

BUSH TELEGRAPH

The House Magazine of the Edinburgh Centre for Rural Research

Web Watch ...

ECRR

Links to ECRR members' websites can be found at www.ecrr.org.uk

Science Seekers

SEERAD, the SABRIs, SAC & RBGE are putting on interactive displays at the Scottish science centres on some of their research projects. The material is aimed at young people and a 'taster' can be viewed at: www.scienceseekers.org.uk

European R&D

The EU Sixth Framework R&D Programme begins later this year and the Commission is inviting ideas for integrated projects and networks of excellence. See: www.cordis.lu/rtd20002/fp-debate/fp.htm

Infectious success

Edinburgh University's new Centre for Infectious Diseases draws together an impressive array of expertise with more than £30m of research funding. www.cid.vet.ed.ac.uk

Science News

www.newscientist.com
www.nature.com
www.sciencemag.org

Inside ...

VetAid - helping poor farmers to help themselves



Page 7

Keeping up to date with the effects of climate change will be on the agenda at CEH **page 9**



At the Dick Vet there's an agreement with the Americans & excellent results from the research assessment exercise but *to move or not to move?* - now there's a question! **See page 10**

And more ...

Penguins & monkey business at Edinburgh Zoo with students focusing on ear flicking. **Page 13**



Cows and people on the move at SAC & why the animal welfare community have a pregnant PAWS **Page 15**

The Vikings are here again! See **page 18** & the Geography Dept report

Napier goes is up the fjords with 11 OAERRE partners. **Page 22**

It's Outrageous! **Page 24**

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Editorial

ECRR hosted an informal summer *get together* at Pollock Halls, Edinburgh in May for those who had been involved in the successful Forum on Ways Forward for the Scottish Economy Post-FMD. Not everyone could come as it clashed with a similar do that the Rural Affairs Minister Ross Finnie was running in Edinburgh Castle. But the chatter was steady and I learnt a good deal about earthquakes in Scotland, that the Botanical gardens is not just a place to skate board through, and that ECRR Institutes have incredibly extensive networks around the world.

It's a great strength to be able to communicate and work with colleagues, where ever they are in the world. The relevant expert is not always up the road. The individual member organisations of ECRR seem to have a significant advantage in research terms if they use these contacts to the full.

It was very encouraging to have the Green Party at the reception in the form of MSP Robin Harper, well known for his multi-coloured scarf! It's important that politicians are aware of and interested in science.

Mike Steele
Editor

Correspondents please note.

**Deadline for copy for next issue is
August 26th 2002.**

**All contributions, comments and
suggestions can now be e-mailed to
M.Steele@ed.sac.ac.uk with copies to
m.talbot@bioass.ac.uk please.**

ROTA OF SOLICITED CONTRIBUTIONS TO BUSH TELEGRAPH

MARCH

British Geological Survey
Biomathematics & Statistics Scotland
University of Edinburgh, Institute of Ecology and Resource Management
Royal Society for the Protection of Birds
SAC Research Division
University of Edinburgh, School of Engineering
University of Edinburgh, Institute of Cell & Molecular Biology
Heriot-Watt University, Department of Biological Sciences

JUNE

University of Edinburgh, Institute of Cell, Animal & Population Biology
Centre for Ecology & Hydrology
MRC Human Reproductive Sciences Unit
University of Edinburgh Royal (Dick) School of Veterinary Studies
Royal Zoological Society of Scotland
SAC Animal Biology Division
University of Edinburgh, Department of Geography
Napier University, School of Life Sciences

SEPTEMBER

Edinburgh Centre for Tropical Forests
Lasswade Veterinary Laboratory
National Museums of Scotland
Roslin Institute
Royal Botanic Garden Edinburgh
Scottish Natural Heritage
University Marine Biological Station, Millport
University of Edinburgh, Centre for the Study of Environmental Change
& Sustainability

DECEMBER

University of Stirling, Institute of Aquaculture
Moredun Research Institute
Forest Research Northern Research Station
University of Edinburgh, Centre for Tropical Veterinary Medicine
Scottish Agricultural Science Agency
Scottish Centre for Animal Welfare Sciences
Scottish Crop Research Institute
Scottish Vertebrate Wildlife Centre

EVENTS DIARY 2002

Sep 27	Directors' Lunch	Institute of Aquaculture University of Stirling - 12.30pm Host : Prof Randolph Richards
Nov 4	Directors' Lunch	Institute of Ecology & Resource Management University of Edinburgh 12.30pm Hosts: Prof John Grace & Prof Keith Smith
	AGM	IERM, University of Edinburgh 14.00
	Reception and poster presentations	John McIntyre Centre, Pollock Halls
Dec 2	Directors' Lunch	MRC Human Reproductive Sciences Unit Little France Host : Prof Robert Millar

SCIENTIFIC DIRECTOR'S NOTES

Prof. Ian Aitken

UNIVERSITY OF EDINBURGH : APPOINTMENT OF COLLEGE HEADS

As part of the process of organisational restructuring the University has recently announced the appointment of the Heads of two of the three Colleges. Leading the College of Humanities and Social Science will be Professor Vicki Bruce, currently Professor of Psychology and Deputy Principal (Research) at the University of Stirling while Professor Grahame Bulfield, at present Director and Chief Executive of the Roslin Institute, will become Head of the College of Science and Engineering. The appointments will be taken up in late summer as the University moves towards the new academic session in 2002-03. To date, no announcement has been made regarding Headship of the College of Medicine and Veterinary Medicine.

As realignment of former departmental arrangements takes place under the new Collegiate structure there is likely to be some modification, at least in descriptive terms, of the constituent base in ECRR. However, those adjustments should not alter the scientific spectrum encompassed by ECRR – in fact they may well offer opportunities to bring new members into the research-facilitating network and cross-disciplinary liaisons that ECRR provides. In this connection, it is worth noting that Professor Bulfield has had a long association with ECRR as a member of its Board and as a former Chairman of its Executive Committee and thus can relate ECRR's aims to the broader objectives of the University restructuring.

