASSETS</u>		<u>36,963</u>		<u>38,344</u>
NET ASSETS		<u>102,287</u>		<u>99,412</u>
REPRESENTING				
FUNDS				
Permanent Endowment		36,413		39,253
Unrestricted		65,874		60,159
		<u>102,287</u>		<u>99,412</u>

prepared by David Gould, Honorary Treasurer
approved by Dalglish and Tullo, Chartered Accountants
adopted on behalf of Council on 23rd November 2005

ROCKWORD PUZZLE No. 5

Clues across

- 1, 3 down. The dynamic duo of the N.W.Highlands of Scotland (5,5 letters)
4. O, oddly extinct bird (4)
6. In the four of us (3)
8. Chatoyant gemstones, burning bright (6,4)
10. The Lady of Loch Ness (6)
11. Insoles for wind-blown dust (5)
13. Ancient Egyptian soul or spirit (2)
14. A descent of water or rock (4)



compiled by Angela Anderson

- | | |
|---|---|
| <ol style="list-style-type: none"> 15. In times over as before (4) 16. Beware one 15th of March (3) 18. Commonly sandwich, arctic, roseate, little sea birds (5) 19. Top tailed (2) 21. Ends side up (4) 22. A Scottish mountain and first name of 1 across (3) 23. Perpendicular to a dipper? (7) | <ol style="list-style-type: none"> 2. Grail tiles are very fine sediments indeed (10) 3. see 1 across 4. Sideboards for preparing ores? (8) 5. Drinker eat triple faceted pebbles (10) 7. Sues for purposes (4) 9. In waters east of here (4) 12. Bold estimate of age (6) 17. Initially Elizabeth Regina hesitates (2) 20. Headless don (2) 22. To -- or not to -- (2) |
|---|---|

Clues down

1. Terrified of being turned to stone (9)

This is Angela's fifth puzzle, and I can promise readers that there is a sixth in the pipeline. The answers (for those who are absolutely stumped) are on the next page.

