

# BUSH TELEGRAPH

The House Magazine of the Edinburgh Centre for Rural Research

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[www.newscientist.com](http://www.newscientist.com)  
[www.nature.com](http://www.nature.com)  
[www.sciencemag.org](http://www.sciencemag.org)

## Inside ...

### Annual ECRR Lecture

Lord Peter Melchett will give the ECCR Annual Lecture on The Future of Food & Farming 20 February 2004

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### Passing the baton

Our Scientific Director, Ian Aitken, hands over the reins to Chris Browitt at the ECRR AGM on 4 Nov 2004.

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### Landscape Forum report

The proceedings of the ECRR conference on Scotland's landscape are now available.

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### Hugh Miller Bicentenary



The story of this remarkable 19<sup>th</sup> century Scottish geologist has been commemorated at the National Museums of Scotland.

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## People & Events

### Moredun's new director



Julie Fitzpatrick, Professor in Farm Animal Medicine at Glasgow Vet School, has been appointed Chief Executive and Scientific Director of the Moredun Group.

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### And changes at EU



Professor Elaine Watson has taken over as head of the Royal (Dick) School of Veterinary Studies at Edinburgh University.

### From barley to wine

Professor Wayne Powell, Deputy Director at the Scottish Crop Research Institute, has been appointed head of the School of Agriculture & Wine at the University of Adelaide.

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## **EDITORIAL**

September 2003 was a busy month for scientific conferences and I was involved in three. As well as the formal presentations of posters and verbal papers a good deal of interaction went on in the coffee and lunch breaks. For established scientists with known networks this was a comfortable and accepted way of soliciting information, establishing alliances and generally finding out what was going on. This greatly helps them decide how they might move forward in the future.

I did notice that younger scientists and people new to the industry, who do not have many, if any, links into these informal networks sometimes found themselves in a lonely and occasionally embarrassing wilderness. If we are to encourage these people, who are the industry's future, then we must beware that we should make every effort to include them in our network as well as encourage them to knock on the doors to others. If this means taking them round to be introduced to individuals or groups they would not normally approach then we should make the time to do this. We forget that it's often difficult for a new graduate to approach a seemingly high level academic, but it's only if this happens that we can maximise use of the expertise, ideas and knowledge within our respective area of science. Only then will we push at the boundaries of knowledge. There are not enough young people coming into science and handling well the ones that do enter is extremely important if the word is to get back that science and research is a good place to be.

Talking of conferences you'll find some interesting ones listed in this edition of the Bush Telegraph.

Please remember there is an electronic version of Bush Telegraph available on the ECRR website at [www.ecrr.org.uk](http://www.ecrr.org.uk)

**Mike Steele**

Editor

**Correspondents please note.**

**Deadline for copy for next issue is  
November 31st 2003.**

**All contributions, comments and suggestions  
can be e-mailed to [M.Steele@ed.sac.ac.uk](mailto:M.Steele@ed.sac.ac.uk)**

**with copies to [m.talbot@bioess.ac.uk](mailto:m.talbot@bioess.ac.uk) please.**

## **ROTA OF SOLICITED CONTRIBUTIONS TO BUSH TELEGRAPH**

### **SPRING**

British Geological Survey  
Biomathematics & Statistics Scotland  
University of Edinburgh, School of Biological Sciences  
Royal Society for the Protection of Birds  
Scottish Agricultural College

### **SUMMER**

Edinburgh Centre for Tropical Forests  
Centre for Ecology & Hydrology Edinburgh  
MRC Human Reproductive Sciences Unit  
University of Edinburgh Royal (Dick) School of Veterinary Studies  
Royal Zoological Society of Scotland  
Napier University, School of Life Sciences

### **AUTUMN**

DEFRA Lasswade Veterinary Laboratory  
National Museums of Scotland  
Roslin Institute  
Royal Botanic Garden Edinburgh  
Scottish Natural Heritage  
University Marine Biological Station, Millport  
University of Edinburgh, School of Geosciences

### **WINTER**

University of Stirling, Institute of Aquaculture  
Moredun Research Institute  
Forest Research Northern Research Station  
University of Edinburgh, School of Social & Political Studies  
Scottish Agricultural Science Agency  
Scottish Centre for Animal Welfare Sciences  
Scottish Crop Research Institute

## SCIENTIFIC DIRECTOR'S NOTES



**Professor Ian Aitken**

### BUSH TELEGRAPH

Recently, in preparation for handover to my successor later in the year, I have been going through various ECRR papers including back issues of the *Bush Telegraph*, of which the present is the 48<sup>th</sup> since the publication was launched in November 1989. Issue No1 was in loose-leaf format, stapled at the top left hand corner and had 21 pages. In length it has deviated little over the intervening years but its cover format has undergone changes. Adorning the cover of the first issue was a drawing of Bush House, for over 40 years the focal centre for ECRR's predecessor body, ECRE, and for all scientific tenants of the Bush Estate. In 1989 the University sold Bush House to the Electrical Contractors Association of Scotland, which formerly had its headquarters in Heriot Row. Thus, unlike ECRE, ECRR never really had a locus in that prestigious early 18<sup>th</sup> century mansion.

A brief editorial in the first issue encouraged ECRR Directors to distribute their copies of the *BT* (10 per Director) to staff in their organisations and solicited contributions for future issues relating to events and people and to interesting research developments in their field that would appeal to the readership. Both subsequent editors since 1989 have reiterated that plea regularly with varying degrees of success. An editor's life can be hard! Initial intention to publish every two months was modified to quarterly given the reluctance of scientists to meet deadlines and, but for an occasional lapse, that frequency has been maintained. Comments in the Foreward noted that the first meeting of the ECRR Board had been held in May under the chairmanship of Vice Principal Yeoman

(Botany) and that one of the outcomes had been compilation of a register of Bush-based staff with tropical experience. That exercise revealed a previously unsuspected wealth of resource that could be called upon in making bids for consultancies/research contracts in the developing world. Separately, the significant increase in research grant applications based on inter-institutional proposals rather than on stand alone in-house projects was reported, a timely development given the growing preference amongst funding bodies for multi-disciplinary approaches to scientific problems. In these respects ECRR was already seeing the benefits of its facilitating role.

In 1994 the *BT* appeared in its present centre-stapled form together with a coloured cover featuring the entrance to Bush Estate – “Gateway to the Future” - with a further revision five years later before adoption of the present cover version in December 2000. These changes refreshed the presentation of the *BT* and were designed to attract readers be it of the hard copy or the electronic version on the ECRR website.

