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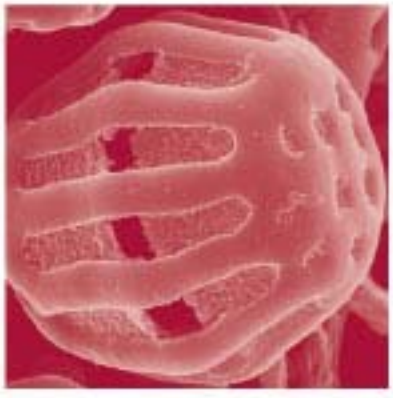

NEWSLETTER AND PROCEEDINGS OF THE LINNEAN SOCIETY OF LONDON

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A living forum for biology

THE LINNEAN SOCIETY OF LONDON

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THE LINNEAN

Newsletter and Proceedings
of the Linnean Society of London

Edited by Brian G Gardiner

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Editorial

This issue contains three papers, the first two of which concern Myrmechory (the planting of seeds by ants).

The first paper describes the Agricultural ant *Pogonomyrex molefaciens* about which Dr Lincecum concluded, they planted their favourite seed-bearing grass *Aristida* around the periphery of their nests. This hypothesis became known as Lincecum's Myth. However, although a harvester, Dr Lincecum's ant appears neither to have planted nor cultivated the grass *Aristida*. It is possible that damp seed thrown out by the ants may account for the myth. Presumably the ants cleaned the ground around their nests, but at a convenient distance allowed the ant grass *Aristida* to grow!

The second paper describes how the seeds of *Erica* have a surface structure which secretes and stores oil (an elaiosome) which acts as an attractant to ants and thereby aids the dispersal of the *Erica* seeds, thus a true example of myrmechory.

The third paper, by P.G. Moore and J.A. Gibson, completes the story of the Foundation of the Marine Station at Millport. It describes how David Robertson, LL.D., FLS, together with a group of fellow Glaswegians with an interest in Marine Science, formed a committee to promote the building of a permanent Marine Station and how, when it was built, a committee was elected to be in charge of running the station. This committee included several Fellows of the Linnean Society: Alexander Somerville (a well-known conchologist), G.F. Elliott (a tunicate specialist) and Professor M. Laurie, Professor at St Mungo's College, Glasgow, who worked on eurypterids.

The paper concludes with how the Millport enterprise eventually ran into both financial and staffing difficulties and how this was partly alleviated by Alexander Somerville and Dr Paul Rottenburg donating over 8% of the annual budget of the station for the year in order to balance the books! Lastly, it recognises the munificence of Dr Sheina McAlister Marshall who not only bequeathed her house (in Millport) to the Marine Station, but also provided funding for a number of studentships.

BRIAN GARDINER

Society News

The Linnaean Tercentenary. I am writing this at the end of a hectic autumn, and we are all looking forward to an even fuller programme next year as we prepare to celebrate the Tercentenary of the birth of Linnaeus. We have had an intense period of planning and most of the events are now confirmed – please see your programme card which should reach you with this issue. We have just had the exciting news that our bid for a stand in the Life-long Learning section at the RHS Chelsea Flower Show has been approved.

We launched the programme on 7th December at a special Christmas event attended by the Swedish Ambassador, the Chairman of the Swedish National Linnaeus Commission, the President of the Swedish Linnaean Society, Lord Selborne, Lord Cranbrook, the Mayor of Lambeth and numerous other distinguished guests. Everyone

was impressed by the posters and presentations. They conveyed a real sense of the wide scope and vigour of our current activities.

The Autumn Programme. The autumn began with a very enjoyable Courtyard party to celebrate the completion of the refurbishment and to promote Burlington House as a cultural campus. Sir David Attenborough and Lord Sainsbury addressed the assembled societies and both were enthusiastic about us all working more closely together. As a result we are planning to have a modest programme of joint events next year – the first will be a St David's Day celebration on 1st March when Dai Morgan-Evans will speak at the Geological Society on Sir Joseph Banks who was such an influential figure in the growth of the learned societies.

Many of us were able to get together again on 30th September for the first Conversazione to be held in the Society for three years. Apart from socialising the main purpose was to showcase all the projects which the Society is involved in and there was a fine array of posters which many people had worked hard to realise; we are very grateful to them.

Our own meetings during the autumn showed just what a wide range of subjects we embrace, starting with Frank Dobson on Lichens in Churchyards, then our distinguished Foreign Member, Walter Lack, on the story of the Empress Josephine's wonderful gardens at Malmaison. That was followed by a completely different topic when Adrian Glover introduced us to the cutting edge science of deep sea worms and their relation to whale carcasses.

To close the autumn programme we had a very well attended Brogdale lecture by Edward Wilson who spoke on Edward Bunyard, an outstanding pomologist and plantsman in the early 20th century, and also a prominent Fellow of the Linnean Society.

A few days later there was standing room only when the second systematics debate took place. Although the motion "Should future classification be exclusively DNA-based?" was rejected both before and after the debate the proposer, Dr Alfried Vogler, did have the satisfaction of almost doubling the number of people supporting the motion.

At the same event the BBSRC Collaborative Scheme for Systematics Research (CoSyst) was officially launched by Christopher St Pourçain of the BBSRC. This exciting new initiative will provide a significant amount of short-term funding for new collaborative research in systematics.

Strategic Planning, Governance and Reviews. As mentioned in the last edition of *The Linnean*, the Charity Commission has been conducting a review of our activities. The result was very positive, with special praise for our financial management. The Charity Commission review also encouraged us to think about our strategic direction.

As part of the Society's development programme, The Officers and Council arranged to have an away day to think about policy and planning. This was led by the President and took place on 29th November. We are grateful to the Officers and members of Council who generated so many valuable ideas, and to Alastair Land at Winchester College who provided such a wonderful venue. The Officers and Council shall be considering these ideas over the next couple of months and will hold a follow up meeting early in the New Year.

Building and Refurbishment Work. As most Fellows will know, the Meeting Room has been refurbished and redecorated. It now has a much better sound system with audio loop, the latest projection facilities and a fine new stage. We have also installed wireless access to the internet throughout the building. We had hoped to move on to refurbishing the library by now but the process of obtaining the necessary licences has proved more complicated than we had anticipated so the work has been delayed, probably until next summer.

The Visual Arts. Lastly I should mention two important developments on the visual front. Bobbi Angell, who won the 2006 Jill Smythies Award, has very generously given us two original drawings, which are now on display in the library. In a different visual realm we have just signed a contract with Liverpool John Moores University to produce an interactive 3D visualisation of our premises and an automated guided tour. This should be a major attraction on our website.

ADRIAN THOMAS

Launch of the Linnaean Tercentenary Year

The Linnean Society launched the Linnaean Tercentenary to celebrate the three hundredth anniversary of the birth of Carl Linnaeus (1707-1778) on December 7th 2006. The tercentenary will be commemorated internationally in 2007 and a comprehensive programme of exciting promotional events, scientific meetings, awards, exhibitions and digitization of the Society's Collections and associated projects was announced. The President thanked Dr Jenny Edmonds and Dr Vaughan Southgate for their achievement in developing such an excellent and wide-ranging programme.

Speaking at the launch, the President, Professor David F. Cutler, said "The tercentenary provides a unique opportunity to raise the profile of various issues challenging not only the Society but the wider community. These include topics such as climate change, biodiversity and the urgent need to regenerate taxonomy and systematics. We are planning various activities to celebrate Linnaeus' legacy by: focusing on his ideas; highlighting the need to devote more resources to systematics and taxonomy and improving international access to the Society's unique collections and facilities. …"

The Linnean Society has identified various important projects to make the Linnaean legacy accessible to all. The collections are unique and are therefore not loaned. The Society's key priority is to substantially improve access to the collections and facilities. The Head of Development, Elaine Shaughnessy, gave a presentation on the successful delivery and progress on a number of these projects, including the conservation of the Linnaean correspondence and provision of digital on-line access to the Linnaean collections and the Society's vision for what still needs to be achieved.

In 2007, projects that will be completed or are ongoing:

- **Online Linnean Society Library Catalogue.** The Library Catalogue is now fully accessible via the Society's web site (*www.linnean.org*) and holds 33,271 records.

- **Conservation and digitisation of the Linnaean letters.** Conservation of almost 4,0000 letters sent to Linnaeus from over 600 correspondents was completed at the end of 2006. The digitisation programme is also completed and approximately 16,200 images will be contributed to the Linnean Correspondence Project and accessible through the Linnean Society's website.
- **Digitisation of the Linnean Herbarium Database.** The herbarium contains approximately 14,300 specimens of which more that 4,000 are types. Over 5,000 images are now safely stored on portable hard drives.
- **Digitisation of the Linnaean Entomological Collections.** There are approximately 9,000 insect specimens of which 3,200 are Linnean ones, including types. The Society's first President, J.E. Smith added to the original collection, trebling its size. 500 images are already safely stored on hard drives.
- **Linnaean Plant Name Typification Project.** This is a joint initiative of the Linnean Society and Natural History Museum, London. Since 1981, hundreds of botanists around the globe have been studying names, specimens and illustrations in order to allow type specimens to be designated so that Linnaeus' names can be applied clearly and consistently worldwide. The project is nearing completion and all 9000+ Linnaean names are now available on the project's web-site.

The publication, in May 2007, entitled 'Order out of Chaos' by Dr. Charlie Jarvis brings together for the first time information on the typification of all Linnaeus' plant names. Co-published by the Linnean Society of London and London's Natural History Museum, this landmark work is a result of 25 years research and will provide an invaluable tool to taxonomists worldwide.

- **Linnaeus Link Project.** This is an international collaboration currently managed by the Natural History Museum moving to the Linnean Society in 2007. An interactive union catalogue devoted to the work of Carl Linnaeus, supported by web-based descriptions of significant Linnaean collections worldwide is being produced. Records from the Linnean Society and the Natural History Museum already total over 2,500 entries.

These projects are being delivered through the generous support of the Lisbet Rausing Charitable Fund (£500,000) which enabled the conservation and digitisation of the Linnaean correspondence and the digitisation of the Plant and Insect collections. A similar sum has been spent from the Society's own resources to realise the remainder of the programmes.

Elaine continued her presentation by emphasising that much more work still remains to be accomplished to make the Linnean Society's collections and premises fully accessible. The Society now needs to secure further funding to undertake these additional ventures. These include:

- **Digitisation of the remaining Linnaean zoological collections.** There are approximately 3,054 shells and 168 fishes with reliable Linnaean provenance. There are also 'supplementary' collections containing tortoises, turtles, corals, barnacles, crabs, brachiopods, sea urchins, starfish, sponges, bryozoans and formaniferans. The collections also include the Linnaean pearls – the first example

of a European cultured pearl – currently on exhibition in Abu Dhabi. More research is needed to establish the status of the specimens and digitisation will facilitate access. Estimated digitisation costs are £84,000.

- **Digitision of the Library Archives.** The Society has over 40,000 pages of published journals, 4,000 Certifications of Recommendations for the Fellowship, over 4,000 manuscripts, 1,300 portraits and collections that are still growing. The Society's collections are unique and contain many special treasures. Digitisation would make these important collections available worldwide for research, especially to those in developing countries who would not have the opportunity to use the collections in person. Digitisation costs are estimated at £235,000.
- **Digitision of the Smithian Herbarium.** The Society has completed the building of a new air-conditioned herbarium. The Smith Herbarium contains a collection of 27,186 dried botanical specimens mounted on hand-made paper. It is a very rare example of a personal herbarium of a famous scientist that has been kept in its original state and has not been remounted or relabeled. It contains thousands of type specimens and over 500 collectors are represented. Digitisation costs are estimated at £129.000. The purchase of a new microscope for research is also needed.