CENTRE FOR INFECTIOUS DISEASES

Indicative of the kind of change that is taking place is the establishment of the Centre for Infectious Diseases (CID)

which will operate within the College of Medicine and Veterinary Medicine as a focus for infectious disease research under the Directorship of Professor M E J Woolhouse. The Centre will draw together medical, veterinary and biological scientists to promote collaborative research at basic and clinical levels and will engage in undergraduate teaching and postgraduate training. Though firmly based in the University of Edinburgh the Centre involves a range of affiliated institutions in its activities. Further details can be found at www.cid.vet.ed.ac.uk

SCOTTISH SCIENCE ADVISORY COMMITTEE

As presaged in the Scottish Executive's *Science Strategy for Scotland 2001* an independent committee, drawn from the academic, research and business communities has been set up under the auspices of the Royal Society of Edinburgh. Chaired by Professor Wilson Sibbert, Wardlaw Professor of Physics at the University of St Andrews, the eighteen member committee will advise Scottish Executive Ministers on science policy, identify priorities in science and technology and comment on matters of scientific importance. *Ex officio*, Professor Sibbert acts as chief adviser on science to the Scottish Executive. The committee's secretariat is based at the RSE in George Street. Membership details and other information about the committee are available at ssac@scottishscience.org.uk

NATURAL ENVIRONMENT RESEARCH COUNCIL

NERC is well known to many of ECRR's member organisations as a primary source of funding for environmental research and for training postgraduate students. Moreover, two of NERC's own research centres are sited in Edinburgh and are members of ECRR-the Centre for Ecology and Hydrology at Bush and the British

Geological Survey at Kings Buildings. There was, therefore, considerable interest in NERCs 'Away Day' visit to Edinburgh on May 21st with Dynamic Earth as the venue. The NERC team was led by its Chief Executive, Professor John Lawton, and other senior members of staff from the Council's Headquarters in Swindon. Together with London and Manchester, Edinburgh was one of three UK cities where regional meetings with research scientists were held.

The morning session was given over to discussions with postgraduate students while the afternoon was devoted to reviewing with an audience of about 100 scientists from across Scotland NERC's recently produced strategy document '*Science for a Sustainable Future*' in the light of the financial constraints which the Council is experiencing. So great are the constraints (due to the need for substantial saving as a result of previous overcommitment and changes in Treasury accounting procedures) that it has been necessary to cancel the round of research mode grants that would normally take place in July. This was clearly a matter of disappointment and concern to many of those present and stimulated considerable discussion although the inevitability of the measures taken was accepted. Other matters on which questions were raised included the balance of funding for 'blue sky' and strategic research, retention of end user interest in research output, promotion of closer working relationships between individual Research Councils and between Research Councils and other funding bodies, and potential for industrial links in areas such as health and food. Overall, the tenor of the afternoon's discussion and dialogue was informative and probing without loss of focus and there was a general acceptance that the exercise

had been beneficial and would bear repeating in future.

Other Research Councils and indeed other major funders would do well to follow the lead that NERC has given in engaging in direct discussion with an important stakeholder group at regional level.

To round the day off NERC had arranged a debate on managing the uplands of Scotland under the theme of '*Land Use or Abuse?*' chaired by Louise Batchelor of BBC Scotland and supported by a number of well known contributors. By all accounts this was a lively and well sustained affair that continued into the Reception that followed.

THE GRANT REVIEWING PROCESS

Pursuit of research grants is a way of life for active scientists with many long hours being devoted to crafting proposals to meet the criteria set by funding bodies. Success in securing grants is now a measure by which performance and achievement are assessed and on which career progress can depend. An article in the Spring 2002 issue of *NERC News* explains the rigorous process by which proposals are screened and finally assessed.

Those interested should contact
requests@nerc.ac.uk

Vetaid is a not-for-profit, international development organisation working for reduction in poverty and increase in food security of people dependent on livestock.”

VETAID was established as a specialist charity in 1989. The organisation is governed by an unpaid board of directors, acting as trustees drawn from the animal health, business and research professions and the NGO development world. We are a member of VSF Europa Vétérinaires Sans Frontières), a network of eight charities across Europe sharing the same goals.

The Problem

Pastoralists and small-scale farmers in many parts of the world face food shortages and a cycle of poverty; frequently because of circumstances beyond their control such as civil war, changes in government policies and international trade affecting their countries. Climatic factors and increasing cultivation of rangelands by crop growers have also disrupted traditional livestock farming strategies, which can lead to increased animal disease, inadequate nutrition and poor husbandry. VETAID's remit is to improve livelihoods of small-scale farmers and pastoralists by providing better access to livestock health and husbandry resources, building on traditional livestock practices where possible, and by increasing the capacity of communities to contribute to decisions that affect their lives.

Wherever VETAID works, our aim is to improve the contribution made by livestock to the well-being of those who depend on them. Our projects are designed to have an impact that lasts beyond the project cycle and therefore always involve the local people in planning and implementation. Training is a major aspect of our work and ensures that skills are developed that will continue to be drawn upon in years to come. We are working at present in the following countries:



Mozambique

Following the devastation caused by the civil war and the floods of 2000, VETAID is helping to build locally-based animal health services by training and equipping Community Animal Health Workers (CAHW) as well as helping the livestock services in Mozambique to rebuild their capacity to combat disease problems. We contribute to the process of restocking by establishing credit schemes to promote distribution of suitable cattle and goats to areas where they are needed. Training is given in the use of draught animals so that cultivation of crop fields is more efficient and agricultural produce can be transported to market.

Tanzania



Maasi herder attending goats

VETAID is working with Maasai pastoralists who have been increasingly marginalised by the encroachment of crop farmers and wildlife parks on their traditional grazing lands. Since they no longer have access to adequate pasture their traditional disease control methods are no longer effective. This threatens the health of cattle on which they depend for their survival. With the reduction in government veterinary health services, rurally based animal health support is almost non-existent. VETAID's main goal in Tanzania is to help the people establish a community based system by which they can provide animal health services themselves. We also work with pastoralist organisations to enable them to participate more fully in the local and national decision-making that affects their lives.

Somaliland

Another country whose pastoralists face increasing exclusion from rangelands traditionally used for livestock grazing, Somaliland also has a civil war legacy and is affected by drought. VETAID is working with pastoralists, veterinary associations and CAHW to ensure that the livestock sector receives the support it needs and to improve systems for resolving conflicts over land issues. We are also involved in several agro-livestock initiatives, including training farmers in the use of animals for draught power, and the introduction of fodder and leguminous crops and improved dairy production.

Uganda

In 2000, VETAID organised a workshop to assemble a wide range of people interested in livestock development in Uganda. We also work with The Ugandan National Livestock Forum whose aim is to improve information sharing and collaboration between the various organisations (government, NGO, and private sector) involved in livestock development.