This is also an opportunity to make a plea. Issue No 2 (February, 1989) is missing from the file so if you have one available I should be pleased to receive it. The file is also incomplete in respect of issues 31 and 33 (June and December 1999) at present though I suspect that they will resurface as I continue my scrutiny of ECRR's substantial papers!

## THE ENERGY DEBATE

The sudden massive loss of electrical power across the north eastern United States and southern Canada in mid August that abruptly halted industrial, business and travel activities served to renew the debate on energy sources and environmental pollution. For the UK collectively about 75% of national electricity is derived from fossil fuel sources – gas (38%), coal (32%) and oil (4%) with attendant emission of carbon dioxide and other pollutants. Nuclear power generates 23% while renewable resources provide only 3%. As illustrated during the *Landscape Forum* in May the figures for Scotland are different at nuclear (44%), coal (28%), gas (20%) and hydro (12%) – a more balanced supply source. What is striking however for both the UK and Scotland is the approaching closure of major plants over the next 20 years and the need for replacement strategies. Informed scientific sources argue strongly that without greater use of nuclear power real deficits in supply will be experienced. Opponents concerned about the long-term risks associated with nuclear power contend that greater use must be made of natural energy sources – wind, waves and tides – which Scotland has in abundance. One example quoted was the island of Muck which is not connected to the national grid but derives over 80% of its electricity needs from wind power, a case of a local solution to a local problem. For mainland Scotland and the UK as a whole, guaranteeing future electricity supplies whilst reducing environmental costs must be a continuing and compelling debate. It certainly commanded attention during August but what if North America's massive shutdown had occurred in midwinter?

On a lighter note August also brought North Uist to national attention at least so far as bird watchers were concerned for the month saw the rare but not unique appearance of a snowy owl on the island, having apparently wandered from its Arctic home. A consequent flocking of twitchers to the island

greatly boosted its normal summer visitor numbers.

## CENTRE FOR ENVIRONMENTAL HISTORY

On 11<sup>th</sup> September I represented ECRR at the formal launch of the above Centre which was established in October 2002 with a £900k grant from the Arts and Humanities Research Board as a joint interdisciplinary venture between the Universities of Stirling and St Andrews, bringing together historians, environmental scientists, ecologists, philosophers and economists. The new Centre builds upon the work of a previous inter university grouping, funded by SHEFC, which focused on environmental history and policy. As an academic discipline environmental history has much to offer, giving insights into how earlier generations, practices and policies created today's urban, rural and social environments. Understanding what went before, and why, will help to inform public debate and to determine future policy. As well as addressing cultural and biological diversity over time the Centre will, over the next four years, take 'waste' as its principal theme carrying out research in two areas – 'Waste Management' and 'Waste Lands', respectively focused in the University of St Andrews and the University of Stirling.

ECRR already has links with individuals within the Centre through their involvement in the *Landscape Forum* and the community of interest is such that the association between the two organisations can only grow.

## **A PARTING NOTE**

As I stand down from ECRR in November this is my last contribution to these columns and I cannot let the occasion pass without expressing my appreciation to the present editor, Mike Steele and his predecessor, Professor Crad Roberts, for their forbearance as I, like others, did not always meet their deadlines. I have enjoyed my spell as Scientific Director, meeting the diversity of people with whom my role has brought me into contact, and engaging in ECRR's many scientific, political and social activities. As a

consortium brought together by 'rural research' ECRR is a remarkable network of scientific bodies drawn from academic, research and regulatory areas in both public and private (charitable) sectors. In this and in its central facilitating role ECRR is unique and so recognised by others. There is much that ECRR can do to foster the appreciation of science amongst its own members and the wider community and I know that my successor, Dr Chris Browitt, will tackle the task with his customary enthusiasm and dedication. I wish him and ECRR success in the future.

## PEOPLE

### CHANGES AT EDINBURGH UNIVERSITY

Professor Mary Bownes, Chairman of ECRR Main Board has been appointed Vice Principal from 1 October 2003. Mary will have particular responsibility within the University for widening access, recruitment and community affairs.



Professor Elaine Watson has taken over responsibility as Head of the Royal (Dick) School of Veterinary Studies.

Professor Andrew Illius has been appointed Head of the School of Biological Sciences.

Professor Andy Leigh Brown is now Head of the Institute of Cell and Population Biology within the School of Biological Sciences.

### SCRI SPREADS ITS INFLUENCE

Professor Wayne Powell, Deputy Director of Scottish Crop Research Institute, has been appointed Foundation Chair and Head of the newly formed School of Agriculture & Wine in the University of Adelaide.

## NEW DIRECTOR AT MOREDUN



Professor Julie Fitzpatrick, Professor in Farm Animal Medicine at Glasgow Vet School, has been appointed to the post of Chief Executive and Scientific Director of the Moredun Group.

Professor Fitzpatrick succeeds Professor Quintin McKellar who is moving to take up the post of Principal of the Royal Veterinary College, London, during 2004.

### NEW RESPONSIBILITIES AT CEH EDINBURGH

After 16 years as Director of the Centre for Ecology & Hydrology Edinburgh, Professor Melvin Cannell is assuming a new role in CEH as one of five Science Directors. Melvin will be responsible for research on climate change across eight CEH sites.

The new head of CEH Edinburgh will be Dr J Neil Cape.

David Fowler, based at CEH Edinburgh, has been appointed the Science Director responsible for CEH work on Biogeochemical Cycles.

## ECRR EVENTS 2003-2004

### 2003

**Nov 4**            Main Board Meeting & AGM            Moredun Research Institute  
Pentlandfield            14.30 hours  
Host: Prof Quintin McKellar

Reception            Moredun Research Institute  
Pentlandfield            1            7.00 hours

**Dec 1**            Directors' lunch            Heriot-Watt University  
School of Life Sciences            12.30 hours  
Host: Prof Fergus Priest

### 2004

**Feb 2**            Directors' lunch            Scottish Natural Heritage  
Anderson Place, Edinburgh            12.30 hours  
Host: Dr Colin Galbraith

**Feb 20**            ECRR Annual Lecture "The Future of Food and Farming"  
Lord Peter Melchett, Soil Association  
Royal Society of Edinburgh  
George St., Edinburgh            17.00 hours

**Mar 1**            Directors' lunch            National Museums of Scotland  
Chambers Street, Edinburgh            12.30 hours  
Host: Dr Mark Shaw

# ECRR ANNUAL LECTURE 2004

## THE FUTURE OF FOOD & FARMING

Royal Society of Edinburgh  
George Street, Edinburgh

20<sup>th</sup> February 2004  
17.00 hours

### INTRODUCTION

The Annual Lecture, which is co-sponsored by the Royal Society of Edinburgh and the Institute of Biology (Scottish Branch), is a prestigious event in the yearly cycle and is given by a distinguished speaker from the scientific, political or business communities. The next in the series will be given on **Friday 20<sup>th</sup> February** .