A long-term strategy for the preservation of the digital assets is being put in place. The Society is currently reviewing options for a content management system which it expects to be in place in the autumn of 2007. The structure will be sufficiently broad to ensure that all the collections can be made available in the future. The estimated storage space required is 10.7 Terabytes of information.

The Linnean Society also now aims to make its rooms physically available to all and to ensure that they are served by the latest technology. Much work has already been undertaken and paid for through the Society's funds. This includes major refurbishment of the Meeting Room, the Council Room, the Smith Herbarium and the top floor rooms and Conservation Studio. Work will begin in the Library in 2007.

With secure tenure in Burlington House and the acquisition of the Tower Rooms, the Society is now ready to move forward to further strengthen its scientific role and is building capacity to:

- Develop the premises to become a high-profile, international centre for the science of natural history;
- Develop the existing facilities, with the collections they hold, to become fully accessible physically.

The Society now has a unique opportunity to restore and redevelop the newly acquired rooms in the Burlington House central Tower, with a self-contained staircase and disused lift shaft. Originally built in 1873 as the "Occasional Meeting Rooms for Miscellaneous Societies", these two Rooms occupy a key position over the central Archway entrance to the Burlington House courtyard. This new Room will provide additional facilities to run meetings, lectures, exhibitions, media events and launch the results of innovative research across the science of natural history.

The adjoining smaller room will be used to provide both first-class archival and

manuscript storage facilities for the Society's rich collection, now dispersed to wherever space can be found (including basements with associated flooding risks). It will also provide a supervised study area for those using the Society's important collections. Estimated costs to realize the plan are £1,000,000.

The Society will launch a fundraising appeal in 2007 in order to be able to take forward all these important initiatives to make the Linnean Society a main centre for public engagement with natural history.

Elaine showed forthcoming highlights of the Tercentenary Programme. As well as the wide-ranging programme of meetings and events there are a whole range of additional activities including: participating in exhibitions worldwide, having an exhibition at the Chelsea Flower Show, media coverage and the commissioning of three Linnean Tercentenary silver medals to be awarded to internationally recognized biologists for their outstanding contribution to our understanding of the natural world.

The Society is now beginning its strategic planning to look forward to the Society's future role through which it can grow, influence and fundraise. The Society is now ready to move forward to further strengthen its scientific role and is building capacity to:

- Develop the premises to become a high-profile, international centre for the science of natural history
- Strengthen its Fellowship & provide enhanced Fellowship benefits
- Provide full digital access to its knowledge & collections
- Develop the existing facilities, with the collections they hold, to become fully accessible physically
- Fundraise to support the above goals and to build a capital base

This will enable the Society to move forward and:

- Promote the communication of scientific ideas and advances;
- Provide critical support to the biological sciences, taxonomy and conservation
- Promote research in natural history through grants and awards;
- Strengthen its ability to inform Government on science policy and research;
- Increase public understanding through increased capacity to host meetings and events

The Fellowship will be kept fully informed of all these exciting plans and the Society looks very much forward to celebrating the Tercentenary Year and delivering the projects as continuing fulfillment of Linnaeus' legacy.

ELAINE SHAUGHNESSY

Award of *Sitara-i-Quaid-i-Azam* to Peter and Azra Meadows for Education and Environmental Work in Pakistan.

Peter Meadows, Fellow of the Linnean Society and an Honorary Lecturer in the Institute of Biomedical and Life Sciences, University of Glasgow, has been awarded the civilian award of *Sitara-i-Quaid-i-Azam* of the Islamic Republic of Pakistan by President General Pervez Musharraf. The award of *Sitara-i-Quaid-i-Azam* (Star of the Great Leader) was presented to Peter by the Pakistan High Commissioner to the United Kingdom, Her Excellency Dr Maleeha Lodhi, at a March 2005 diplomatic investiture ceremony and reception in London. The award is one of the highest available for award to foreigners – only two or three being promulgated each year.

The Citation attached to the award is for 'Services to Pakistan' by Peter Meadows and by Azra Meadows, who is also a Fellow of the Linnean Society and an Honorary Lecturer at the University of Glasgow. The citation refers to their work over many years in education and the environment in Pakistan. This has included fostering educational links between the United Kingdom and Pakistan, and working with ethnic minorities in the two countries. The Indus River symposium at the Linnean Society in 1994, and the resultant publication by Oxford University Press in 1999 are part of these links. Peter and Azra Meadows have also led international expeditions to Chitral (The Royal Geographical Society/Linnean Society International Hindu Kush Expedition, 1999) and to the Makran coast, and they have worked with many universities and research institutes in Pakistan organising international conferences and promoting cross-cultural dialogue. The initial results of the 1999 expedition were announced at an evening meeting of the Linnean Society in November 2000.

Ethnic minority groups in Scotland and elsewhere in the UK have also been involved in and benefited from these activities. These have included staff and student exchanges, postdoctoral awards and undergraduate visits and projects. Amongst these, the Association of Commonwealth Universities Commonwealth Foundation Awards scheme, the British Council Connecting Futures programme, and the British Council Higher Educational Links programme have featured prominently. Potential large-scale funding initiatives between the University of Glasgow and universities in Pakistan are also currently under discussion in the light of the new funding initiatives of the Pakistan Higher Education Commission in Islamabad.

In Pakistan, Peter and Azra Meadows's current work is focussing on the coastal zone and on mountain environments – including the area affected by the recent massive earthquake in October 2005. They are investigating the sustainable use of natural resources and related health issues with members of local rural communities, universities and NGO's. This includes the importance of natural hazards, maintenance of biodiversity, and availability of clean water. The work is funded by the Government of Pakistan, the British Council, the Department for International Development, the Royal Geographical Society of London, the Royal Society of London, the Carnegie Trust for the Universities of Scotland, and the Linnean Society.

The Linnean Society and the National Trust

The National Trust Council comprises 52 members, half of whom are elected. The other 26 are nominated by appropriate organisations, which did include the Linnean Society. At the NT's 2006 AGM in November, this arrangement was ended when the list of nominating bodies was put before the membership for approval of modifications recommended by a special Nominations Committee. There were nearly 5,000 votes cast in support of the Linnean Society (well done!), but these were swamped by the 20,000 or so votes that were cast by members simply ticking a box to accept the list of 26 bodies recommended by the Nominations Committee. Other non-recommended bodies fared even worse.

Under the present rules limiting terms of office for Council members, my own period as the Linn's nominee ends in June 2007. So I am not defending a personal position. The correct administrative procedures were followed, although the Council did not accept the original list of suggestions made by its Nominations Committee, who were asked to reconsider. As a result, the RHS was reinstated, although not the Linnean Society. The Committee had sought to broaden the expertise of Council and also to create a 'balanced slate' of suggestions. The Linn lost out, despite vigorous protests.

The Linnean Society was one of the organisations whose help was sought when the National Trust was first established. Beatrix Potter/ Mrs Heelis, one of the three prime movers in the foundation of the NT, was a keen mycologist and personally associated with the Linnean Society, and it was represented on the NT's governing body when that was set up in 1895. The Linnean was thus one of the Founder Members of the National Trust and may well have been the last remaining one. Now, after 112 years of service to the NT, the Linnean Society has been eliminated from the Council without any comment being made during that process concerning the historical background or historic change. This prompts the wicked thought that perhaps History doesn't Matter after all, contrary to the NT's recent very successful heritage campaign slogan.

The purpose of having Nominating Bodies is to ensure that the Trust has access to a broad range of expertise and experience that might not otherwise be available through the process of electing members. In my view, the most important lesson to be learned from the present situation (apart from the fact that the Linnean Society and what it represents is not well or widely understood) concerns the need to ensure a balanced and capable Council membership for the NT. The Trust operates in a world that is increasingly dominated by scientific and technical issues. It needs scientifically competent Council members (from whom are appointed most of the Board of Trustees). For example, it needs people who know what eutrophication is and why it might cost the Trust millions of pounds (especially following the imminent implementation of the Water Framework Directive). It needs people who can understand a statistically based argument, and who can challenge one that has no statistical substantiation. Yet, year after year, such people fail to stand for personal election to the other 26 seats on Council. Those who put themselves forward from among the membership rarely offer scientific expertise. Owning land or enjoying the countryside are not substitute qualifications and do not offer an alternative way of thinking to the many BAs and arts-based people that are attracted to the Trust.

The Council includes excellent and highly intelligent people, many of whom can certainly understand a scientific case if it is explained to them. Such explanations are usually provided, eloquently and professionally, by NT staff. But the principle of external scrutiny is undermined if Council members are not able to appraise an argument for themselves and reach their own independent conclusion – to support the staff or challenge them as appropriate. Since suitably qualified people rarely stand for election to Council, the list of nominating bodies should be arranged to ensure that balance is maintained and full competence is represented among the Council membership. This didn't happen in 2006, when efforts were made instead to ensure the nominating bodies formed a balanced list, to include a broader scope and without a full assessment of the competences represented among existing Council members. This is why the Linnean Society was dropped from the list and also why it was not replaced by another obviously scientifically based organisation.

All is not lost. The British Ecological Society is still there, and so are the Wildlife Trusts, but professionally based scientists are not very evident among the Trust's 52 Council members. Inexplicably, the RSPB declined to be considered as a nominating body and my letter asking for that decision to be reconsidered never received a reply. The less that biology, and science in general, is represented on Council, the more likely it is that the situation will be perpetuated and even worsened, especially as the list of nominating bodies is not now due for revision until 2012.

I believe there are three lessons to be learned from all this:

1. The NT should ensure that its list of nominating bodies is used explicitly to fill gaps in scientific and technical expertise that are not being filled by ordinary NT members who stand for election. I shall be pressing for this.
2. Members of the NT, including a lot of Linnean Society members, biologists and others scientists and technical specialists (including soil scientists, geologists, IT specialists, ecologists, meteorologists) must put themselves forward for election to Council in a personal capacity. My experience suggests that it is thoroughly worthwhile, so get on and do it!
3. The Linnean Society needs to raise its public profile as the World's oldest scientifically based forum for biodiversity expertise.

I was very flattered to be invited to follow the impressive footsteps of my predecessor as Linnean Nominee, the late Professor Bob Savage. He was a very civilised and likeable man and I soon discovered that he had been a very popular member of Council, for 17 years. It was made plain to me, in no uncertain terms, that I had a tough act to follow! My nine years have been enormously interesting and enjoyable and I have met some admirable and highly intelligent people whose path I would not otherwise have crossed. Council membership has also enlarged my own experience and knowledge in many useful and interesting ways. At a personal level, I feel my time has not been wasted, far from it. I am also happy that I have fulfilled the intended role of the Linnean's Nominee in providing biological input to discussions and decision making, perhaps most significantly in the controversial area of deer hunting, where some objective science was particularly needed. There have also been important discussions about the future of farming (especially in the uplands), climate change issues, the management of SSSIs and the policy of allowing natural processes to take place in respect of coastal re-alignment.