Mongolia

VETAID has been involved in two emergency operations to relieve the famine caused by severe winter weather in Mongolia. Funded by the Brooke Hospital for Animals, VETAID distributed fodder, veterinary supplies and medicines to nomadic herders for their starving animals.



Distribution of fodder for horses in Mongolia

United Kingdom

VETAID initiated a Development Awareness Project in the UK to raise awareness among students and the general public of the role of livestock in development and to encourage people to think more globally about livestock, animal health and agriculture.

Our funding

VETAID receives most of its project funding from a number of large donor organisations including the European Commission, the Department for International Development, European governments, Comic Relief, The Community Fund as well as smaller Trusts. We also rely heavily on contributions from our supporters to enable us to administer and develop projects. This support is much appreciated and valued by us, and by those for whom we work. If you would like further information, please contact the office by telephone - 0131 445 6241, by Email information@vetaid.org, or look at our website – www.vetaid.org (Scottish Charity Number: SC004913)

VetAid is based on the Moredun Research Institute site at the Bush Estate and led by its Director Partick Krause.

Centre for Ecology and Hydrology (CEH)(Formerly, Institute of Terrestrial Ecology)

Melvin Cannell

Science Strategy

NERC has recently published its statement of strategic and scientific priorities, entitled 'Science for a Sustainable Future 2002-2007'. CEH will release its science strategy later this year. In both cases, the science priorities highlight the following themes.

1. Climate change – predicting and mitigating impacts.
2. The Earth's life support systems – water, biogeochemical cycles and biodiversity.
3. Sustainable energy, resource and land use – hazard mitigation, energy supply and land use.

Organizational structure

CEH comprises nine sites across the UK. Merlewood will move to the Lancaster University campus in 2003 and discussions are currently under way about the future of the freshwater research laboratory at Windermere

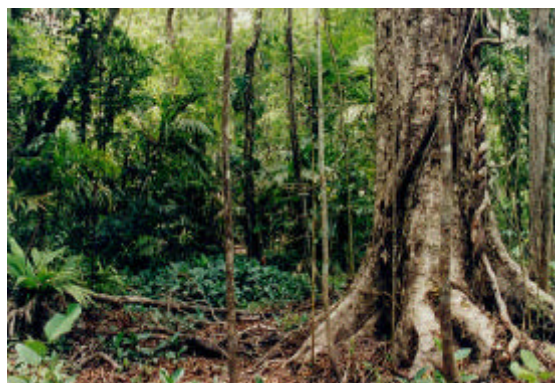
At CEH Edinburgh (at the Bush Estate), the scientific staff are now managed in two divisions, each of about 22 staff.

The *Atmospheric Sciences* division comprises groups working on (i) land-atmosphere exchange (David Fowler), ammonia (Mark Sutton), air chemistry and effects (Neil Cape) and aerosols (Eiko Nemitz).

The *Biosystem Sciences* division comprises groups working on (i) biosystem dynamics (Ronnie Milne), (ii) biosystem management (Julia Wilson) and (iii) Scottish freshwater ecosystems (Linda May).

Activities

CEH Edinburgh has never been busier. We currently have 104 contracts or awards, generating 72% of our total costs, including salaries – the balance being our Science Budget grant from NERC. Last



The world's tropical forests are at risk from climate change

year, DEFRA was our single most important source of income, with the NERC SB grant second. However, NERC thematic programmes form an important part of our work, especially the programme on Global Nitrogen Enrichment, in which we have involvement in 12 awards.

Success in generating income has brought new people to the laboratory. Notably, we now have 32 students and postdoctoral researchers – a large number in relation to the 45 scientific staff and making a lively environment.

Staff

Professor David Fowler was elected a Fellow of the Royal Society (London) in May 2002.

Philip Mason retires in June 2002, after over 30 years at ITE/CEH. Philip has worked throughout that time as a mycologist, specialising in mycorrhizal fungi.

Two staff were recently appointed: David Anderson (lately at JRC at ISPRA) to work on aerosols and Bill Bealey (an Edinburgh graduate) to develop a UK air pollution effects database for the conservation agencies.

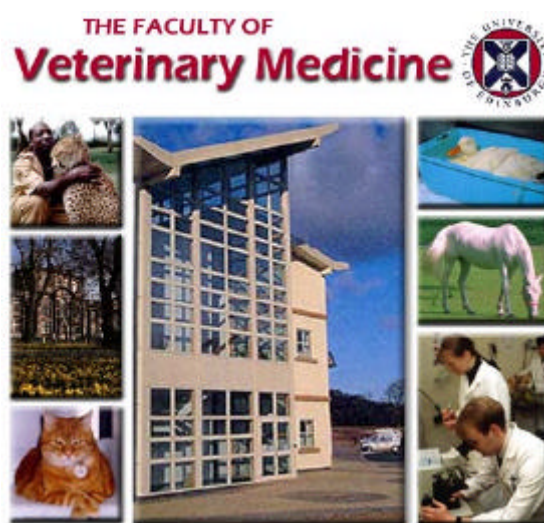
course the day to day teaching, research and clinical work of the Faculty has to continue.

Report from the Royal (Dick) School of Veterinary Studies

This report comes at a period of change, both for the school and the University. In the last edition of the Bush Telegraph John Grace touched on the restructuring currently being implemented by the University. A new Principal has now been appointed, and Professor Timothy O'Shea, Master of Birkbeck College of the University of London since 1998, will take over from Lord Sutherland of Houndwood from October this year. Professor O'Shea's research interests are in the field of the educational applications of computing. The new schools which will make up the three Colleges of the University have now been confirmed and, like the Faculty of Science and Engineering, there will not be much change in the college in which the Dick Vet will be incorporated. Veterinary Medicine will be one of four schools in the College of Medicine and Veterinary Medicine. The head of this College is an internal appointment, Professor John Savill, currently Professor of Medicine and Director of the MRC

Centre for Inflammation Research. The head of the College of Science and Engineering will be well known to members of the ECRR as it is Professor Grahame Bulfield, Director of the Roslin Institute. And finally, closer to home, I am conscious of what personally will be the biggest change – my impending retirement at the end of the current academic session.

There is no suggestion that I have been able to take things easy in my final year! We have been engaged in several major activities recently such as the preparation for, and dealing with the outcome of, the Research Assessment Exercise and our application for American Veterinary Medical Association approval. And of



The Dick Vet remains a popular place to study among undergraduate applicants with around 14 applications for each place. Although we have had to discontinue the taught postgraduate programmes in Tropical Animal Health because of falling demand, we will be offering an MSc course in Applied Animal Behaviour and Animal Welfare, which is transferring from the Faculty of Science and Engineering under the leadership of Dr Natalie Waran, with effect from the new academic year.