The speaker is Lord Peter Melchett, part-time Policy Director of the Soil Association whose has taken as his topic **The Future of Food and Farming**

Farming and food production in Western Europe and North America face unprecedented problems. These consist of a combination of: massive over production and dumping on world markets of most commodity drops; public and political concern about taxpayers' subsidies for farmers; dramatic declines in farmland wildlife and food quality; rapidly increasing concern about the rise of diet-related illness, particularly among children.

Does this mark the end of the agricultural system based on pesticides and artificial fertilisers which has, briefly, dominated agriculture for the last 50 years?

### THE SPEAKER

Lord Melchett runs an 890 acre organic farm in Norfolk, in the East of England. The farm has a herd of Red Poll beef cattle, an ancient native breed. Crops include barley, wheat,

peas and grass. The farm is well known for the wildlife conservation work done there over the last 30 years and for the high level of public access provided for more than 20 years. As well as working as part-time Policy Director of the Soil Association, the UK's main organic food and farming association, Lord Melchett is an environmental consultant

From 1974 to 1979 Lord Melchett was a Labour Government Minister, first at the Department of Environment, then Department of Industry and finally in Northern Ireland responsible for education, health and social services. He was a Trustee of the World Wildlife Fund UK from 1977-84, President, Chair or Council member of several of the UK's leading nature conservation and wildlife non-governmental organisations before working full-time for Greenpeace UK as Executive Director from 1989 to 2000. He has also been a member of the International Board of Greenpeace and was Chair of Greenpeace, Japan from 1995 to 2001.

Admission to the Lecture will be by *ticket only*. Requests for tickets should be sent to Mike Talbot, ECRR Secretary, JCMB, Kings Buildings, Edinburgh EH9 3JZ, email: [m.talbot@bioss.ac.uk](mailto:m.talbot@bioss.ac.uk)

## REPORT ON ECRR FORUM 2003

### SCOTLAND'S LANDSCAPE – A FIXED ASSET?

The Proceedings of this ECRR sponsored Forum is now available. It was a joint effort between ECRR, Aberdeen Research Consortium and the Business & Environment Network and took place at the SNH Battleby Centre on 8 May 2003..

Here are a few quotes from that day:

- Scotland's Landscape:
  - Is forged by geology and climate;
  - Has been given a 'green veneer' by plant and animal communities;
  - Is modified by human intervention;
  - Confers uniqueness of place, imparting character and identity;
  - Has functional, economic and aesthetic value;
  - Has rich and varied diversity;
  - Is dynamic and ever evolving;
  - Is important at a basic personal level;
  - Encourages tourism by scenic quality;
  - Is a national resource to be nurtured for present and future benefit;.
- The brevity of human life lures us into perceiving the landscape as permanent.
- Land use is a major determinant of landscape character; landscape change reflects prevailing environmental and social processes translated through government policy.
- Sector-specific, production-oriented policies have created disintegrated landscapes.
- The forces of globalisation are driving us towards the "McDonaldisation of cultural landscapes".
- Society is progressively appropriating the rights of individuals to do things with their land as they wish.
- Landscape is a national resource not in national ownership. No one accepts responsibility for it at a large scale and it could all too readily become a wasting asset.
- Public goods - including landscape and its enjoyment - are now much more important functions of our countryside than the former 'core rural industries'.
- The UK's commitment to increasing renewable energy sources will rely primarily on harnessing wind power. Wind speeds are highest in Scotland. Can wind farms enhance the value of Scotland's landscape?
- Scotland has a wealth of water resources - a massive asset that is used and abused in a wide variety of ways. Considerable harm has been, and is being, done by human activities but recent European legislation should improve matters.
- The impact of non-native species, mostly plants, is a major threat to Scotland's biodiversity.
- Future urban planning should be more sensitive to local landscape character.

Interested? Challenged? Then contact the ECRR office for a copy.

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## HUGH MILLER BICENTENARY AT NMS

Life itself is a school, and Nature always a fresh study - and ... the man who keeps his eyes and his mind open will always find fitting, though, it may be, hard schoolmasters, to speed him on his lifelong education.

So ends *My schools and schoolmasters*, Hugh Miller's ironically titled autobiography and a classic of self-education that inspired many – including the émigré Scot and pioneering conservationist John Muir (who named an Alaskan glacier after Miller). Born in Cromarty north of Inverness in 1802, Miller abandoned his schooling and the chance of university to become a stonemason and achieve a literary career in winter free time. Eventually, via work in a bank, he became in 1840 founding editor of *The Witness*, set up to oppose lairdly interference in the Church of Scotland – a problem which led, in the 'Disruption' of 1843, to the foundation of the Free Church, a major crisis when most Scots were Presbyterian, and much of society was run by the parish, including what we would think of as government roles such as schooling and social welfare.

As well as the sheer quality of his writing, Miller's fame rests partly in his trenchant journalism attacking social injustice. But he

was also a keen geologist, who even as a mason had made major discoveries of fossil fishes at his classic Old Red Sandstone locality at Cromarty. If too busy to be a full-time research geologist or to write many



formal papers, Miller made important contributions through his fossils and sites, and in his observations. His fossils (almost all now in NMS) were written up by others such as Louis Agassiz and remain of primary importance today, notably as taxonomic type specimens. They represent an immense amount of hard work, of exploration, searching and discovery.

In articles and books for the lay reader, at a time when popular science was taken seriously as high literature, Miller took a 'Life, the Universe and Everything' approach to explaining the meaning of the latest scientific discoveries from the prevailing Calvinist Presbyterian viewpoint. Archibald Geikie rated him as one of the greatest popularisers of geology, who helped to rescue the science from suspicion as something unchristian. In *Beginnings* in the Museum of Scotland, we took a gallery, several hundred thousands of pounds, and all the techniques of modern exhibition work to tell the geological story of Scotland: individual specimens

discussed in detail, images of modern or reconstructed landscapes, fossils and life models, and videos ... Miller did all that and more, in uncannily precise parallel, with just pen and paper. He would have been a first-rate exhibition curator.