Although Council members are not supposed to campaign for any particular cause, throughout my time I made no secret of the fact that, in my view, the arguments that justify the preservation of our cultural heritage should apply equally and exactly to the conservation of our natural heritage. I believe my repeated challenges to assumptions helped to develop a more balanced approach to the NT's policies and actions. Being an impatient fellow, I regret that there are not greater signs of having had some effect. However, getting the NT to change course is like trying to steer a supertanker. Perhaps that's as it should be. The National Trust exists to preserve our heritage 'forever and for everyone'. It must not be hijacked by particular interest groups (even our own!), or steered this way and that according to whims and changes in public attitudes.

I am happy that wildlife issues and environmental conservation are now high on the NT's agenda, more than in the past, and rightly so. Because of its huge landholding, the NT (Britain's biggest private landowner) has huge responsibilities for wildlife conservation, many of them constituting legal obligations (e.g. in respect of SSIs, SACs, NNRs etc). It owns seabird colonies of international importance, most of our key butterfly sites, more red squirrels than anyone else, 700 miles of coastline, historic parklands and horticultural sites. Nearly half of Britain's water falls on or flows through National Trust land, much of which lies in the vital upland catchments. I am disappointed that the public perception of the NT remains rather one-dimensional, focussed on stately homes, yet between a third and a half of its annual expenditure goes on the countryside and open spaces. That's upwards of £100,000,000 per year, probably more than all the wildlife conservation bodies put together. It's sad that it does not get appropriate public recognition for this huge commitment to wildlife and the environment. Sadder still if its Council and Trustees are short of people who can proclaim this at frequent intervals, based on personal and professional experience.

PAT MORRIS

November 2006

Library

The autumn has been a very busy period for the Library staff as we prepared for the Tercentenary year, with herbarium and insect specimens as well as newly conserved letters all going out and returning in batches after digitisation. This has involved Lynda in an ongoing record-keeping exercise which includes finding safe storage for all the hard drives which now hold the resulting images. Major events such as the Conversazione and the Tercentenary launch saw the Reading Room cleared and tidied as displays were accommodated and gives us a date-line for monitoring dust accumulation. A very successful book sale on the evening of 14th October has added nearly £600 to the Library purchase fund as well as a very large number of potential additions to the Library stock, which we are still processing. These will have their source (when identifiable) indicated in the electronic catalogue but they are not listed here for reasons of limitations of space.

Some Readers are still unaware that they can search the Library catalogue on-line. This is easy to find on the new web site and needs no password: just follow the

links from *www.linnean.org*. If you do not manage to connect first time do try again as we have a limit on the number of users at any one time. Let us know if that becomes a problem as we can change that when it becomes necessary but, as every extra simultaneous user increases our license fee, we will only add that when necessary.

Many of the records still have to be upgraded to include correct locations and loan details as well the as creation of extra entries for different editions. This is because we instructed those keying in the data to give everything a single location and loan status. It does not affect the bibliographic information which should be correct. The catalogue does not yet include serials or manuscripts but does include entries for portraits up to "P". These added elements will follow as we develop the CARLS system.

The plans for redecoration and refurbishment of the Library are moving forward slowly and we will let our Readers know as soon as we have any idea of when this might move on from plans on paper to actual physical changes. At the moment we do not think that any major disruptions will occur until sometime during the summer of 2007.

The donations below record gifts of books to the Library from mid-August to early December. We are especially grateful to Cornelia Ziegler for the gift this summer of two albums of flower paintings by her father and mother, dating from the 1930's when they had fled Germany and found a temporary home on the Dalmatian island of Korkula. Mrs Edith Ziegler was clerk to the Council of the Linnean Society from 1952 to 1963. A recent gift from the family of her translated diaries for her early days of service to the Society make fascinating reading and add an extra dimension to the gift. Cornelia was also able to provide us with a photocopy of her own account at age 11 (in a nice clear round hand and in excellent English) of the death of the King on 6th February 1952 and the Coronation procession viewed from the roof of the Society. We were able to display both albums in the Reading Room for St Andrew's day as they include representations of a large thistle.

GINA DOUGLAS

Donations from mid August to early December 2006

Margaretha Bååth: Bååth, Margaretha, S*ommerlängtan, botaniska illlustrationer & blomstermåleri*. [112 pp.] [Sweden, privately] 2006. ISBN 978-91-976187-0-0.

Dr M. Beretta: Beretta, M. ed. *The starry messenger and the polar star, scientific reflections between Italy and Sweden from 1500- 1800* [exhibition catalogue] 188 pp., illustr. some col., Prato, Giunti, 1995. ISBN 88-04-20793-9.

Björn Bergenholtz: *Blomstergrisen, grisen Lindboms äventyr med Carl von Linné*. [23 pp] col. illustr., Stockholm, Rabén & Sjögren, 2003. ISBN 91-29-65759-1.

Bioculture Press: Griffiths, O.L. & Florens, V.F.B**.,** *A field guide to the non-marine molluscs of the Mascarene Islands*. 185 pp., Mauritius, Bioculture Press, 2002. ISBN 99949-22-05-X.

Prof. Janet Browne: Browne, Janet, *The secular ark, studies in the history of biogeography*. 273 pp., illustr., New Haven Yale University Press, 1983. ISBN 0-300-02460-6.

Browne, Janet, *Darwin's Origin of Species, a biography*, 174 pp., London, Atlantic Books, 2006. ISBN 1-84354-393-1.

Thackray, John C., ed. *To see the Fellows fight – eye witness accounts of meetings of the Geological Society of London and its Club, 1822-1868*. 243 pp. {Oxford] British Society for the History of Science, 2003. ISBN 0-906450-14-4 [BSHS Monograph 12].

Dr Toni Burgin: Burgin, Toni, *Mördermuscheln, Tritonshörner und Perlboote, Streifzüge durch die Welt schalentragender Weichtiere.* 51 pp. col. illustr., St Gallen, "Typotron" No. 22, 2004. ISBN 3-908151-39-3.

Burgin, Toni, *Federleicht und daunenweich, die Vogelfeder in Spiegel von Wissenschaft und Kultur.* 51 pp., col. illustr., St Gallen, Ed. Ostschweiz, 2006. ISBN 3-7291-1111-6.

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Correspondence

FROM: Jeremy Franks FLS *jeremy.franks@mailbox.swipnet.se*

When I wrote in *The Linnean* 2005 Vol 21(2) on Linnaeus', Solander's and other Swedes' putative religious inhibitions, I relied on a 40-year-old source. As a researcher has recently studied this interesting subject, you may like to know how Carola Nordbäck regards it in her dissertation, *Samvetets röst. Om motet mellan Luthersk ortodoxi och konservativ pietism i 1720-talets Sverige* "The Voice of Conscience. On the encounter of Lutheran orthodoxy and conservative Pietism in Sweden in the 1720s" (Umeå, 2004).

On pp.53–58, in *Det religionspolitiska läget 1720–1741* ("Religio-political conditions 1720–1741"), Nordbäck writes that the 1735 legislation "in principle forbade all forms of dissentient religious thinking" and aimed at "creating preconditions for order in *both the lay community* (emphasis added) and the church." Anyone who wished to teach privately or seek employment in the service of the state or any such employee who wished to travel outside Sweden was required to have a certificate attesting to his religious status. In the early 1740s, when the principle of freedom of religious conscience was under discussion in Sweden, there was no question of extending it to "Anabaptists, Quakers, atheists, Roman Catholics and 'fanatics' [because] these groups ... were deemed to be a danger to public order." As an offender would be both exiled and deprived of his or her inheritance, this legislation must have had a salutary effect on younger members of families of means, regardless of their beliefs or lack of them.

Nordbäck naturally does not address the wider question of how far, if at all, the Royal Academy of Sciences (founded 1739) or any of its members or any Linnaean 'apostle' was inhibited by this legislation, but it must be hoped that in due course some other scholar will. Besides a tendency to convoluted syntax in discussing some possibly contentious point, I have found nothing in C.H. Braad's papers to suggest that he at least was particularly inhibited.

The Freshwater Biological Association is back in business

FROM: Mary Morris FLS (*aka* Mary Burgis) *p.morris5@btinternet.com*

It is a pleasure to be able to report that, after a long period of upheaval, the Freshwater Biological Association is now back on track and starting a new phase of its long history. Although we have had to sell the Ferry House itself, our headquarters are still on the west shore of Windermere, in the Pearsall Building, and we still own the rest of that site, including the hatchery, the annexe and the jetty where the research vessel *Velia* is moored. The Dorset River Centre, on the River Frome at East Stoke, has been completely renovated and was re-inaugurated earlier this year when the FBA Annual Scientific Meeting and AGM were held there. We still own the fluvarium, an extensive set of experimental mesocosms and several experimental channels, all of which are still being used by CEH staff from Winfrith, whose future is now uncertain.

For most of the 77 years since its foundation the FBA has been seen primarily as a research organisation, but since the withdrawal of NERC's CEH from its properties the Association has had to reassess its role, re-organise its finances and is now actively

The Pearsall Building which now houses the FBA's Windermere headquarters, including the library.

raising its profile. The FBA is a membership organis-ation whose primary purpose, as always, is to promote and support scientific research into all aspects of freshwater biology, in a variety of ways. Both sites are located in prime areas for field research and have laboratory space for resident or visiting researchers, world-class library and information services, conference facilities and teaching facilities for field courses. You can find pictures and details of these and all the advantages of joining the FBA on our web site *www.fba.org.uk*. Also on the web is our partner project called Freshwater Life (*www.freshwaterlife.org*) which is working to put as much information as possible about freshwater organisms on the internet and make it freely available to everyone. The Association offers several small grants for research and has a long list of publications for sale, including specialist keys as well as more general publications. We also plan to make the archives and the Fritsch Collection of Algal drawings available to all on the internet but first we have to find some funds to assist this process. Any suggestions would be warmly welcomed.

That the FBA has survived the last decade has been primarily due to Dr Roger Sweeting FLS who, as Chief Executive, has fought our corner every step of the way. He has now decided to retire and go back to his fish parasites so he is to become an Honorary Research Fellow of the FBA. His successor is to be Dr Mike Dobson, currently at Manchester Metropolitan University, who takes over at the beginning of April 2007. As a member of FBA's Council I am keen to promote the Association and encourage any FLS who needs (or knows of someone who does) a venue for a small conference, or somewhere to teach a group of students, or facilities for a research project, or access to the FBA Library, to get in touch with the Association. I first went to work at FBA as a volunteer vacation student in 1960 and can still recommend it.

The flow-gauging weir on the River Frome at the FBA's Dorset River Centre

Picture Quiz

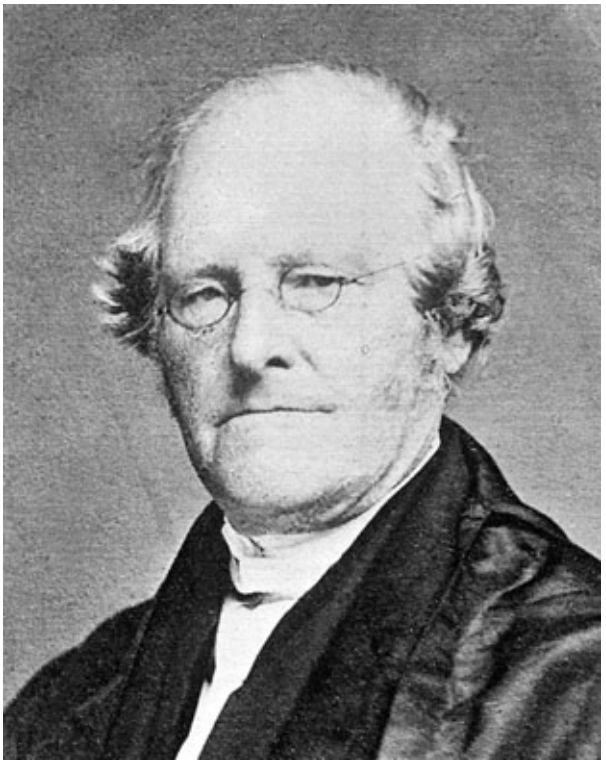
James Paget (1814-1899)

Sir James Paget, D.C.L., LL.D., F.R.S., FLS, was born at Great Yarmouth on 11th January 1814, the eighth of seventeen children, only nine of which survived to adulthood. He was initially educated at a local private school and later served an apprenticeship in medicine with Charles Costerton of Yarmouth. In 1834, aged 20, he enrolled at St Bartholomew's where his progress was such that he was elected a Member of the Royal College of Surgeons in 1836, a Fellow in 1843, a Council Member in 1865, and Vice President 10 years later.