Contrary to speculation that has appeared in both the national and veterinary press, we are not closing the Centre for Tropical Veterinary Medicine (CTVM). Indeed the postgraduate research training and the research programmes in general go from strength to strength.

The final stage of the development of our clinical facilities, the new reception centre for the large and farm animal hospitals and the large animal practice, is scheduled to be completed by October 2002. Work is expected to begin on site next month.

The Faculty was successful in bidding for funding from the Science Research Investment Fund to upgrade research

facilities in the Department of Veterinary Pathology (£330k award) and to refurbish laboratories in the Department of Tropical Animal Health (£825k award). In addition the Wellcome Trust has provided 75% of the funding of £1.7M to refurbish accommodation at Summerhall for developmental and molecular neurosciences.

We continue to be successful in attracting members of staff to join us from outside agencies. Professor Ivan Morrison has joined the Department of Tropical Animal Health from the Institute of Animal Health and Dr Elspeth Milne has been appointed Senior Lecturer in the Department of Veterinary Pathology from the Scottish Agricultural College.

For the first time, one of our students, Anne Lo, a native of Hong Kong, has been accepted as a participant at the prestigious Cornell University Veterinary Leadership Program. This research oriented learning experience runs for 10 weeks from early June and brings together 25 students from vet schools in the USA and around the world.

Research Assessment

In December 2001 the outcomes of the national Research Assessment Exercise (RAE) were published and the Faculty achieved a '5' rating, representing, according to the RAE definition, "quality that equates to attainable levels of international excellence in up to half of the research activity submitted and to attainable levels of national excellence in virtually all of the remainder". This was an improvement from the rating of '4' achieved in the last exercise conducted in 1996, and was coupled with the largest submission of research active staff from any of the vet schools.

The impact on the Scottish Higher Education Funding Council (SHEFC) grant for 2002-03 was not known until March

and the higher rating resulted in an additional £620k for research being assigned to veterinary medicine using the SHEFC formula.

American Veterinary Medical Association

After postponing the planned site visit in May 2001 because of the Foot and Mouth Disease crisis, the team from the American Veterinary Medical Association (AVMA) arrived at the beginning of December. It has been an aspiration of the Faculty to seek AVMA approval to allow our graduates to gain employment in the United States without going through a further certification process, but only recently has the AVMA considered applications from veterinary schools outside the USA and Canada.

The site visit consisted of a tour of our facilities followed by two days of meetings with a wide cross-section of Faculty staff and students, spending one day at Summerhall and one at Easter Bush. The AVMA team gained information about the Faculty from a self-evaluation document we submitted in advance, which formed the basis for the discussions.

As with any external assessment, a great deal of effort was put in to prepare the necessary material, and members of staff assisted with the process by participating enthusiastically in the sessions to expand on the content in the self-evaluation document. This enthusiasm even extended to the participants on the tour, which commenced at Summerhall on the Sunday morning at 8.00 a.m.! After examining the teaching and library facilities in the city centre, there was an opportunity to tour the farm and hospital areas at Easter Bush.

The AVMA team was not exclusively American as the specified composition included a Canadian member, by virtue of that country's affiliation to the AVMA, and two UK members to advise on custom and practices here; David Murdoch, a practitioner from the Wirral, and Professor

Michael Clarkson, a retired member of staff from the University of Liverpool.

The outcome of our application was announced at the beginning of April and it was pleasing to be notified that we had been successful, become one of only 5 vet schools outside the USA and Canada to have gained 'Accredited' status.



The New Animal Hospital at the Bush

Future Location of the Faculty

One of the issues which is currently exercising members of the Faculty is a review of our future location, although this is not questioning the operations at Easter Bush but considering on strategic grounds the best location for the activities being undertaken at Summerhall. There are many options, ranging from maintaining and developing our city centre base to a complete relocation to Easter Bush, with possible piecemeal movements to other University accommodation or the New Royal Infirmary at Little France in between. Our thinking has been crystallised following the visit of two eminent European veterinarians who undertook a review of our structure coupled with discussions at a special meeting of the Faculty. The integrity of our Faculty is a key issue. The next stage is to identify the potential options and to conduct an option appraisal to allow the final decision to be taken.

Professor Richard E W Halliwell
Dean

EDINBURGH ZOO RESEARCH

Dr. Mauvis Gore, Charlotte O'Sullivan
Dept. of Animal Conservation and Research

With Charlotte O'Sullivan appointed Research Assistant, the research programme at Edinburgh Zoo has been very active in the past 12 months. Research focused largely on nutrition and communication and on our endangered species.

Very little is known about the nutrient requirements of wild animals in captivity. Many domestic species are fed processed diets, which are not suitable for their exotic analogues, and many of the food types, which are available in the UK, are very different to those which the animals would eat in their wild habitat. One of our main studies is on the role of insects in primate digestion, focusing on how chitin is utilised (Mauvis Gore and Charlotte O'Sullivan, with Dr. Kathy Velandar and Dr. Sophie Foley of Napier University and Keith Morris of MRC collaborating). Small bodied callitrichids, New World monkeys, are insectivorous, but it is unclear if they are capable of gaining any nutrients from the large amounts of chitin ingested from the exoskeleton. Gut and faeces samples are being measured for the amount of chitin in these samples and mechanical, biochemical and microbial modes of digestion used are being investigated. The overall results should provide a more nutritionally relevant diet for captive callitrichids, and a better understanding of the importance of insects to conservation of callitrichids and other small insectivores. A student from Napier has contributed to the study through investigating body part preference of insects in the callitrichids at Edinburgh Zoo.

Students from Edinburgh and Newcastle-Upon-Tyne Universities investigated the effect of timing on the digestibility of gum in callitrichids. The results will help in



developing a feeding regime closely related to that in the wild. The Registrar, Anne Godfrey, is currently monitoring changes in diets of the animal collection ungulates with Dr. Gore for improved nutrient uptake.

Some of our bird species have recently undergone major changes in their living conditions. The Waldrapp ibis were moved to a new, large enclosure in 2001 and a BSc student from St Andrew's University studied their social and foraging behaviour. The work is continuing with an MSc student from Edinburgh University developing the foraging and feeding requirements of these birds. The penguin colony has had a few major setbacks in the past couple of years with an avian malaria outbreak in 2000 and loss of chicks to gulls in 2001. A student from Edinburgh University continued work begun in 2001 studying nest building and reproductive success in the Gentoo penguin colony. Research Volunteer Vicky Bleasdale has worked through a comparison of captive versus wild diets for a large part of the bird taxa in the collection.