Miller was not so much a literary geologist as an astonishingly rounded figure who wrote holistically about his world, of which geology was an integral part. Geology as an improving recreation fitted well with the Protestant work ethic, even if Presbyterianism made life difficult for those fossil-hunters whose only free day was Sunday! It was good hard open-air work and exercise for the brain, keeping the amateur geologist face to face with the works of the Lord. To Miller, God made the scales of a fossil fish fit together with the same attention to detail as a Scots craftsman making a slated roof. Natural theology complemented revealed theology (from the Bible, etc.) as two faces of the same divine truth. To Miller, science and religion complemented, not conflicted. Miller's attitude was pragmatic. New problems had to be tackled with new answers. Traditional Biblical literalism would no longer do: the Flood was a local flood, and Genesis a vision of geological time. He had enormous contempt for those who denied scientific truth.

Miller and fellow Edinburgh journalist Robert Chambers famously both tackled biological evolution. Chambers' *Vestiges of the Natural History of Creation* asserted a linear, simple to complex model, against which Miller argued on scientific grounds, for instance the presence of early, but complex, fossil fishes. Miller also rejected evolution on theological grounds, because of the discontinuity between irresponsible animals and humans with souls responsible before the Maker. Indeed, if anything, the Calvinist view – as he pointed out – was that things had got *worse* thanks to the Fall and Original Sin. Miller fretted that evolution would lead to the rejection of religion, the collapse of society and the damnation of many – less self-serving, I

daresay, than the antievolutionary diatribes of Anglican Tories anxious to shore up the social status quo. With hindsight and Darwin's deeply apogressionist model of evolution, Miller and Chambers were both half right (and half wrong). But the differences are perhaps less important than the similarities – that both insisted on dragging this crucial issue out into the open, asking the scientists to get off the fence and tackle their science's social and religious implications, and doing the job when the scientists didn't.

Miller shot himself in his Portobello house in the wee small hours of Christmas Eve 1856 – apparently hallucinating with appalling nightmares thanks to physical illness. Apart from ensuring that he never properly published his geological work, a task which his widow Lydia had to tackle, the suicide also gave rise to the myth, in my view false, of a Jekyll and Hyde figure, torn between the reputed dichotomies of the Scottish psyche: Highland believer in demons versus Lowlander rationalist, science versus religion, evolution versus God. Moreover, like much other Victorian culture, Miller went out of fashion in the 20th century. It is only in recent years that the growth of interest in the history and culture of Scotland, and in pre-Darwinian science, led to a reappraisal of the man and his work.

2002, being the bicentenary of his birth, saw a very wide range of events by various bodies all over Scotland, mediated by a steering group led by Lester Borley of the Cromarty Arts Trust. The Trust, amongst other things, organized two day meetings and a major, and excellent, international conference, both rapidly published to give two very readable books (Borley, L. ed. *Hugh Miller in context ... Cromarty Arts Trust, 2002*, and *Celebrating the life and times of Hugh Miller. Scotland in the early 19<sup>th</sup> century ... Cromarty Arts Trust, 2003*: copies available from the Royal Museum shop, or tel/fax Dr Borley on 0131 332 2364).

NMS' main contribution was a temporary exhibition on Miller's life and work, *Testimony of the Rocks: Hugh Miller 1802-1856*, in cooperation with the National Library of Scotland and the National Galleries of Scotland, at the Royal Museum in spring 2002. My colleague Lyall Anderson prepared a supplementary display of Miller's fossils in the Royal Museum; it is still on show. Susan Seright of Groam House Museum in Rosemarkie (near Cromarty and Eathie, another major Miller fossil site) used elements from the temporary exhibition, and other NMS material, to create *Hugh Miller Local Hero* which ran till April 2003. Cooperation and complementation with local museums all over Scotland is an important current aim of NMS, and we also helped with a temporary exhibition in Portobello Library near his last house (now marked with a plaque).

NMS staff was also involved in giving talks and leading field parties to various locations, hopefully to the benefit of local economies as well as education, especially at Cromarty but also Edinburgh itself and on the Isle of Eigg. Miller's *Cruise of the Betsey, or Rambles of a Geologist* has just been reprinted by NMS Publishing with a modern introduction and notes by myself, to give the context and explain the various allusions, making a superb but otherwise confusing book accessible to the modern reader. In it, I also encourage people to visit the many places described therein.

There is still plenty of juice in the orange for NMS to exploit – and if I am unsure at times whether my Miller research should be scored under exhibitions, or outreach, or formal academic output, then that just reflects its utility. Subject as ever to other commitments, we are looking at possible further publications, such as a popular biography and field guides. We are also advising the National Trust for Scotland in their creation of a new museum in Hugh Miller House in Cromarty, next to the Birthplace Cottage which they already maintain. As with the

Groam House exhibition, this reflects NMS' cooperative outreach policy.

Quite apart from the benefit for NMS' formal aims, I have found working on Miller interesting and challenging experience because it forces one to ignore modern disciplinary and departmental boundaries. For instance, in his books, Miller so to speak thumps down on the table individually recognisable fossil specimens – ones I can go and examine in the collection today, Miller is always referring back sooner or later to them, the literal evidence for past creation. These individual fossils must have been very famous in his time, whether as examples of fossil-collecting or in his anti-evolutionary arguments, and must be as much part of wider Victorian culture as Oliver Twist's empty bowl, or the Albert Memorial. This raises major questions about their proper display and interpretation. But at the same time – as type specimens, records of now lost sites, and so on – they remain of major scientific importance within the NMS collection as a whole.

## FURTHER INFORMATION

The official Hugh Miller website is [www.hughmiller.org](http://www.hughmiller.org); for some articles on Miller, and also Muir and Chambers, see [www.edinburghgeolsoc.org/z\\_38\\_04.html](http://www.edinburghgeolsoc.org/z_38_04.html), [http://www.edinburghgeolsoc.org/z\\_39\\_07.html](http://www.edinburghgeolsoc.org/z_39_07.html), [http://www.edinburghgeolsoc.org/z\\_40\\_04.html](http://www.edinburghgeolsoc.org/z_40_04.html) and <http://www.jmt.org/news/2002/32/muirmiller.html>



### MEETINGS ON LAND REFORM AND THE AGRICULTURAL HOLDINGS ACT

“The new legislation on land law and how it is going to impact on farm businesses is the biggest development to hit Scottish farming since the introduction of the Common Agricultural Policy,” says Iain McGregor of SAC who is organising the events.