Clue: Catalogued the pathological specimens in the College of Surgeons Museum. (By kind permission of the National Portrait Gallery.)

In 1847 Paget was appointed first as Assistant Surgeon at St Bartholomews and finally Full Surgeon in 1861. Meanwhile, in 1858, he became Surgeon-Extraordinary to Queen Victoria. Back in 1835, however, together with Richard Owen, he published his first medical paper on *Trichinia spiralis*, found in the muscle tissue of a cadaver. His first paper on natural history also included a second author, in this case his brother Charles, when in 1834 following their studies of the local fauna and flora, they published "*A sketch of the Natural History of Yarmouth and its neighbourhood*" (1834). Publications in which Paget was the sole author included 10 contributions to Knight's *Penny Cyclopedia* (1833-1844) and the *London Medical Gazette*.

Paget's Descriptive Catalogue of the pathological specimens contained in the Museum of the Royal College of Surgeons of England (1846-9) ran into five volumes. It was a mammoth task and brought him notoriety while, at the same time, it enhanced his reputation as an outstanding pathologist. He was, in the words of the DNB, "an indefatigable writer" publishing nearly 200 books and papers, a few of which have become medical classics which include his "Clinical Lectures and Essays". However he is best remembered for his publication in 1874 of "On disease of the mammary areola producing cancer of the mammary gland", subsequently called Paget's disease (of the mammary nipple and areola). Nevertheless, three years later he published what I believe to be his most important medical contribution entitled "On the form of chronic inflammation of bones (osteitis deformans)' 1877, which is known as Paget's disease. Other syndromes to which Paget's name is attached include: Paget's test, which is used to distinguish between tumours, Paget-von Schrötter syndrome – a form of thrombosis, and the bone disease without any signs of inflammation which is called Paget's quiet necrosis.



Clue: Anglo-Irish botanist who pipped T.H. Huxley to the post.

Paget also became intimately involved in the interaction between the Hospital Medical Schools and the University of London (the examining body) following his election to the Senate in 1860. He later served as Vice-Chancellor from 1884-1899. During this period he firmly supported the entrance of women into medical schools, advocating the provision of grants to assist them.

Paget died of pneumonia at his London residence, in Regent's Park, on 30th December 1899. He was buried in Finchley Cemetery following a funeral service in Westminster Abbey. He had become a Fellow of the Royal Society in 1851 and in 1871 was created a baronet. He was elected a Fellow of the Linnean Society on 18th January 1872, his form having been signed by: Joseph Hooker, George Bentham, George Busk, Maxwell Tylden Masters and William Henry Flower.

BRIAN GARDINER

Information for this article has been extracted from several sources including the Proceedings of the Linnean Society and the Oxford Dictionary of National Biography 2004. The latter two are gratefully acknowledged.

Dr. Gideon Lincecum, Frontier Naturalist

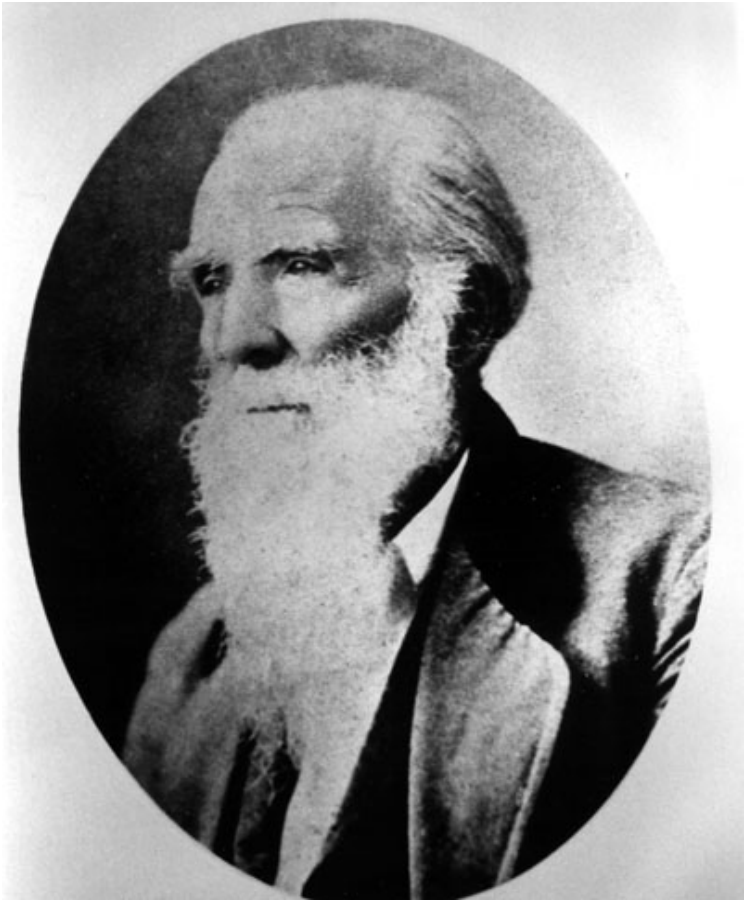
Jerry Bryan Lincecum, Peggy A. Redshaw, and Edward Hake Phillips

"Founders Row" in the Texas State Cemetery in Austin includes one marker designating the grave of a pioneer Texas naturalist. The epitaph reads as follows:

Dr. Gideon Lincecum
A Veteran of the War of 1812
Internationally Famous Botanist
Friend of Darwin
Born in Georgia
April 22, 1793
Died at Long Point
Washington County, Texas
November 28, 1873

Like many tombstone epitaphs, Gideon's inflates somewhat the fame and accomplishments of the deceased. But even with its distortions, this one provides a good starting point. It is correct that he was a veteran of the War of 1812, although when he applied for a pension in 1859, no official records of his service could be found and he had to supply considerable documentation. To say that he was "internationally famous" and a "friend of Darwin" is an exaggeration. The plain, unvarnished facts are remarkable enough: this self-taught naturalist corresponded with a number of the leading scientists of his day (including Charles Darwin), published over two dozen articles about science in scholarly and popular journals, was elected a corresponding member of the Philadelphia Academy of Natural Sciences, and contributed many hundreds (perhaps thousands) of botanical specimens to world-class museums (including the Smithsonian, the British Museum, and the *Jardin des Plantes* in Paris).

Gideon read *Origin of Species* in 1860 (one year after it was first published), embraced the theory of evolution, and wrote Darwin a lengthy letter offering supporting evidence from his observation of the ants of Texas. Moreover, he soon received a cordial reply, wrote a second letter providing more detail about the Texas agricultural ant, and eventually had his letters about the ant read before the Linnean Society, published in their learned journal in 1862, and critiqued by a leading Swiss authority on ants. That is a considerable accomplishment for an obscure naturalist from Texas, and it points to the fact that despite his lack of formal training, Gideon had a discerning eye, an analytical mind, and the ability to describe the natural world in ways that



make his writings a rich source of information about the ecological history of the 19th century South and Texas in particular. When Samuel Wood Geiser considered Gideon's scientific career at length in his book entitled *Naturalists of the Frontier*, he concluded: "it is cause for wonder not that he did so little, but that he accomplished so much".[1] Gideon Lincecum made significant contributions to the advancement of scientific understanding of ants and grasses in Texas.

A bit more biographical information will provide helpful context. The tombstone epitaph was wrong about when Gideon died; it was 1874, not 1873. He was born in 1793 in Georgia to Hezekiah Lincecum and Sally Hickman; the family lived on the bordering country, near the Muscogee, Choctaw and Chickasaw Indians, and much of Gideon's practical knowledge was derived from the Indians. About five months of formal schooling, when he was 14 years old, is all that Gideon received. Later, he served as the sales agent of Parson Weems Traveling Library and read this collection of books extensively during his teenage years. He also read allopathic medicine books during his teens. Thus he was self-educated, and the habit of eagerly devouring books, newspapers, and journals persisted throughout his life.

At the age of 21, Gideon married Sarah Bryan in 1814 and they lived briefly in Georgia and Alabama before settling in Mississippi, near Columbus, for nearly 30 years. During this time in Mississippi, he recorded the traditional history of the Choctaw People

during the early 1820's, made and lost a fortune as an Indian trader, became a popular and successful "Indian plus botanical style" physician, and then made another fortune.

Like Charles Darwin, Gideon made one journey that changed his life and prepared him to become the scientist he ultimately became. It was Gideon's exploration of Texas in 1835 that he considered the most exciting period of his life. Before settling for nearly thirty years in Mississippi, near Columbus, Gideon took time out to lead a group of six Mississippians to Texas for the purpose of determining whether it was as promising a territory for immigration as they had heard. Although the others went home after two months, Gideon and his intrepid horse Ned remained almost seven months, studying the flora and fauna as far south as Aransas Bay and west to the Edwards Plateau.

He returned to Mississippi but could not get Texas out of his mind. In 1848, ostensibly to escape the damages of civilization to his children, he moved the family to the small community of Long Point, Washington County, Texas. Gideon was now fifty-five years old and financially independent. Allowing his sons to do most of the doctoring, he became very serious about his science, reading extensively, keeping detailed records of his observations, making numerous collecting trips to other regions of Texas, corresponding with other scientists and intellectuals in the north and east, and sending specimens of Texas flora and fauna to a variety of institutions and museums. Ultimately Gideon published over two dozen articles in such journals as *Proceedings of the Academy of Natural Sciences* (Philadelphia), *American Naturalist,* and *Journal of the Linnean Society*. He was elected a corresponding member of the Academy of Natural Sciences in Philadelphia. At the age of 81, he died in 1874 at Long Point and was buried beside his wife Sarah in Mt. Zion cemetery, near their home. In 1936, his remains were moved to Founders Row in the State Cemetery in Austin.

What did science mean to Gideon Lincecum? As a true child of the Enlightenment, Gideon found truth and logic in science. He viewed science as a profession higher than religion or politics; it would prevail over the traps of ignorance and superstition and would perfect the human race. His pursuit of the natural history of Texas was an invention for his mental and physical enjoyment and personal happiness. Gideon recorded everything he observed and pushed towards conclusions – he called them "ultimates." His curiosity never grew stale and his interests stretched from birds, animals, fossils, fish, insects, grasses, geologic formations, mineral deposits, and meteorology.

He had a place for his extensive collection of shells, fossils, geologic specimens, plants, petrified logs, bones, jars of insects – a little red cedar house, a structure some 40 feet from the family residence in Long Point. It was here he recorded his observations about daily life with the natural world and wrote hundreds of letters to his scientific correspondents and to our good fortune kept copies of his correspondence by using his letterpress. Here he also boxed up specimens – of everything imaginable – for shipping to the north and east. He even sent Spencer Baird of the Smithsonian a pair of live shrews, who did not survive their journey to Washington.