Social communication is very important for indicating the stability of group and herd animals. Several investigations this year have looked at different types of communication in different species. Students from Edinburgh University have focused on ear flicking as a method of communication in ungulates species, visual attention and social relationships in chimpanzees, communication through

facial expressions in non-human primates and communication and social play in non-human primates: rules and regulations. A student from Stirling University has investigated allogrooming site preferences in chimpanzees. Allogrooming is a form of communication and helps to develop rank among hierarchal species.

A study on patterns and trends relating to biodiversity, longevity and breeding success of the zoo animals by Alison Wright of Edinburgh University was carried out. Alison studied the zoo records, begun in 1913. This was a particularly difficult task as the records were very vague in the early years, followed by a card file system, and now computer databases. In many cases it was difficult to interpret the handwriting in bound ledgers. Taxonomic developments meant that many species/subspecies are no longer recognised. Interesting trends were noted showing that the zoo has evolved in a relatively short space of time from a menagerie into the conservation breeding and education centre it is today.

We now have a Research Volunteer programme. The department accepts university students wishing to develop their research skills, to help collect and collate data. One of the major projects they are involved with this year is the collation and interpretation of data collected in 2001 by Dr Gore in Buton, Indonesia. The data collected comprised of food samples from the forest and also from the crop fields, which are raided by Buton macaques. A student from Edinburgh University analysed these samples for nutrient composition and Research Volunteer Lisa Proctor collated the activity and movement records of the macaques. This project is a good example of how captive knowledge and skills can be applied directly to *in situ* conservation.

SAC - ANIMAL BIOLOGY DIVISION

Head of Division:

Professor Cled Thomas

SAC, Auchincruive, Ayr KA6 5HW

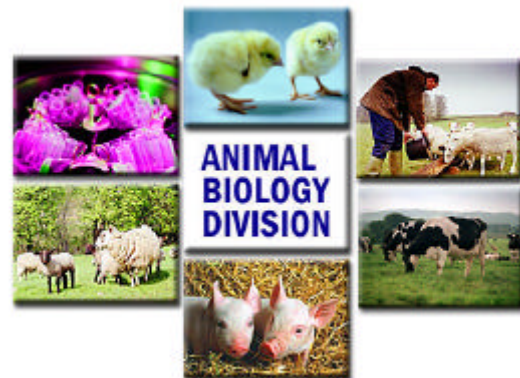
Tel: 01292 520331

E:mail: c.thomas@au.sac.ac.uk

Changing Times

Since the last contribution from SAC's Animal Biology Division to Bush Telegraph, there have been a number of significant changes within the Division and also within SAC. Our new Principal, Professor Bill McKelvey, was appointed in March and is leading, in concert with SEERAD, a thorough reappraisal of SAC's purpose and functions. It will be a little while before that process is concluded so we are truly in the midst of a process of review and development, the outcome of which will be reported to Bush Telegraph readers in due course.

The Animal Biology Division has, in itself, undergone considerable change in the last year. Not least by increasing considerably in size by amalgamating the old version of the Animal Biology Division (located in Edinburgh and, in part, in Aberdeen) with most of SAC's Food Systems Division, located in Auchincruive and Dumfries. The part of the old Food Systems Division that did not merge with the old Animal Biology Division dealt with Food Technology. Those activities are now incorporated into SAC's joint venture with the Hannah Research Institute, namely 'CHARIS'. This new structure will provide food science and technology R & D and consultancy services, and be the main base for food technology R & D in the SABRI/SAC network.



An expanded Animal Biology Division

SAC's Animal Biology Division now has 6 Departments as follows:

- Animal Behavioural Sciences (Head, Professor Alistair Lawrence, Bush Estate)
- Animal Breeding and Genetics (Head, Professor Geoff Simm, Bush Estate)
- Animal Nutrition and Health (Head, Professor Ilias Kyriazakis, Bush Estate)
- Avian Sciences (Head, Dr Nick Sparks, Auchincruive)
- Dairy Systems and Nutrition (Head, Dr David Roberts, Crichton Royal, Dumfries)
- Applied Animal Physiology (Head, Dr Cheryl Ashworth, Aberdeen)

This new, enlarged version of the Animal Biology Division, has a substantial R & D activity with total R & D income of around £6m/year, half of which is funded by SEERAD and the other half through competitive grants.

Alongside the research activity the new Division also makes a significant contribution to the education, training, advisory and consultancy activities of SAC. The poultry resources at Auchincruive and the dairy resources at

Crichton Royal, near Dumfries, especially have significant training and consultancy options alongside R & D.

Resource planning

At the time of writing, it is not possible to say precisely how SAC's activity in Animal Science and Animal Biology will be organised and delivered in the future. Several options are being reviewed but there is no doubt that SAC will develop in the future with a very considerable commitment to animal science and animal biology. The single largest concentration of our existing resources is at the Bush Estate and, with colleagues in the Roslin Institute and the Moredun Research Institute, we have just started a thorough review of existing resources and those that are needed in the future. Together with the Royal (Dick) Vet School, our 4 institutions form a tremendous focus for animal and veterinary science research. It is simply a fact of life that resources to sustain such research are expensive, so it makes sense to consider very carefully how best to develop, use and share resources for optimal efficiency. An important outcome of this resource review amongst SAC, Roslin and Moredun should be a clear picture of what we have, what we need, and how we might best develop our joint resources for optimal benefit. A healthy example of ECRR in practice.

A particularly important feature of SAC's resources at the Bush Estate is the CT scanning unit. The original scanning machine was second-hand when it was installed and has been very heavily and productively used over the last 5 years. It has now been replaced with a brand new machine (The Somatom Espirit) with a hugely improved specification and up to date technology capable, amongst other things, of yielding 3D images. This resource is suitable for imaging a wide variety of materials and, in addition to our own research programme, we are happy to discuss collaborative or contract usage for

the machine. If any readers are interested in using this technology please contact Professor Geoff Simm (g.simm@ed.sac.ac.uk).