“The extent of the legislation is far reaching and includes issues such as access, grazing rights, tenants’ rights, limited partnerships and other business complications which can make interpreting and abiding within the letter of the law a delicate and often complex affair.”

Following a one day conference on 1<sup>st</sup> October for solicitors, landowners and land managers a series of regional evening meetings are being held specifically for farmers who need to know where they stand with the legislation and what the practical implications are for their particular farm business. The meetings will address the effect of the practical implications of the various new Acts but in particular the Agricultural Holdings (Scotland) Act, the land management issues of the Bill, and the implications on access and the right to roam.

All four meetings will run from 1930-2200.

- **Ayr**, Oswald Hall, SAC, Auchincruive Estate, 8 October 2003
- **Penicuik**, Pentlands Science Park, Bush Estate, 29 October 2003
- **Aberdeen**, Ferguson Building, SAC, Craibstone Estate, 12 November 2003
- **Inverness**, Thistle Hotel, , on 19 November 2003.

Delegate fees for the evening meetings are £40 including tea, coffee & sandwiches.

Further information is available from local SAC Offices, or from:

Kim Townend, Land Economy Group,  
SAC, Craibstone Estate, Aberdeen  
AB21 9YA

Tel: 01224 711083, Fax: 01224  
711270, E mail:  
K.Townend@ab.sac.ac.uk

For more details: [www.sac.ac.uk/landreform](http://www.sac.ac.uk/landreform)

### A PERTSHIRE MONITOR FARM

SAC is to hold a meeting for subscribers on Thursday, 2nd October to explain the aims of their monitor farms project. The aim is bring forward farmers who would volunteer their farm to be monitored. The meeting also aims to establish a group of interested farmers to form the "Community Group" to choose what parameters are monitored and to spread ideas out to the farming population.

SAC has been contracted by SEERAD to set up Scotland’s first two monitor farms in the Borders and Perthshire. Monitor farms have had a huge influence in the take-up of new ideas and techniques to improve farm profitability in New Zealand and have proved popular in Wales. If similar benefits can be identified in Scotland through this research then the idea may be rolled out on a larger scale across the country.

SAC advisers are acting as co-ordinators, providing advice and bringing in other specialist expertise as required.

Contact:

Mary Munro, Farm Business Services,  
SAC

Tel: 01738 636611, email:

[m.munro@ed.sac.ac.uk](mailto:m.munro@ed.sac.ac.uk)

## **VISITORS FROM TAJIKISTAN**

A team of senior figures from Tajikistan including senior members from the Parliament, the Ministry of Agriculture and the Ministry of Justice visited SAC in September. This was part of an international study tour which aimed to allow the Tajiks to review the application of Third Party Arbitration Courts (TPAC) in the UK and the Soviet Union. For the last two SAC has been working with neighbouring Kyrgyzstan within a Department for International Development programme to establish a TPAC to help resolve land disputes and this system is now enshrined in their Civil Code. TCAP is a well-proven system now well established in Russia and former Soviet States.

Contact:  
Garth Entwistle, Ruralk Business and Marketing Services Group, SAC  
Tel: 01224 711047  
email: [g.entwistle@ab.sac.ac.uk](mailto:g.entwistle@ab.sac.ac.uk)

## **FARM MANAGEMENT HANDBOOK**

The latest edition of SAC's Farm Management Handbook was published in September. This publication draws together into a single reference book, a wealth of technical and financial information, which aims to help farmers, and rural businesses evaluate their current situation and

develop their future business plans. Price £17.50 (post-free UK).

Contact:  
Linda Chadwick, SAC, West Mains Road, Edinburgh, EH9 3JG.  
Telephone: 0131-535 4120 or 0131-535 4305, email: [fmh@ed.sac.ac.uk](mailto:fmh@ed.sac.ac.uk), or see the SAC website: [www.sac.ac.uk/fmh](http://www.sac.ac.uk/fmh) for further information

The SAC Farm Management Handbook is also available through SAC Local Advisory Offices in Scotland.

## **DEVELOPMENT OF DIAGNOSTIC TESTS**

SAC Veterinary Services and the Moredun Research Institute have appointed veterinary scientist, Dr Kim Willoughby, to develop new and improved diagnostic tests for a range of livestock diseases. Both organisations have a strong commitment to accelerating progress in the development of new diagnostic tests, the vital tools which enable veterinary surgeons and farmers to institute correct treatments and control practices. Kim's first project will be to look at *Campylobacter*, bacteria that cause reproductive disease in cattle and sheep and diarrhoea in other species, and hopefully develop an effective test for it.

Contact:  
Brian Hosie, Veterinary Services Group, SAC  
Tel: 0131 535 3138, email: [b.hosie@ed.sac.ac.uk](mailto:b.hosie@ed.sac.ac.uk)

## ROSLIN INSTITUTE



### THE GENESIS FARADAY PARTNERSHIP

The Genesis Faraday Partnership is the result of a bid, led by the Roslin Institute, to the 2002 competition for new Faraday Partnerships. Genesis FP works to improve the co-ordination of **the use of genetic and genomic technologies by the livestock breeding and animal health industries.**

It will promote and co-ordinate basic research, assist with technology transfer and organise and promote relevant training activities. The results of this activity will be a more sustainable livestock industry with better animal production, health and welfare, together with thriving livestock breeding and animal health companies.

### OWNERSHIP & GOVERNANCE

The Genesis Faraday Partnership was established as a Company Limited by Guarantee in November 2002, and commenced operations from 1 January 2003. The Company is 'not for profit'. The owners of the Company are:

The Roslin Institute (Edinburgh)  
The Royal Veterinary College  
(London)  
The Meat and Livestock Commission  
(Milton Keynes)  
The University of Edinburgh  
Sygen Ltd (Oxfordshire)

Genesis supports research activity through a number of different mechanisms.

### BBSRC FUNDS

The BBSRC is providing the Genesis Faraday Partnership with £1M of research funding. Part of this sum is allocated to fund three BBSRC CASE studentships in each of the first three years of the Faraday.

Genesis Faraday will also help allocate £640k of 'ear-marked' BBSRC funds to support high quality research in the area of Farm Animal Genetics and Genomics.

### OTHER RESEARCH OPPORTUNITIES

Genesis has a major role in facilitating access to all national and international funding opportunities. This includes, but is not limited to, LINK and Foresight LINK Awards, Research Council/DTI initiatives, EU programmes (e.g. FP6).