How do you do science on the Texas frontier from 1848-1874? Gideon's answer was to make careful observations, record them and send them to his cadre of scientific correspondents in the north and east like Elie Durand, Spencer Baird, Joseph Leidy,

and Edward Drinker Cope among others. He broke onto the international scientific scene in 1860 and '61 with letters to none other than Charles Darwin.

How did that come to be? Shortly after he relocated his family in Texas in April 1848, Gideon began to give serious study to the local ant population. By the time he read Charles Darwin's *On the Origin of Species*, in December 1860, he had been observing Texas ants for twelve years and writing out his findings, and in one species in particular he saw evidence to support the theory of natural selection.

Here are excerpts from his first letter to Darwin, dated 29 December 1860:

"Charles Darwin M.A.
"Down, Bromley. Kent. England.

"Dear Sir.

"While in my little, quiet office this evening, carefully examining your valuable work 'on the origin of species' &c - - [I recalled] the fact that I had received, hot from the press, and read with so much pleasure, the 'Temple of Nature,' which, as far as I know, was the last published work written by your grandfather, Erasmus Darwin. And now, . . . it occurred to me . . . that I have been here long enough, all the time in possession of good eyes and ears . . . to enable me to state some facts relative to your favourite theory of natural selection. With that thought . . . came the desire to communicate a few facts of striking character . . . which are, as I conceive, in harmony with your theory. . . .

"In my journal of observations I find many cases applicable to your theory of natural selection, but in my present state of mind, I feel more inclined to state some of my observations on the agricultural successes of one of our many species of Texas ants."

The letter continued for several pages and ended thus:

"I am a native American, born in the smoke of our first revolution; was raised and have always been a dweller in the wild border countries, and now, I think the chances are pretty good for me to make my exit in the turmoil and smoke of another revolution [i.e., the Civil War].

Most Respectfully.
Gideon Lincecum"

Within two months he had received a reply, and although the letter from Darwin has not been located, Gideon's response (dated 4 March 1861) gives a good indication of its contents. The contents of Gideon's second letter allow one to figure out the question that Charles Darwin posed to Gideon Lincecum:

"Your kind letter of 27th January, was just one month on the way. I would not pester you again, but for the question contained in it. You speak dubiously of my 'long career in wild countries.' I might do the same in regard to your oppertunities in the <u>tame</u> country of books and seminaries, pompous priests and legal superstition. But I don't, [since I know of] your trip around the globe. If I can not have company whose minds are clearly free, I would prefer to go alone. And thus it has turned out with me through my long sojourn. I

> have had no associates, and my observations and conclusions, be them right or wrong, are not trammeled by the sway of other minds. Except five month's schooling at a deserted log cabin in the backwoods of Georgia by an old drunkard, my mind has not been biased by training of any kind from designing man. In the cane brakes and unhacked forests on the borders of the above named state, with the muscogee Indian boys for my classmates, I learned my first lessons in nature's grand seminary. Here arose my first thoughts on the subject that is now, by yourself, and by me subscribed to, denominated 'Natural Selection.'

The correspondence did cease, perhaps because of what Gideon regarded as "the War of Northern Aggression," otherwise known as the US Civil War. But on April 18, 1861, portions of the two letters were read to the Linnean Society, and an edited version of them was later published in the journal of the society.[2] *A Calendar of the Correspondence of Charles Darwin* enabled us to discover that first Darwin forwarded the two letters, with his annotation and a cover letter, to George Busk, Secretary of the Linnean Society, asking for help in deciding whether they should be read before the society. From the Darwin Letters Project at Cambridge University we obtained copies of Darwin's cover letter and the annotated versions of Gideon's two letters that he transmitted to Busk. Here is the text of Darwin's cover letter, as transcribed from a xerox copy of the holograph original:

> "Letter to Accompany Lincecum, Agric. Ant of Texas
> Ap. 5 Down, Bromley, Kent
> Dear Busk
>
> "In last no. of Journal of Linn. Soc. there is a marvellous account of ants; enclosed is its match, which if you think fit, might be read, with some such title as 'Extracts from two Letters from G. Lincecum, Esq., of Long Point, Texas, to Chas. Darwin, Esq., on the habits of ants.'— Please observe, I know nothing of writer.— But if you will take trouble to read the <u>whole</u> of these extraordinary epistles, I think you will be impressed into belief that the man does not <u>intentionally</u> tell lies. He paid the heavy postage on both. – I have struck out with pencil what ought not to be read. – If the facts are true, it is perhaps most marvellous instinct ever recorded. –
>
> Really I can almost believe the statements, after Kirby's account of the ants bringing up the eggs of their imprisoned aphids to the sun to be warmed and to be hatched early that they might be milked soon. —
>
> The only use of publishing such a paper in my estimation is that it might call some other observer's attention to these points.—
>
> The whole letters are so odd that they are almost worth your reading, – such spelling — such grammar!
>
> He evidently speaks the truth that he was never educated. —
>
> You must use your own judgment whether to read it, — I hardly know what to think.
>
> Plz relieve me from my uncertainty.
>
> Darwin

P.S. In reading the 1' [primary] letter, attend to his paging; for the order goes very oddly."

Evidently someone relieved Darwin of his uncertainty, for in 1862 an edited version of excerpts from Gideon's two letters appeared in the Linnean Society's journal, under the heading: "Notice on the Habits of the 'Agricultural Ant' of Texas." The credit line read: "by Gideon Lincecum, Esq., M.D. Communicated by Charles Darwin, Esq., F.R.S., F.L.S. Read April 18, 1861." The article began with a note: "The following is merely an abstract of Dr. Lincecum's communication, containing only what appears to be most remarkable and novel in it in the way of observation."

As to why Darwin found Gideon's letters so interesting and chose to sponsor their publication, a scholar named W. Conner Sorensen has some insight: In his recent book entitled *Brethren of the Net: American Entomology, 1840-1880*, he writes: "In the years immediately following the publication of the *Origin*, Darwin paid increasing attention to insects. He corresponded extensively with entomologists, asking questions, suggesting solutions, and encouraging them to pursue evolutionary themes in their own observations. In the 1860s he used the meetings of the Entomological Society of London as a sounding board for his developing ideas on natural selection. The result of Darwin's intense interest in entomology in this period is apparent in *The Descent of Man* (1871), which draws upon entomological sources for much of its supporting data. Just as Gideon suspected, his accounts of the ant behavior was of interest to Darwin because it offered supporting evidence for his evolutionary theory.

Gideon continued his study of Texas ants for a total of some 25 years, spending untold hours on his knees in dirt and mud digging into their mounds, year after year, sting after sting – observing and recording everything he could. He pushed his observations of the Agricultural ant of Texas (*Pogonomyrex molefaciens*) to conclusions about these ants: the ants were social insects; they kept slaves; they harvested and stored grain; they milked aphids; they engaged in warfare; they mated in periodic swarmings; they planted their own favorite seed-bearing grass – *Aristida* called ant grass – around the periphery of the mound. This last conclusion has become known as the "Lincecum Myth" and is still a periodic source of controversy. More significantly, Gideon was the first to describe the founding of a new ant colony by a single queen. In his classic text *Ants: Their Structure, Development and Behavior* (1910), William Morton Wheeler stated: " . . . the actual founding of a colony by a single queen was first witnessed by an American of somewhat doubtful reputation as a myrmecologist, Dr. Gideon Lincecum."[4]

A more objective assessment of Gideon's contribution to the field of entomology was offered in 1995 by W. Conner Sorensen. Using A.S. Packard's annual *Record of American Entomology* for the years 1868-73 to make a detailed analysis of "the leadership of the American entomological community" in 1870, Sorensen ranked Gideon as fiftieth in priority (or overall importance) for American entomology among 108 Americans and Canadians cited.[5] Compared with the output of academically-trained scientists like Joseph Leidy, Edward Drinker Cope, and Spencer Baird – each a correspondent of Gideon – his contributions are modest, but considering his isolation and the lack of any formal training his accomplishments are impressive, indeed.

NOTES

Portions of this essay have appeared in *Adventures of a Frontier Naturalist: The Life and Times of Dr. Gideon Lincecum* (Texas A&M University Press, 1994) by Lincecum and Phillips and *Science on the Texas Frontier: Observations of Dr. Gideon Lincecum* (Texas A&M University Press, 1997) by Lincecum, Phillips and Redshaw.

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ENDNOTES

1. Samuel Wood Geiser, *Naturalists of the Frontier*, Dallas (TX): Southern Methodist University, 1948, p. 214.
2. Gideon Lincecum, "Agricultural Ant of Texas," *J. Linnean Society (Zoology)*, 1862, 6:29-31.
3. W. Conner Sorensen, *Brethren of the Net: American Entomology, 1840-1880*, Tuscaloosa (AL): University of Alabama Press, 1995, p. 197.
4. William M. Wheeler, *Ants: Their Structure, Development and Behavior*, New York: Columbia University Press, 1910, pp. 187-89.
5. Sorensen, pp. 263-64.

Richard Salisbury FLS and the discovery of elaiosomes in *Erica*

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Elaiosomes defined, and discovered in Cape *Erica* species

An **elaiosome** is defined by Allaby (1998) as "a structure on the surface of a seed that secretes and stores oil, usually as an attractant to ants, which assist in seed dispersal." (The Greek word ελαιον, elaion, means oil, properly olive oil.) In some seeds elaiosomes are very conspicuous, sometimes brightly coloured – in Australian *Acacia* species (wattles, or mimosa), for example, the elaiosome can be red, orange, yellow, white or brown (O'Dowd & Gill, 1986).

As far as I can determine there was no explicit account published of the presence of elaiosomes on the seeds of *Erica* species before 1998 when *Erica cedromontana* was described and named by Oliver & Oliver (1998: 269-272). This species produces a tiny, 0.5x0.25mm, "ellipsoid, slightly flattened, smooth, shiny, orange [seed], with a small white elaiosome". Oliver and Oliver (1998: 272) commented that "the possession of an elaiosome on the seed would appear to indicate that the seeds are distributed by ants", and they speculated that the "selfsame ants" were involved in pollination of *E. cedromontana*.

Two years later, discussing the seeds of the entire subfamily Ericeae, to which the mega-genus *Erica* belongs, Oliver (2000: 52) noted that "like the fruits the seeds have never been investigated in ... any detail". Yet they provide useful characters for delimiting species. He continued: "A few have been noted with elaiosome-like appendages which feature has never before been recorded in the family." However no list of the African *Erica* species possessing elaiosomes has been compiled and published.

Several years earlier, Inge Oliver made a series of sketches of *Erica australis* among which she drew a seed with a "white elaeosome"; the carefully annotated drawings, included in "Genus Erica: Interactive Identification Key" (Volk *et alii* 2005), are dated 15 March 1996 (the material she studied had been collected in southern Spain by Dr Fernando Ojeda).

In fact the discovery of elaiosomes on seeds of *Erica* was made two centuries ago but had been overlooked.

Richard Salisbury and elaiosomes in European *Erica* species

Richard Salisbury FLS (1761-1829) was a prominent botanist and horticulturist, one of the seven founders of the (Royal) Horticultural Society of London, but a "very difficult" man: "un homme d'esprit vif et d'une petulance extraordinaire" was Augustin-Pyramus de Candolle's succinct opinion. His reputation as a botanist has been sullied both by accusations of plagiarism which need not concern us here, and by his very public row with Sir James Edward Smith.