BSc in Animal Science now validated

Following the decision by the University of Edinburgh to withdraw from undergraduate teaching in agriculture and agricultural science, SAC has now organised a new BSc in Animal Science to be delivered in Edinburgh with first student entry in Autumn 2002. The degree is validated by the University of Edinburgh. For the first two years, students will largely follow a range of courses offered through the Biological Sciences programme in the University of Edinburgh, but augmented in Year 1 with a compulsory course on 'Principles of Animal Science' and in Year 2 with a course on 'Quantitative Aspects of Animal Science'. In Years 3 and 4 the courses will be in SAC delivered largely by Animal Biology Division staff. The flavour of these two years and the final year in particular, will reflect the research focus for the Division with strong emphasis on animal behaviour, health and welfare, animal breeding and genetics and animal nutrition. The course is designed to be an attractive alternative to veterinary studies and we hope will build on the long and strong tradition of animal science teaching in Edinburgh.

Platform for Animal Welfare in Scotland (PAWS)

Professor Alistair Lawrence is the person to blame, or give credit for, a new acronym in our animal behaviour and welfare community. The Platform for Animal Welfare in Scotland (PAWS) is a name we have chosen to give to the project which has now been part-funded by ERDF to create a bridge between research and practice into animal welfare and behaviour. We hope that it will play a key role in knowledge transfer in this area of science. The platform is being developed between

SAC's team and Dr Natalie Waran and colleagues in the Royal (Dick) Vet School. We would hope to see this activity develop with other interested parties to provide a major platform for knowledge transfer in the Animal Welfare Sciences. We are very grateful for support from ERDF through the East of Scotland European Partnership for this project and hope its activities gain considerable momentum. We look forward to reporting on its achievements in due course.

Moving Cows - the Langhill Herd at Crichton



SAC has worked closely with the University of Edinburgh to research into dairy cattle genetics for many years. The development of the genetic lines at the University's Langhill Farm has been supported through SAC's research programme and, in latter years, the focus of research has been on genotype x feed system interactions. In full agreement with the University, we took the decision more than 18 months ago to move the genetics lines from Langhill to SAC's Crichton Royal Farm, near Dumfries, to create a consolidated resource which will be a major focus for dairy research in Scotland in the future. The core of the future research programme will be on genotype x systems interactions, with a very strong emphasis on dairy cattle health and welfare. The University of Edinburgh will keep an overt interest in the resource and

we will welcome other interested parties who want to use this Dairy Research Centre as a location for large-scale studies with dairy cattle. We had originally planned to move the cows and youngstock in the genetic lines from Langhill to Crichton last year but have been delayed through the impact of FMD and its aftermath. The cows and youngstock will now move from Langhill to Crichton in June 2002 and equivalent numbers of animals will move in the reverse direction. The Royal (Dick) Vet School will continue to use the cattle at the Langhill Farm as part of their overall activities. The Langhill herd at Crichton will continue to be used for research into dairy cattle genetics.

A change in personnel

Professor John Oldham (who is writing this report) was the Head of the Animal Biology Division until the end of March 2002 and has now been appointed Head of R & D for SAC. Professor Cledwyn Thomas, who is based in Auchincruive, has now taken over from JDO as Head of the Animal Biology Division.

Professor John Oldham
Head of R & D for SAC.

News from the Department of Geography, University of Edinburgh

Sadly we learned of the death of **Tom Waugh** who was a lecturer in the Department from the early 1980s to the mid-1990s and during that time a Director of Studies to many undergraduates. Over the past few years Tom had been working at the University Computing Service Data Library. Tom was instrumental in the development and international distribution of GIMMS (Geographical Information Mapping and Manipulation Software) in the early 1970's. This system was a pioneering antecedent to GIS. The system was adopted by hundreds of organisations in twenty-three countries during the '70s and '80s, for education, local authorities and central governments, and used to produce over 200 atlases including 'The Mortality Atlas of Canada'. Tom was a source of great inspiration to the geography students he taught, most notably the many students of the masters course in Geographical Information Science in areas of technology, data modelling and computer cartography. He had a very engaging style of lecturing, with a tremendous capacity to enthuse and motivate students with new ideas, helping them to realise the potential application of technology in geographical problem solving.

Vikings in the North Atlantic - Edinburgh shares in major award

The Department of Geography is to receive a share of substantial funding for an innovative interdisciplinary research programme. A grant for almost stg1.25 million has been awarded by the Leverhulme Trust, and **Andy Dugmore** is one of the four co-applicants. The grant will fund an investigation into the human and ecological consequences of Viking Age settlement in the North Atlantic region (the Faroe Islands, Iceland and Greenland).

The degree to which long-term settlement is influenced by the natural environment, initial colonisation decisions, subsequent cultural and climatic changes, or human-environmental interactions, is a major issue. To what extent is the natural environment simply a backdrop for human drama, or does it shape the course of events? Such ideas can be effectively assessed in the North Atlantic region. Uniquely within the Old World, this is an area where the general timing of settlement is well known from historical sources and archaeology, where the cultural background can be understood, and the environmental record can be well constrained. Using the fossil evidence preserved in natural and archaeological occupation deposits, together with historical documents, there is an unrivalled opportunity to examine the long-term effects of human settlement in environmentally-sensitive areas.

The 5-year multi-institution study will involve collaboration with Prof. Kevin Edwards (University of Aberdeen, Principal Investigator), Prof. Paul Buckland (University of Sheffield), Dr Ian Simpson (University of Stirling), Prof. Thomas McGovern (City University New York) and Dr Gu-run Sveinbjarnardottir (University College London/National Museum of Iceland). The study will also involve work by a large team of researchers from 12 disciplines in 10 countries.

The award from the Leverhulme Trust [[www link](#)], within the theme 'Long-term settlement in the ancient world', resulted from a UK-wide competition.

Other new research grants

The Planning Data Management Service, run by **Steve Dowers**, has received supplementary funding of £240K from the Scottish Sports Council. PDMS provides sports facility planning services to the councils using the Facilities Planning Model developed jointly by PDMS and SSC.

Iain Woodhouse obtained £200k funding from NERC for a project entitled: "Retrieving tree height, species indicators and surface topography from polarimetric and interferometric synthetic aperture radar". The grant will employ a post-doc and PhD student for three years each. This project is concerned with the exploitation of future L-Band SAR sensors for regional to global scale forest monitoring. This work establishes a framework for effective exploitation of new data for forest mapping from the future PALSAR instrument due for launch onboard ALOS in 2003. Collaborating institutions include Forest Research, AEL Consultants and Wageningen University.

Donna Easterlow, Paul Bennett and Sue Smith have been awarded £99k from the ESRC to study 'Health, life insurance and financial inclusion'. This grant will fund a postdoc for two years.