Genesis Technology Translators are building a collaborative network of organisations. They drive and administer the proposal application, mentoring applicants through the process and can support the financial and general administration of the programmes. Genesis Faraday Staff have years of experience of LINK funding mechanisms and a strong track record of successful applications.

### FOR FURTHER INFORMATION

Please contact one of our Technology Translators with any questions and comments regarding funding or research opportunities.  
[info@genesis-faraday.org](mailto:info@genesis-faraday.org)  
0131 527 4358

## **FUNDING OPPORTUNITIES**

### **NEW JOINT RESEARCH COUNCIL INITIATIVE**

The Government has awarded £20m to BBSRC, ESRC and NERC for the joint Rural Economy and Land Use Programme (RELU). The aim of the programme is to provide a body of evidence supported by underpinning research that may be used to inform Government policy in this area and facilitate progress towards the vision of the Government's rural White Paper, *Our Countryside: the Future*.

The Research Councils have recently issued a call for proposals under the RELU programme which includes funding for studentships. The closing date for applications is **28 November 2003**. Further information is available from [www.esrc.ac.uk/relu/timetable.htm](http://www.esrc.ac.uk/relu/timetable.htm) .

## **FORTHCOMING EVENTS**

### **CONFERENCE**

#### **SCOTTISH NATURAL HERITAGE**

##### **Farming, Forestry and the Natural Heritage**

**Pitlochry 4 – 7 November 2003**

#### **BACKGROUND**

This year Scottish Natural Heritage's conference is on farming, forestry and the natural heritage, and the aim is to bring together a broad spectrum of interests in the management of land in the countryside, and make connections between these in order to share ideas and information and inform future research and advice.

#### **THEME & OBJECTIVES**

Farming and forestry are going through a time of change, with increasing economic pressures, trade liberalisation, policy evolution and growing public interest in the wildlife, landscape and recreational value of the countryside. Given this context it is important for policy and advice to be supported by sound scientific research. SNH's conference aims to foster a better understanding amongst all key interests of possible ways of integrating landscape, biodiversity and recreational objectives in land management. It will review current practices and identify future research and advisory needs that will help land managers to protect and enhance the natural heritage. The conference The Conference Sessions on 5 - 6 November will be led by keynote speakers and will include opportunities for discussion, and will focus on:

- key trends in land management;

- how these changes are likely to affect biodiversity
- the influence of farming and forestry on the landscape;
- managing access on farm land and in forests and woodlands;
- possible ways of integrating landscape, biodiversity and recreational objectives in land management.

The conference dinner will be held on the evening of 5 November and a programme of field visits will take place on 7 November. The themes of the visits are:

- Combining farming, forestry and the natural heritage on a Highland Estate
- Long-term forest plans in Highland Perthshire
- Integrating conservation and access with farming in Lowland Perthshire

#### **CONFERENCE ARRANGEMENTS**

Further information from:

*Mrs Helen G Forster*

*Scottish Natural Heritage*

*2 Anderson Place, Edinburgh EH6 5NP*

Tel: 0131-446 2420

Fax: 0131-446 2406

*Email: helen.forster@snh.gov.uk*

## FORTHCOMING EVENTS

### WORKSHOP

#### Frontiers of innate immunity - the genetics of disease resistance

14 January 2004

Surgeon's Hall, Royal College of Surgeons, Edinburgh

#### BACKGROUND

This is the first of the Genesis Faraday international focussed scientific workshops for academic and commercial scientists.

The aim of these meetings is to bring together experts in both molecular and genetic aspects of immunology from different species. To discuss with research scientists working on farm animal species the current understanding of the innate immune system and common themes in all species on how the genetics of the innate immune system governs resistance/susceptibility to infections. The outcome of these discussions will be to generate ways forward potentially by adoption of new techniques, collaborations or comparative studies.

#### SPEAKERS CONFIRMED

**Professor Susan Lamont** (Iowa) - Candidate genes and response to Salmonella in chickens

**Professor Joe Templeton** (Texas A&M) - Comparative immunogenetics of natural disease resistance in mammals line mutagenesis in mice

**Professor Bruce Beutler** (Scripps, La Jolla) - Dissection of innate immunity through germ  
**Christian Schönbach** (RIKEN Genomic Sciences Center) -The FANTOM project and data on immune-related transcripts in the mouse transcriptome

This will be a small participatory workshop suitable for scientists working on disease resistance from both academic and commercial environments. There will be no charge for participation in the workshop.

Format will be of 5x 20mins talks with 15mins for discussion after each talk and then a facilitated/structured round table discussion with all participants for between 2-2.5 hours.

If you feel you could contribute then please register your interest in attending by contacting Pauline on 0131 527 4332 [info@genesis-faraday.org](mailto:info@genesis-faraday.org).

Because of limited places and expected demand, other than prior agreement, we are limiting member organisations to **no more than 2 participants**. The registration deadline is 14th November 2003 but we urge you to register as soon as possible to avoid disappointment..

## FORTHCOMING EVENTS

### CONFERENCE

#### **Plants as animal foods: a case of catch 22?**

**Royal Botanical Gardens Edinburgh**

**19 April 2004**

**Organisers:** Jos Houdijk, Mauvis Gore, Jamie Newbold

#### **BACKGROUND**

While plants provide nutrients to animals ingesting them, they also produce plant secondary metabolites (PSM). These are thought to play a role in reducing the degree of herbivory e.g. their astringent taste or toxicity. There is an increasing body of evidence suggesting that ingesting PSM may also be beneficial to the host, e.g. through their anti-parasitic or anti-bacterial properties. Hence, there is a growing interest in PSM, illustrated by two current Scottish based Framework 5 EU projects on PSM (Scottish Agricultural College and Rowett Research Institute). In addition, PSM will play a prominent role in the newly proposed Framework 6.

This meeting, organised jointly by the Nutrition Society and BSAS, will address questions related to PSM from various angles, including regulation, plant (biochemistry and breeding), animal (antiparasitic and antibacterial) as well as an overall view (systems).