Richard Salisbury was certainly a careful and accurate observer who in the 1790s and early 1800s had minutely studied around 250 different species of *Erica*, a remarkable piece of research that would not be repeated until George Bentham undertook work on *Erica* for Candolle's *Prodromus* in the late 1830s. Salisbury wrote:

> The old Genus Erica containing 400 species which I have wild specimens of, about 150 unexamined, I now regard as an Order, distinguished from all other Bicornes by their Anthers coalescing (ante anthesin) round the pores where the Pollen afterwards escapes, & this so forcibly that the 2 lobes of diff^{t} Anthers will often separate at their rachis (connectif of the French) if pulled asunder, than at their Pores. I have divided these 250 species which I know into about 60 genera, 20 consisting of only 1 species each, 20 or thereabouts of from 2 to 4 species, the rest of more ... .[1]

His botanical publications include a monograph on *Erica* read before the Linnean Society of London on 6 October 1801, and published at the end of May 1802. In it he described 246 species, naming 53 new ones and renaming many others. One of the European species which he renamed (for the second time!) was *E. australis:* in the monograph he gave it the name *E. pistillaris* (Salisbury, 1802: 368). Previously, in a catalogue of his garden at Chapel Allerton, the same heather was dubbed *E. protrusa* (Salisbury, 1796: 293).

Salisbury's (1802) Latin diagnosis of *E. pistillaris* reads:

> *E. pedunculis foliolis gemmaceis obsitis: corolla 3-lineari, laevi; tubo curvulo, infundibuliformi; limbo recurvo. ... Semina ad hilum, appendiculam fungosam exserunt.*[2]

The final sentence may be translated as "At the hilum the seeds put forth a small, spongy appendage" – an elaiosome. This meaning is made clear in an unpublished letter (partly quoted above), preserved among Salisbury's papers in the Botany Library, The Natural History Museum, London[1] – unfortunately the date is not known (internal evidence suggests it cannot have been written before late December 1819). In this letter, Salisbury set out his views about the classification of *Erica* and even provided new generic names and brief diagnoses for the genera. He provided the following diagnosis for one of his proposed segregate genera:

> Tylosporum term. incl. c.[3] E. Australis L. this Portugal shrub grows 10 feet height & differs from all others in its seeds which have a Caruncula as large as a Mimosa seed.[1]

There are two significant points about this diagnosis. A caruncle is "an excrescence at or about the hilum of certain seeds": an elaiosome is a caruncle. Salisbury's intended name for the genus comprising only *E. australis* was "Tylosporum", derived from Greek τυλος (tylos) = callus, lump or swelling; σπορα (spora) = seed. Salisbury's genus was never published. However, under *E. australis* in his treatment of the Ericeae for Candolle's *Prodromus*, George Bentham (1839: 666) noted: "Hæc species Salisburio sect. propriam Tylosporam constituit [This species was put by Salisbury in its own section Tylospora]"; but Bentham did not pursue this opinion and did not establish a new section, leaving *E. australis* in Sect. Eremocallis. Nor did he describe the seed of *E. australis*.

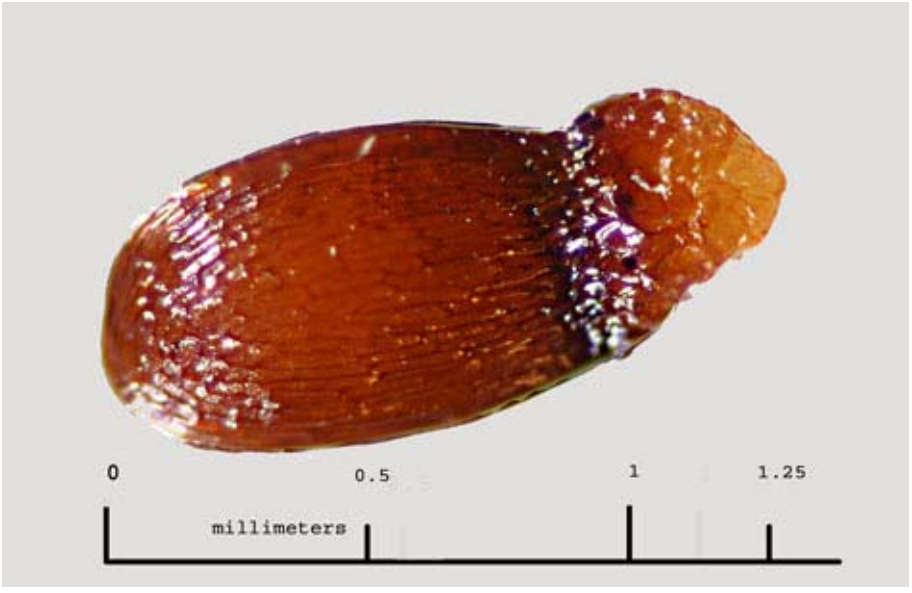

Figure 1. Seed from *Erica australis* 'Mr Robert' (from plants cultivated by Allen Hall, Loughborough) with intact elaiosome (© Allen Hall 2006).

Bentham's comment was taken up more than a century later by Irmgard Hansen, who decided that *E. australis* did merit segregation into a separate section. Hansen (1951) does not seem to have realised the significance of the name that Salisbury had coined, and her protologue of Sect. Tylospora Salisb. ex I. Hansen makes no reference to the unique (in the context of European species) characteristic of the elaiosome. Like Bentham, and a majority of other authors, the seeds of *Erica* species seemed to her to be of no taxonomic value.

To check if Salisbury had been correct I did a thorough search of the literature (for a list of papers including the dimension of seeds of European *Erica* spp, see Nelson (2006)). It is remarkable that between Salisbury in 1802 and 2004, no-one who has studied European *Erica* species had clearly noted – or remarked upon – the presence of elaiosomes on the seeds of *E. australis*. A line-drawing of a seed of *E. australis* in Benito Cebrian's monograph (1948) does show the elaiosome, but the author made no comment. There are several more recent studies of *Erica* seeds including, for example, Fraga Vila (1984); the photomicrograph of *E. australis* in her paper seems to show a seed with a shrunken apex, most probably an artefact caused when the seed was prepared for study. Then, at the very end of 2004, Fagundez and Izco (2004) published a detailed account of the external morphology of seeds of *E. australis* and they noted the presence of the caruncle, described as "a conspicuous mass of enlarged cells continued from the testa cells. It has a fleshy aspect and a yellowish color ...". Again the SEM photomicrographs show seeds with shrunken, seemingly damaged hilar regions. In one SEM picture, the details of the enlarged cells of the caruncle are seen clearly. Fagúndez and Izco (2004), commenting on the possibility that seeds of *E. australis* are dispersed by ants, noted that whereas myrmecochory has "never been reported for this species" they had "observed an intense removal of seeds by ants in field populations ...".

Before I was aware of Fagúndez and Izco's paper, in Autumn 2004 I obtained some seeds collected from plants cultivated by Allen Hall, Vice-president of The Heather Society, in his garden near Loughborough. Although only six seeds of *E. australis* 'Riverslea' were then available, one clearly showed an intact pale yellow elaiosome; two others had vestiges of the structure. Subsequently both Allen Hall and I have examined hundreds of seeds, all of which have elaiosomes in place (Figure 1; from Hall (2006)).

The elaiosome varies in colour from almost white to golden brown. It seems to be fragile and does not appear to have a long natural "shelf-life" at least in the relatively cool, damp conditions prevailing in England. Examination of seeds extracted from old flowers suggest that it quickly decays, and more recent observations on seeds collected in Spain and England seem to show fungal hyphae associated with the caruncle.

Conclusion

Credit for the discovery of elaiosomes in *Erica* rightly belongs to Richard Salisbury. He did not trumpet the fact, probably because he did not realise its significance. Indeed in his six-word Latin sentence he might be said to have been vague and abstruse. Inevitably, perhaps, the fact was forgotten until the 1990s when the Olivers, unaware of Salisbury's comment, observed and described elaiosomes in both European and African species of *Erica*.

Notes

[1] R. A. Salisbury ms; the letter, inscribed on a folded sheet, is incomplete and has been cut to remove whatever text was written on the top-right corner of the first folio. There is no date, signature or addressee's name. It may have been a draft letter. The ms is inserted in volume 3 of a collection of Salisbury's notes and drawings (listed by Sawyer 1971; Bridson *et al.* (1980) no 229.218) in The Botany Library, The Natural History Museum, London.

The evidence for a date is Salisbury's remark about a paper by the Revd William Herbert that "... will be published in the next part of the Hort. Tr. ...". The only relevant paper by Herbert was one on the production of "hybrid vegetables" read on 21 December 1819, and published in *Transactions of the Horticultural Society* volume 4, the title page of which is dated 1822.

[2] Latin translation by Philip Oswald. The first part of Salisbury's diagnosis of *E. pistillaris* reads: E[rica] with peduncles covered with budded leaflets; with the corolla 3 lines [=3ins] long, smooth, with the tube somewhat curved [and] funnel-shaped [and] the limb recurved.

[3] Salisbury's manuscript makes clear that this should be read in the following way: "Tylosporum [characterized by] flowers terminal, anthers included [and] calcarated." Calcarated refers again to anthers which have prominent basal appendages – aristae (*sensu* Bentham 1839) – for which no single translation or term is consistently used in descriptions of *Erica* spp. Oliver (2000) suggested that spur should be employed.

Acknowledgements

My thanks to Allen Hall and Jaimé Fagundez for seeds, to Ron Cleevely and Dr Luis Ramón-Laca for helpful advice, to Philip Oswald for translating Salisbury's Latin, and to the staff of the Botany Library, The Natural History Museum, London, for

access to Salisbury's manuscripts. As always, Gina Douglas, Librarian & Archivist, The Linnean Society, was also especially helpful with material about Salisbury and the dates of publication of papers in *Transactions of the Linnean Society*.

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The Marine Station at Millport: laying the permanent foundations (1896)

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An accessible account of the history of the Marine Station at Millport was written by Dr Sheina Marshall, D.Sc., F.R.S. (1896-1977) but published (1987) only after her death. The earliest physical manifestation of the Marine Station at Millport was represented by *The Ark*, a lighter that had been converted to serve as a laboratory, that eventually was drawn up on the shore at Port Loy on Great Cumbrae island (Marine Biological Association of the West of Scotland, 1901; Moore, 2002). It had been towed to the Clyde Sea – through the Forth-Clyde canal (from the flooded Granton quarry on the East coast of Scotland) in June 1885 at the behest of Dr (later Sir) John Murray, F.R.S. of *Challenger* expedition fame – to act, as originally conceived, as a mobile base for exploring the waters around the West coast of Scotland. The Scottish Marine Station for Scientific Research at Granton eventually closed in 1903.

In 1894, David Robertson, LL.D., F.L.S., F.G.S. (1806-1896) (the well respected "Cumbrae naturalist"; see Stebbing, 1891), "together with a group of business and professional men in Glasgow, all of whom had an interest in marine science, formed a committee to promote the building of a permanent Marine Station" (Marshall, 1987, p. 10). *The Ark* was formally given over by Dr Murray to that Committee in April of 1894 to act, meantime, as their temporary Marine Station. But, as recounted (Marine Biological Association of the West of Scotland, 1901):

> Early in 1896 the Committee resolved to take steps to secure the erection of a more permanent building on shore, and a preliminary appeal for subscriptions was issued. The response to the appeal, however, was at first very disappointing. The sum primarily aimed at was about £800 or £900, but only about £300 of this amount was forthcoming, and the scheme seemed likely to hang fire, when a handsome donation of £500 from Dr Thomas Reid, Waltonian Lecturer in the University of Glasgow, entirely altered the aspect of affairs.