Iain Woodhouse has obtained EPSRC funds of £50k for a project entitled 'Minimum Cross-Entropy Reconstruction and Despeckling for Synthetic Aperture Radar Imagery'. This project will apply a minimum cross-entropy (MCE) approach to the problem of despeckling images from synthetic aperture radar (SAR) imagery. SAR is an important instrument in Earth Observation and remote sensing for mapping and environmental monitoring but its application can be limited by the noise-like speckle that is inherent in the

imagery. MCE methods have been applied in a wide range of image reconstruction problems, but have been noticeably underused for SAR imagery. Collaborators include AEL Consultants from St Andrews.

Andy Dugmore and Dr Gordon Cook (of SUERC) have received a joint grant of £40K from Historic Scotland to investigate temporal changes in the Holocene marine radiocarbon reservoir effect in Scotland.

Sarah Metcalffe has been awarded approximately £10k from the Centre for Ecology and Hydrology for a scoping study for acid waters in Wales strategy.

Tim Malthus has been awarded £16k as part of a larger collaborative research contract from Scottish Natural Heritage involving colleagues Dr Richard Bates (University of St Andrews) and Drs Colin Moore and Hamish Mair (Heriot Watt University). The grant is for high spatial resolution remote sensing for seabed habitat monitoring, focussing on the Sound of Barra in the Hebrides. The project will involve an evaluation of high resolution IKONOS satellite data for monitoring change in Scottish coastal waters.

Other news from academic staff

A big congratulations to **Liz Bondi** who was awarded a Personal Chair in the Department, with effect from 1 October 2001. The title of the chair will be Professor of Social Geography. Amongst other activities, Liz was also appointed to the ESRC's virtual college for Politics, Economics and Geography. Along with **Susan Smith**, she is serving on the Academic Panel for the Scottish Executive Review of Scottish Cities.

The ESRC-funded project "The anatomy of a housing boom" jointly undertaken by **Liz Bondi** and **Susan Smith** with Hazel Christie and Moira Munro (School of Planning and Housing, Heriot-Watt), was

awarded a grading of “outstanding” for their project final report. They are now busily working on publications.

David Howard has recently been elected as a Research Fellow at the Institute of Commonwealth Studies, University of London and been invited to speak on Dominican migration and changing ethnicities at the National Museum of Ethnography, Osaka and at Florida International University, Miami.

Andy Dugmore continues research programmes in Iceland including glacier foreland fieldwork with Dr Martin Kirkbride (University of Dundee), and environmental archaeology field projects with **Anthony Newton**, and Prof Tom McGovern (New York), Dr Orri Vesteinsson (Institute of Archaeology, Iceland), Dr Ian Simpson (University of Stirling).

Charlie Withers' new book has just been published. 'Geography, Science and National Identity: Scotland since 1520' is published by Cambridge University Press as No. 33 in the prestigious Cambridge University Press Historical Geography Series. The work brings together work in the history of geography, the history of science and on national identity to consider the historical geography of geographical knowledge - how and why different forms of geographical knowledge were used in the past to constitute national identity, where those different ideas were made and received and for whom they had the meanings they did.

New staff

Dr Patrick Meir, currently a post-doc in IERM, has been appointed to the lectureship in biogeography. He will take up his post in July 2002.

Dr Andrea Nightingale was appointed to the post of Lecturer in Environmental Geography and will take up her post in November 2002.

Chris Hill, who completed the MSc in GIS course in the Department last year, has been appointed to the new academic post

of GIS and Data Management Support Officer.

Stewart Jamieson, another of last year's graduates from the MSc in GIS course, has been appointed to a post GIS Support Officer to support students who pay special fees to take specific MSc GIS modules.

Dr Richard Hedger, a former PhD student of the Department has returned after a two year absence to take up a 16 months post-doc on a BNSC LINK funded project on remote sensing of leaks from aqueducts. The project aims to test and develop automated means of leak detection using optical and radar remote sensing methods.

Dr Steve Roberts will be working as a post-doc with David Sugden, Mike Bentley and James Smith (Durham) and Dominic Hodgson (BAS) on the Millennial-scale history of the George VI Sound Ice Shelf, West Antarctica project. The project aims to test the hypothesis that the George VI Ice Shelf fluctuated in response to millennial-scale climate oscillations during the Holocene, disappearing during periods of maximum warmth. This is to be achieved by geomorphological surveying, mapping and dating and multi-proxy palaeolimnological analysis of selected glacial lakes dammed by the ice-shelf in George VI Sound.

Dr Jim Nicholson is working as a post-doc on the DEFRA project Modelling deposition of long-range air pollutants. Jim did his PhD in Meteorology here at Edinburgh and then worked as a PDRA in Geology and Geophysics.

Laboratory upgrades

After a somewhat longer wait than usual, the refurbished Geography physical laboratories were opened in early June. Smaller but better purposed laboratories now exist for mineral separation, soil science and water analysis.

Departmental web site

For more information on the Department check out its web site at:

<http://www.geo.ed.ac.uk/>

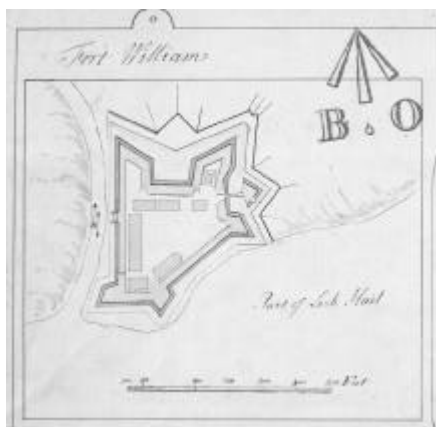
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Charting the Nation project

Following the award of £3,000 from the National Library of Scotland, the *Charting the Nation* project, managed by Prof. **Charles Withers**, has recently created over 350 high-quality digital images of the complete collection of Board of Ordnance maps and plans held by the Map Library of the NLS (MSS.1647-1651). This collection is of great significance to historical geographers, military historians and architectural historians.

The origins of the Board of Ordnance date back to the fourteenth century when it developed as a department of the Tower of London, supervising the provision of arms to the military. During the 17th century it acquired additional responsibilities, even including the supply of fireworks for royal entertainments and the office of the Yeoman of Tents!

Plan of Fort William, ca. 1750.