For further details contact:  
j.houdijk@ed.sac.ac.uk

#### **SPEAKERS & PAPERS**

##### **Plant secondary metabolites in animal nutrition: regulations'**

**Dr Andy Chesson**, Rowett Research Institute, Aberdeen, Head of Biological Chemistry.

##### **Biochemistry of plant secondary metabolites'**

**Dr Tom Acamovic**. Scottish Agricultural College, Department of Avian Sciences, Auchinchruive,

##### **Breeding perspectives for plant secondary metabolites**

**Dr Phillip Morris**. IGER

##### **Antiparasitic properties of plant secondary metabolites**

**Dr Spiridoula Athanasiadou**. Scottish Agricultural College, Department of Animal Nutrition and Health, Edinburgh

##### **Antimicrobial properties of plant secondary metabolites**

**Dr John Wallace**. Rowett Research Institute, Department of Gut Microbiology and Immunology

##### **The role of plant secondary metabolites in grazing ecology**

**Dr Glenn Iason**. MLURI, Aberdeen.

## WRITINGS BY OR ABOUT HUGH MILLER



*Archibald Geikie on Miller striding the Edinburgh streets, in The Centenary of Hugh Miller (Anon., 1902: 40-41):*... a man of good height and broad shoulders, clad in a suit of rough tweed, with a shepherd's plaid across his chest and a stout stick in his hand. His shock of sandy-coloured hair escaped from under a soft felt-hat; his blue eyes, either fixed on the ground or gazing dreamily ahead, seemed to take no hint of their surroundings. His rugged features wore an expression of earnest gravity, softening sometimes into a smile and often suffused with a look of wistful sadness, while the firmly compressed lips betokened strength and determination of character.

*Miller on bothy accommodation as provided by farmers for unmarried staff and itinerant masons (Essays, p. 202):* We have seen more than the mere outsides of bothies, and know from experience, that though they may be fit dwellings for hogs and horses, they are not fit dwellings for immortal creatures, who begin in this world their education for eternity.

## HIGHLANDS & ISLANDS

*Miller visits Rum (Cruise of the Betsey, 133-136: ...* All was solitary. We could see among the deserted fields the grass-grown foundations of cottages razed to the ground; but the valley, more desolate than that which we had left, had not even its single inhabited dwelling: it seemed as if man had done with it for ever. The island, eighteen years before, had been divested of its inhabitants, amounting at the time to rather more than four hundred souls, to make way for a sheep-farmer and eight thousand sheep. All the aborigines of Rum crossed the Atlantic ... the whole of the once peopled interior remains a wilderness, without inhabitant, – all the more lonely in its aspect ... [the ruins and former fields] seemed to bespeak the place a fitting inhabitant for man, in which not only the necessaries, but also a few of the luxuries of life, might be procured; but in the entire prospect not a man nor a man's dwelling could the eye command. The landscape was one without figures. I do not much like extermination carried out so thoroughly and on system; - it seems bad policy; and I have not succeeded in thinking any the better of it though assured by the economists that there are more than people enough in Scotland still. It did not seem as if the depopulation of Rum had tended much to anyone's advantage. The single sheep-farmer who had occupied the holdings of so many had been unfortunate in his speculations, and had left the island: the proprietor, his landlord, seemed to have been as little fortunate as the tenant; for the island itself was on the market; and a report went current at the time that it was on the eve of being purchased by some wealthy Englishman, who purposed converting it into a deer forest. How strange a cycle! Uninhabited originally save by wild animals, it became at an early period a home of men, who, as the gray wall [of an ancient deer trap] on the hill-side testified, derived, in part at least, their sustenance from the chase. ... the island was to return to its original state, as a

home of wild animals, where a few hunters from the mainland might enjoy the chase for a month or two every twelvemonth, but which could form no permanent place of human abode. Once more, a strange and surely most melancholy cycle! ... *Cruise of the Betsey*,

*The Sutherland clearances* (Leading Articles, 1871 edition, p. 392), referring to the type of clearance where people were shifted within an estate, often to inferior and more crowded conditions: The county has not been depopulated – its population has been merely arranged after a new fashion. The late Duchess found it spread equally over the interior and the sea-coast, and in very comfortable circumstances; - she left it compressed into a wretched selvage [margin] of poverty and suffering that fringes the county on its eastern and western shores ...

## FIELD KIT

*Miller kitted out for collecting fossils* (*Cruise of the Betsey*, p. 238): My dress is the usual fatigue suit of russet, in which I find I can work amid the soil of ravines and quarries with not only the best effect, but with even the least possible sacrifice of appearance: the shabbiest of all suits is a good suit spoiled. My hammer-shaft protruded from my pocket; a knapsack, with a few changes of linen, slung suspended from my shoulders; a strong cotton umbrella occupied my better hand; and a gray maud, buckled shepherd-fashion aslant the chest, completed my equipment – *although he also had a pair of pistols for self-protection*

## DISCOVERING FOSSILS

*On working, as a young apprentice stonemason, in a quarry at Eathie, and starting his fossil-hunting career in the nearby coastal rocks by finding abundant Jurassic fossils, including 'thunderbolts' or belemnites (the hard bulletlike parts of the internal skeletons of squidlike cephalopods)* (My Schools and Schoolmasters, 1858 edition, 160-161)... I laid open my first-found

ammonite. It was a beautiful specimen, graceful in its curves as those of the Ionic volute, and greatly more delicate in its sculpturing; and its bright cream-coloured tint, dimly burnished by the prismatic hues of the original pearl, contrasted exquisitely with the dark gray of the matrix which inclosed it. I broke open many a similar nodule during our stay at this delightful quarry, and there were very few of them in which I did not detect some organism of the ancient world – scales of fishes, groups of shells, bits of decayed wood, and fragments of fern. At the dinner hour I used to show my new-found specimens to the workmen; but though they always took the trouble of looking at them, and wondered at times how the shells and plants had 'got into the stones', they seemed to regard them as a sort of natural toys, which a mere lad might amuse himself in looking after, but which were rather below the notice of grown-up people like themselves. One workman, however, informed me that things of a kind I had not yet found – genuine thunderbolts, which in his father's time were much sought for the cure of bewitched cattle, were to be found in tolerable abundance on a reach of the beach about two miles further to the west ...

*Discovering Old Red Sandstone fishes at Cromarty* (My Schools and Schoolmasters, 1858 edition, 472-473): I laid open a nodule with a blow of the hammer, and my heart leaped up when I saw that it enclosed an organism. A dark, ill-defined, bituminous mass occupied the centre; but I could detect what seemed to be spines and small ichthyic bones ... I eagerly wrought on, and disinterred, in the course of a single tide, specimens enough to cover a museum table; and it was with intense delight that, as the ripple of the advancing tide was rising ... I carried them to the higher slopes of the beach, and, seated on a boulder, began carefully to examine them ... I had got amid the remains of an entirely different and incalculably more ancient creation.