The Waltonian Lectureship (founded at the end of the eighteenth century and not predicated upon a particular specialism) was within the medical school. As Marshall's account (1987, p. 10) took up the story:

> A gift of £500 from Dr Thomas Reid enabled them to begin making plans for a permanent building onshore. On August 17th, 1896 Robertson cut the first sod but he took ill soon after and died on November 20th. Reid laid the foundation stone in October 1896 and the Millport Marine Station was opened the following year.

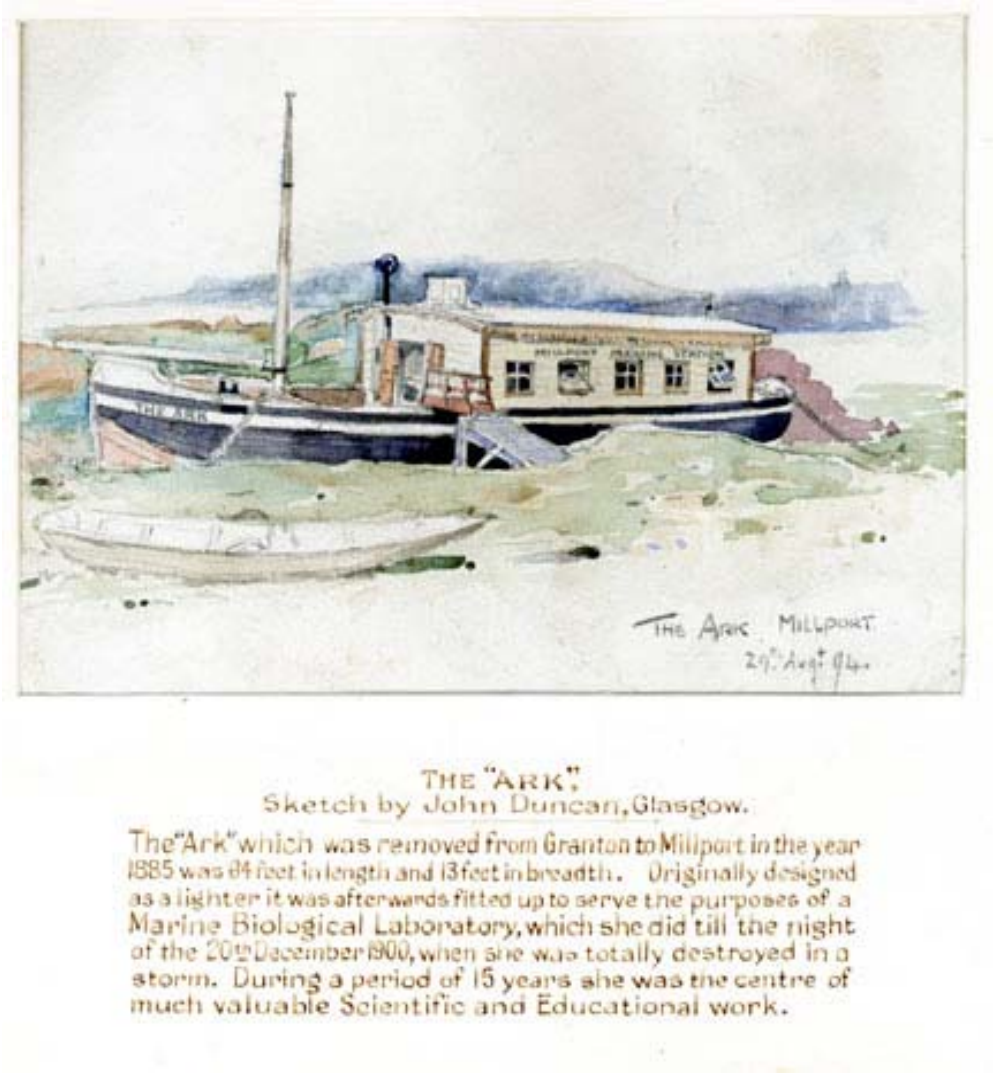

Figure 1. *The Ark*, a watercolour sketch by John Duncan, Glasgow (dated 29th August [18]94), currently on display in the Common Room at the University Marine Biological Station Millport. Port Loy, as it turned out, was not such a sheltered place after all.

This was none too soon since *The Ark* (Figure 1) was destroyed in a storm (on 20th December 1900) as recalled vividly in the curator's (Alexander Gray, formerly of Campbeltown) account reproduced in Marine Biological Association of the West of Scotland (1901):

> The storm of the night of 20th December will long be remembered as one of the heaviest and most destructive of the last decade of the century….many bits of her fittings were found by me the next day in a field adjoining the Marine Station, where they had been carried by the wind a distance of fully a quarter of a mile.

LAYING THE FOUNDATION STONE

The photograph, taken by an unknown photographer, on the occasion of cutting the first sod for the foundations of the permanent building has been reproduced by Marshall (1987, p. 11) and Bellamy (2003, p. 26; although apparently without the latter having consulted the former regarding identifications). However, the photograph representing the party present at the ceremonial laying of the foundation stone (17th October 1896; photographer also unknown) – which has been part of the display concerning the history of the Marine Station for many years – has never been published. The opportunity is taken here to rectify this omission (Fig. 2) especially since, fortunately, its subjects are all identified (albeit not entirely accurately and with several spelling mistakes) on the reverse of the print we display. The party is seen assembled (after the event?) in front of the late Dr David Robertson's house at "Fern Bank", Kames Bay, Millport.

The ivory-handled silver trowel that was used in this ceremony has, ornately engraved on its blade's top surface, the wording "Presented to Thomas Reid, Esq., M.D., LL.D., by the committee on the occasion of his laying the foundation stone of the Marine Biological Station, Millport, 17th October, 1896". The under surface of the blade is engraved "Presented to the Station, August 1954, by Mrs D. G. Thompson, Rutherglen". No details are presently known to us about Mrs Thompson's relationship, if any, to Dr Reid. This unique memento is currently on view in the historical display case of the Robertson Museum at U.M.B.S. Millport. After Reid's death in 1911, the general committee expressed their hope that "his help in the affairs of the Association will never be forgotten" (Marine Biological Association of the West of Scotland, 1912). We renew that hope here, nigh on a century later, and identify others who warrant similar remembrance for services to Millport above and beyond the call of duty.

The Annual Report of the Marine Station for 1896 (Millport Marine Biological Station, 1897), listed the members of the committee then in charge of running the Station as: Prof. John Young, M.D.; Prof. F. O. Bower, D.Sc., F.R.S.; William Martin; Thomas Reid, M.D., LL.D.; James Rankin, B.Sc.; William Jolly, F.R.S.E., F.G.S.; James Dunlop, M.D.; J. F. Gemmill, M.A., M.B., C.M.; David Robertson; John Millar; James Peattie; John Kennedy; A. Somerville, B.Sc., F.L.S.; G. F. Scott Elliot, M.A., B.Sc., F.L.S., F.R.G.S.; John Main, F.G.S.; A. E. Davies, M.D.; Prof. M. Laurie D.Sc., F.R.S.E., F.L.S.; P. M'Gregor Chalmers; Alex. H. Aiton; John Downie; Boswell Sandeman; with George M'Crie as Chairman; Robert Gourlay as Honorary Treasurer; Dugald Bell F.G.S. as Honorary Secretary and with Alex. H. Aiton (115 St Vincent St, Glasgow) and David Robertson (Glendale, Uddingston) as joint acting Honorary Secretaries.

WHO EXACTLY WERE THESE PEOPLE?

Marshall (1987, p. 144 *et seq*.) provided some details about who these people were but her coverage remained incomplete and left many personalities unembellished. The General Committee consisted of the trustees plus representative members of a number of local scientific and administrative organisations: the University of Glasgow, the Corporation of the City of Glasgow, the Faculty of Physicians and Surgeons in Glasgow, the Philosophical Society of Glasgow (becoming the Royal Philosophical Society of Glasgow in 1901), Anderson's College Medical School, St Mungo's College,

Figure 2. Party attending the ceremonial laying of the foundation stone at the Marine Station, Millport (17th October 1896). Identified, as written on the reverse of the original, from left to right (standing) as: J. F. Gemmill [erroneously given as Gemmil], P. M. Chalmers, G. McCrie, Boswell Sandeman, Dugald Bell [erroneously as Dougal], Wm. Peattie (Paisley) [erroneously as Peatie], Dr Jas. Rankin, Dr Robert MacNeil Buchanan [erroneously as Dr Leslie Buchanan]; (sitting): Dr Thomas Reid, Mrs Reid, Mrs D. Bell.

Glasgow, the Natural History Society of Glasgow, the Microscopical Society of Glasgow, the Geological Society of Glasgow, the Andersonian Naturalists' Society of Glasgow, the Paisley Naturalists' Society, the Greenock Natural History Society and the Commissioners of the Burgh of Millport.

George McCrie (d. 1901), whose photograph still adorns the foyer at the Robertson Museum at the Marine Station (published in Marine Biological Association of the West of Scotland, 1902, frontispiece) was formerly a leather merchant (of "Clola Villa", Newlands, Langside, Glasgow). He was the first Chairman (1894-1900) then Honorary Vice President and Trustee (1901) of the Millport Marine Biological Station Committee.[1] Robert Gourlay was manager of the Bank of Scotland in Glasgow.[2]

Professor John Young (1835-1902), of 38 Cecil St, Glasgow, was Regius Professor of Natural History and Keeper of the Hunterian Museum in the University of Glasgow (1866-1902).[3] He had worked at first in the Royal Edinburgh Asylum, having qualified originally as M.D. He then worked in the Geological Survey, mapping the area around the upper Tweed, moving (in 1866) to the Natural History Chair at Glasgow, and there teaching both geology and zoology (Macnair & Mort, 1908). Those disciplines were not separated at Glasgow until 1902 (Laverack, 1983). He wrote the introduction to the *Catalogue of the western Scottish fossils* produced by James Armstrong, his non-professorial local namesake John Young, and David Robertson (Armstrong *et al*., 1876). A man of "immense geniality", Professor Young it was said "always took a keen interest in educational affairs" (Macnair & Mort, 1908). His colleague, Professor

Frederick Orpen Bower (1855-1948) was Regius Professor of Botany in Glasgow University and an expert on the Pteridophyta. His own struggles to modernise that department (the Chair of Botany having been described in 1888 as "the worst provided as regards accommodation in the University") have been chronicled by Boney (1998). Bower, assuredly, would have understood the desirability of building-up the facilities at the Marine Station.

Dr Thomas Reid (1830-1911), of 11 Elmbank St., Glasgow, was the first ophthalmic surgeon at the Glasgow Eye Infirmary and lecturer on ophthalmic medicine at Glasgow University (Jacyna, 1989, p. 136). For portraits of Thomas Reid see Marine Biological Association of the West of Scotland (1911, frontispiece), Anonymous (1911a, opposite p. 358) and Ramsay (1937, opposite p. 70; with signature). His dexterity as an eye surgeon has been attributed (by Ramsay, 1937) to his having been apprenticed early in life to his father who was a cabinet-maker.[4] He had studied medicine in Glasgow under the estimable Professor Allen Thomson. Reid's doctorates both came from Glasgow University (M.D., 1857; LL.D., 1896) (Ms Moira Rankin, pers. comm. to PGM). Upon graduating M.D. in 1857, his health had showed signs of suffering from strain so he had taken a holiday and gone for a sea voyage on a whaling ship. Could that have sparked his interest in matters marine biological?