By the late seventeenth century it was mainly concerned with the construction and maintenance of forts, barracks and military roads, the character that it preserved largely unaltered until it was finally abolished in 1855. The production of maps and plans was an essential responsibility of the military surveyors and draughtsmen attached to the Board, and the collection includes many very fine examples of their work. Some of these maps and plans were first drawn up at Edinburgh Castle, but new research has shown that many of the multiple copies that exist in the collection were drawn at the Tower of London, probably as exercises for trainee draughtsmen. One of the finest examples is an early work of Paul Sandby, famous for his work on the Military Survey of the Highlands in the 1750s and who later became a water-colourist of repute. All these images will be made available on the *Charting the Nation* web site next year.

Plan of Edinburgh Castle, ca. 1770.



For further news, The Department's 'GeogNews' newsletter can be found at:

<http://www.geo.ed.ac.uk/home/newsletter.html>

NAPIER UNIVERSITY

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OAERRE

Napier University is co-ordinating partner for a project known as OAERRE - 'Oceanographic Applications to Eutrophication in Regions of Restricted Exchange'. It is a partnership of 12 institutions in Belgium, France, Norway, Portugal, Sweden and the UK and is substantially funded (contract EVK3-CT1999-00002) by the Framework V programme of the European Commission.

The contents of fjords, lagoons and rias are cut off from the normal circulation of coastal waters by enclosure on three sides, although there may be good exchange across the fourth side. Such Regions of Restricted Exchange (RREs) are an important feature of the European coastline, and the lands surrounding them are preferred sites for human settlement, using their waters for fisheries, aquaculture, navigation and recreation.

RREs may be particularly susceptible to eutrophication defined as the 'enrichment of water by nutrients especially compounds of nitrogen and phosphorus, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms and the quality of the water

concerned.' A variety of legislation including the Water Framework Directive is concerned with the ecological and chemical status of waters and consequently an understanding of the impact of anthropogenic nutrients on the physical, biogeochemical and biological processes in RREs is essential in order to diagnose, predict and manage their trophic status.

The sites under study in the project exemplify a range of hydrographic and enrichment conditions. Four are fjords: Firth of Clyde (Irish Sea coast of Scotland); Kongsfjord (west coast of Spitzbergen); Gullmaren (Skagerak coast of Sweden); and the Himmerfjärden (Baltic coast of Sweden). Two are bays: Golfe de Fos (French Mediterranean); and Ria Formosa (Portuguese Algarve).



OAERRE collaborators

OAERRE uses oceanographic methods together with coupled physical-biological models for RREs to gain a better understanding of ecosystem functioning. The project's final objective is to construct simplified 'screening' models for the definition, assessment and prediction of eutrophication, in collaboration with end-users, and to use these models to analyse the costs and benefits of various amelioration scenarios which might be proposed in order to meet legislative requirements.

Further details are available on www.oaerre.napier.ac.uk

Award

PhD student Rodger Duffin was awarded the title of the Most Promising PhD Student of the Year in the UK by Labsystems. The research investigates the properties of respirable quartz particles and their effects on the lung. It specifically looks at the interactions between highly reactive quartz and components of clay in soil which might prevent its carcinogenic effects in the lung. Rodger is supervised by Prof. Ken Donaldson and Dr. Vicki Stone, Senior Lecturer.

The ceremony took place in the Dorchester Hotel, London earlier this year. The study is based at the Edinburgh Lung and the Environment Group Initiative (ELEGI) Colt laboratory at Edinburgh University. This is a joint research group involving the Biomedicine Research Group at Napier, Edinburgh University and the Institute of Occupational Medicine. ELEGI is directed by Prof Ken Donaldson (Napier) and Prof Bill MacNee (Edinburgh).

Stephen Johnson also of this School was awarded the best runner up. His research investigates the anaerobic degradation of linear alkyl benzenes used as insulation oil for subsoil electricity cables. Stephen is registered at the University of Edinburgh, in the School of Civil and Environmental Engineering, with the work being carried out in collaboration with the Pollution Research Unit, Napier University under the direction of Prof. Nick Christofi.

New Staff

Marine animal behaviourist Dr. Alison Craig has joined us from University of Glasgow. Her previous posting was with Kewalo Basin Marine Mammal Lab, University of Hawaii where she obtained both her masters and PhD while studying humped back whales and running cetacean field courses for Earthwatch. We are looking forward to her input into our Environmental degrees, in particular the MSc in Wildlife Biology and Conservation and MSc Ecotourism.

might know what to do. Anyway, in my twenty-five years there we managed to reinvent the wheel two and a half times. Quite an achievement really. Those marvellous field trials with 8 x 8 Latin Squares. In every trial I used the same randomised numbers given us in an example by Sir Ronald Fisher (he was only plain Dr when I was up at Cantab). It was much easier than sticking a pin in a page full of numbers!

Letters to the Editor

"Outrageous!"

It's outrageous, to say the least. In your last issue you left a complete page, opposite the editorial report, empty just because you had nothing to say or because no one had written a letter to you. What will the foresters and ecologists in ECRR think, to say nothing of the ECCR Treasurer about this poor use of a finite resource and a missed business opportunity into the bargain. Couldn't you have sold the space for an advert and made a profit?' You keep telling us that we are running at a loss. In my day one had to look after the pennies and not waste money like the young ones do today.

Don't our members read the '*Bush Telegraph*.' Don't they have any ideas! Aren't they concerned about organic farming, genetic engineering, economists, social scientists, the weather! Or are they just plain illiterate! I might be a senile old octogenarian (or am I a nonagenarian! can't remember) but at least I intend to have my penceworth.

But I digress. I was sent out to Africa before the War. Can't remember which war! Anyhow it was in the good old days of the Empire. We did some sterling work, called it research, found out when to plant crops, how much fertiliser to use, when to harvest. Never thought that the locals

So much information, but I never understood the third order interactions and neither did the extension staff. They weren't interested then, and I suppose they're not interested now. The farmers never got to hear of any of our astonishing breakthroughs. Couldn't afford to buy the fertiliser anyway. It was a good life if you managed to dodge the odd dose of yellow fever. Worked hard each day, built a few bush roads, the odd field station, and organized planting of some plantation crops. Looking back I didn't do too well with the farmers! I ended up "The Boss" in the big city but would rather have been on some station in the bush.

I'd tell you a lot more but I see that the carbon ribbon is coming right out of the spool, and more importantly the gin bottle is empty.

I remain, Sir,
Your Obedient Servant,
Sir Angus Carruthers-Smith
Rutland Square, Edinburgh EH4

(Editors note: This letter has been borrowed from the TAA who kindly lent it to us so that we could fill up the space. Maybe in September you would like to say something!)