*Archibald Geikie assessing Miller:* I do not think that the debt which geology owes to him for ... deepening the popular estimation of the science ... has been sufficiently acknowledged ... Hugh Miller was looked upon by the general body of his countrymen as the leading geologist of the day. And this exaggerated but very natural estimate spread perhaps even more extensively in the United States. His books were to be found in the remotest log-hut of the Far West, and on both sides of the Atlantic ideas of the nature and scope of geology were largely drawn from them.

*Archibald Geikie again, on Miller's effect on Presbyterian opinion, in The Centenary of Hugh Miller (Anon., 1902: 61):* His genial ardour and irresistible eloquence swept away the last remnants of the barrier of orthodox prejudice against geology in this country ...

*Miller on the formation of the Bass Rock, the eroded remnant of a volcano forming an island in the Firth of Forth (Edinburgh and its neighbourhood, p. 338):* The billows roll back, - the bared strata heave, and crack, and sever, - a dense smouldering vapour issues from the opening rents and fissures; and now the stony pavement is torn abruptly asunder, like some mildewed curtain seized rudely by the hand, - a broad sheet of flame mounts sudden as lightning through the opening, a thousand fathoms into the sky ... and the volcano is born. Meanwhile, the whole region around, as far as the eye can reach, heaves wildly in the throes of Plutonic convulsion. Above many a rising shallow, the sea boils and roars ...

*A coal mine in Dryden glen, probably just south of what is now Bilston Glen Industrial Estate, Loanhead – i.e. somewhere between the BGS Core Store and land at Langhill Farm, Roslin: around 1840-5 (Edinburgh and its neighbourhood, pp. 73-74):* The time chosen for our exploratory descent is when the workmen are absent at their mid-day meal; nor would it be very convenient to thread a passage so narrow and long, so

broken by descents, and perplexed by turnings, when the bearers are passing out and in, either laden by coal, or carrying on their shoulders the bulky basket. Here the miners come, however, each furnished with his lamp. They squat themselves down in a reclining posture, which only habit could have rendered bearable; and, striking out the projecting masses of coal, roll them over into the gallery. And now come the bearers with their baskets, to carry up to the surface the coal thus disengaged. But what work for women? Each bears a lamp fastened to her head, to light the long upward ascent; and, laden with more than a hundredweight of coal, and bent forward at nearly a right angle, to avoid coming into contact with the low roof, they ascend slowly along the flights of steps, and through the narrow galleries, and, lastly, up the long stair of the shaft; and when they have reached the surface, they unload at the coal-heap, and return. And such is the employment of females for twelve, and sometimes fifteen hours altogether. It has been estimated by Mr Robert Bald, the distinguished mining engineer, that one of their ordinary day's work is equal to the carrying of a hundredweight from the level of the sea to the top of Ben-Lomond.

*On the divine design, as Miller saw it in those pre-Darwinian days, of fossil fishes: ... the art of the slater ... had been anticipated, - the scales had been slates fastened down by long nails driven in slantwise, which were however mere prolongations of the scale itself. ... it struck me as wonderful that the humble arts of the tiler and slater should have existed in perfection in the times of the Old Red Sandstone.*

*On evolution (Footprints of the Creator, 1896 edition, p. 18):* A form of error at once exceedingly plausible, and consummately dangerous, and which is telling so widely on society, that one can scarce travel by railway or in a steamboat, or encounter a group of intelligent mechanics, without finding decided trace of its ravages ...

The problem of the Ice Ages, as it then seemed: had Scotland been covered with a deep iceberg-laden sea, or a solid icecap?

*On glaciation, or was it icebergs floating over the flooded land and catching the rocks?*

(Cruise of the *Betsey*, p. 233): ... that comparatively modern geologic agent, whatever its character, which crushed, as in a mill, the upper parts of the surface-rocks of the kingdom, and then overlaid them with their own debris and rubbish ...

*Scotland in the Ice Ages: A foundering land under a severe sky, beaten by tempests and lashed by tides, with glaciers half choking up its cheerless valleys, and with countless icebergs brushing its coasts and grating over its shallows ...*

*In Kinloch Glen on Rùm, in 1844, Miller contemplated* (Cruise of the *Betsey*, pp. 123-124) ... the mysterious scratchings and polishings now so generally connected with the glacial theory of Agassiz. The scratchings run in nearly the line of the valley, which exhibits no traces of moraines; and they seem to have been produced rather by the operation of those extensively developed causes, whatever their nature, that have at once left their mark on the sides and summits of some of our highest hills, and the rocks and boulders of some of our most extended plains, than by the agency of forces limited to the locality. They testify, Agassiz would perhaps say, not regarding the existence of some local glacier that descended from the higher grounds into the valley, but respecting the existence of the great polar glacier. I felt, however, in this bleak and solitary hollow, with the grooved and polished platforms at my feet, stretching away amid the heath, like flat tombstones in a graveyard, that I had arrived at one geological inscription to which I still wanted the key. ... here was a story not clearly told. It summoned up doubtful, ever-shifting visions, – now of a vast ice continent, abutting on this far isle of the Hebrides from the Pole, and trampling heavily over it, – now of the wild rush of a turbid, mountain-high

flood breaking in from the west, and hurling athwart the torn surface, rocks, and stones, and clay – now of a dreary ocean rising high along the hills, and bearing onwards with its winds and currents, huge icebergs, that now brushed the mountain-sides, and now grated along the bottom of the submerged valleys. The inscription on the polished surfaces, with its careless mixture of groove and scratch, is an inscription of very various readings.

## **ECRR MEMBER ORGANISATIONS**

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**University of Edinburgh**

**Heriot-Watt University**

**Napier University**

**University of Stirling**

**Scottish Agricultural College**

**Biomathematics & Statistics Scotland**

**British Geological Survey**

**NERC Centre for Ecology & Hydrology Edinburgh**

**Forest Research Northern Research Station**

**CVL Lasswade Veterinary Laboratory**

**Moredun Research Institute**

**MRC Human Reproductive Sciences Unit**

**National Museums of Scotland**

**Roslin Institute**

**Royal Botanic Garden Edinburgh**

**Royal Society for the Protection of Birds**

**Royal Zoological Society of Scotland**

**Scottish Agricultural Science Agency**

**Scottish Crop Research Institute**

**Scottish Natural Heritage**

**University Marine Biological Station Millport**

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**ECRR web site : [www.ecrr.org.uk](http://www.ecrr.org.uk)**