> In subsequent life, the only regular holiday he allowed himself was the weekend at Millport. Robertson the naturalist lived there. He and Dr Robertson were great friends, and the two spent much time together discussing problems arising out of the work at the Marine Biological Station … he was always ready to give generous pecuniary support to any worthy scheme for the promotion of scientific research (Ramsay, 1937).

As Waltonian Lecturer and lecturer in diseases of the eye, he was one whose opinion even other eminent medical figures sought. Jacyna (*loc. cit.*), for instance, evidences William Sharpey, F.R.S. as consulting him about eyesight problems.[5] Although he was a consummate histologist (Anonymous, 1911a,b,c; Ramsay, 1937) Reid never published much. Indeed, it was said that he "went but little into society" (Anonymous, 1911a). A man with both foresight and means – though "he was no seeker after money" (Ramsay, 1937) – Reid contributed the lion's share (see above) to the building fund of the eventual Marine Station. His obituaries (Anonymous, 1911a,b,c) and the subsequent appreciation by Ramsay (1937), all stress his generosity regarding support for the Marine Biological Station at Millport.

Dr James Fairlie Gemmill (1867-1926), of 16 Dargavel Ave., Dumbreck, at the time was Assistant to the Professor of Anatomy at Glasgow University. He became another of the great supporters of the Millport enterprise, becoming the first President of the Marine Biological Association of the West of Scotland (as the organisation became in 1901). He went on to become Professor of Natural History at University College Dundee and eventually was made F.R.S. According to Thomson (1926a), he supported Millport with "extraordinary persistence and disinterestedness". After graduation he had travelled to India and Rangoon and he was doing marine biological research at Bergen shortly before he died (Thomson, 1926b). Professor E. W. MacBride once said of him that "I know of no more brilliant researcher at present living in the United Kingdom, so far as Zoology is concerned" (Dobson, 2001).

James Rankin, M.B., C.M., B.Sc., of Deanhill, Bearsden – who was the representative of the Microscopical Society of Glasgow – was in the zoology department at Glasgow University where he worked on coelenterates. He even held the reins in that department for a brief period after John Young's resignation in 1902 before John Graham Kerr (1869-1957) took over the Regius Chair of Natural History (Laverack, 1983). He also contributed the section on tunicates in the Clyde compilation by Scott Elliot *et al.* (1901). He appears also in a couple of the photographs published by Marshall (1987, pp. 11,18).

Malcolm Laurie was Professor of Zoology at St Mungo's College, Glasgow (college established in 1889 in the wake of the University of Glasgow's move from the city centre to its present situation atop Gilmorehill). He was interested mostly in Arachnida including fossil eurypterids (Laurie, 1899a). He investigated the Order Pedipalpi as it then was (Laurie, 1896a; that taxon is now redundant being split into Amblypygi, Schizomida and Uropygi all at ordinal level) but, in particular, was captivated by the Order Scorpiones (Laurie, 1890, 1891, 1896b,c,d) establishing the subfamily Euscorpiinae Laurie, 1896 within the family Chactidae (Laurie, 1896c). That taxon is now elevated to familial status as the Euscorpiidae Laurie, 1896 within the superfamily Chactoidea (Fet, pers. comm. to PGM). Maybe it was simply that stinging beasts – the whip-scorpions excepted – exerted a fascination, for he also contributed the section on Coelenterata (= Cnidaria) to the Clyde catalogue of Scott Elliot *et al.* (1901). Laurie had applied to be considered for the Regius Chair of Natural History in the University of Aberdeen in 1899 (a copy of his application and testimonials is housed in the National Library of Scotland; Laurie, 1899b). He was unsuccessful in that ambition, losing out to J. Arthur Thomson (1860-1931).

George Francis Scott Elliot (1862-1934), of 1 Wilton Mansions, Glasgow (and Newton, Dumfries), was a soldier, author and explorer (Scott Elliot, 1896) as well as a botanist and antiquarian (though his Cambridge degree was in mathematics).[6] His father had been a Calcutta merchant. An eminent soldier (he wrote *War History of the 5th Battalion King's Own Scottish Borderers* in 1928), he had been awarded the Order of the Nile for conspicuous bravery with the 'Kosbies' in Egypt in 1915 (Anonymous, 1934). His brother was also a decorated military man: Lt Col. William Scott Elliot, D.S.O. (1873-1943). George Francis Scott Elliot, rather oddly, twice became a Fellow of the Royal Society of Edinburgh (first elected 1913, resigned 1916-1917, re-elected 1921, resigned 1927-28; his original proposers being Robert Kidson, John Horne, John Aitken and James Geikie; Mrs Vicki Hammond, pers. comm. to PGM). For a time he was Professor of Botany at Glasgow Veterinary College. He became President of the Dumfriesshire and Galloway Natural History & Antiquarian Society (1902-1909) after publishing the standard work locally, his *Flora of Dumfriesshire*, in 1896. He revivified that Society during his Presidency (having been a member since 1887). He also seems to have been oddly inconsistent over hyphenating his surname. Sometimes he appears as Scott-Elliot, and sometimes as Scott Elliot (even in the same year, note 1896). The hyphen seems to have been dispensed with in later life. Scott Elliot, together with Laurie (and Murdoch), co-edited the 1901 volume entitled *Fauna, flora and geology of the Clyde area* for the British Association for the Advancement of Science meeting held that year in Glasgow.

Dugald Bell, F.G.S. (1827-1898) was prominent in the Geological Society of

Glasgow becoming, in turn, its Secretary and Vice-President (Mitchell, 2001). A "spare and wiry figure", a "devoted member of the Free Church of Scotland, and a strong Liberal in politics", he studied the glaciation of the west of Scotland (Bell, 1892, 1894) (for his portrait, see Macnair & Mort, 1908, opposite p. 234).[7] The prominence of the geologically inclined on the original committee (Dugald Bell, John Young; John Main; William Jolly; G. F. Scott Elliot) doubtless reflected both the interest of David Robertson (senior) in Post-Tertiary fossils and the fact that geology was then firmly embedded within natural history. Palaeontology has been said to fall between the two stools of biology and geology. In that connexion, the Canadian trilobite specialist William Diller Matthew (1871-1930) memorably compared the palaeontologist to a man with two wives; "perfectly happy with either, were t'other dear charmer away" (Bowler, 1996).

John Main, of 20 Balshagray Avenue (and also 24 Marlborough Ave), Partick, taught science at Glasgow High School. He had joined the Geological Society of Glasgow in 1887 (Macnair & Mort, 1908).

William Jolly, of St Andrews Rd., Pollokshields, was an Inspector of Schools (at one time in Inverness) who contributed a number of papers on the geology of the Scottish Highlands (for example; Jolly, 1885). He was the first President of the Inverness Scientific Society and Field Club, and later became Vice-President of the Geological Society of Glasgow in 1885 (Macnair & Mort, 1908). A friend of John Stuart Blackie (1809-1895), Jolly is the "Hilarius" of Blackie's *Altavona: fact and fiction from my life in the Highlands* (1882) (Lamont, 1947).[8] He was also interested in the life and times of his contemporaries and predecessors in science and literature: like the extraordinary Alford weaver and botanist, John Duncan of Kincardine (Jolly, 1883) and the national bard, Robert Burns (based on reminiscences told to him in childhood by old Willie Patrick, Burns's erstwhile herd-boy; Jolly, 1881).

Dr (later Professor) Robert MacNeil Buchanan, M.B., C.M., F.R.F.P.S. (Glasg.) (1861-1931), of 9 Burnbank Terrace, Glasgow and 2 Northbank Terrace, Kelvinside, Glasgow was the first city bacteriologist for Glasgow (a position he went on to hold for over 30 years).[9] Previous to that appointment he had been the first lecturer in Bacteriology in Glasgow University (appointed about 1892). He went on to become Professor of Medical Jurisprudence and Hygiene in the Anderson Medical College where he established the West of Scotland Clinical Research Association (Anonymous, 1931). He represented Anderson's College Medical School on the General Committee of the Marine Station.[10] Microbes were not his only biological interest. He traced an outbreak of plague in Glasgow in 1900-1901 to rats and "showed a strong liking to the study of the insect world" (Anonymous, 1931), being especially interested in insects in relation to disease (Buchanan, 1915). When middle-aged (in 1904) he joined the Geological Society of Glasgow (Macnair & Mort, 1908, p. 288). Professor Buchanan had a holiday house in Millport and was also a keen amateur phycologist (Dr J.S. Buchanan, pers. comm. to PGM), an interest perhaps partly fostered as a result of his initially having to manufacture agar culture media for his own use. According to the list of members of the Marine Biological Association of the West of Scotland, as at 25th February 1903, Dr Buchanan was also a Fellow of the Royal Society of Edinburgh (note Marine Biological Association of the West of Scotland, 1903, p. 38). It seemed odd, therefore, that his contribution to Scottish microbiology received no mention by

Selwyn & Wardlaw (1983). Delving deeper into this conundrum, it appears that he was elected a Fellow in 1902 (proposed by John G. M'Endrick, John Souttar M'Endrick, Magnus McLean and Andrew Freeland Fergus) but that he resigned in 1909-10 (Dr J.S. Buchanan, pers. comm. to PGM, after details supplied to JSB by Mrs Vicki Hammond). Whether that decision reflected anything of the traditional rivalry that has always existed betwixt Glasgow and Edinburgh is probably unknowable. On the evidence we see here (note also Scott Elliot; above), the Royal Society of Edinburgh appears, at that time, to have been a society that people were not averse to leaving. We can only assume that the designation F.R.S.E. was a less prestigious cachet then (compared with now). Frugality with subscriptions would be readily understandable hereabouts, in spite of Pryde's contention (1958) that, with increasing wealth, Glasgow's old-time frugality began to decay away in 1750.

Boswell Sandeman, of 11 John St., Glasgow, then "Ferndean", Lenzie, was a prominent businessman and member of the Glasgow Chamber of Commerce (which, incidentally, is the oldest such Chamber in the world) (note the subscribers listed in Stewart, 1881).

Of William Peattie (Figure 2) (given simply as "of Paisley" on the reverse of the photograph in Figure 2, but as of 2 Gilmour St., Paisley in the Annual Reports of the Marine Station of the time) we know a little. The name James Peattie, however, only crops up once, in a Millport context, in the listing of the first Committee in 1896. William and James Peattie were brothers who were in business together in Paisley, mainly as tobacconists. Their shop was at 2 Gilmour St., Paisley. Both were on the Council of the Paisley Naturalists' Society from at least 1892. Both probably remained members of that society until their deaths, but James was no longer a Council member after 1893. William, on the other hand, remained on its Council for at least the next ten years (possibly longer), was President of the Society from 1894 to 1896 and read many papers to the Society on a wide range of subjects. Marine biology was probably the main interest of both brothers.

We know only a modicum about a local man, William Martin ("Freeland", Millport), except that he was a retired merchant. He was the second President of Millport Golf Club (1892), becoming an honorary life member in 1909, and can be seen centre-stage in a photograph of the Cumbrae Golf Club team and officials (taken 28th April 1894) reproduced in McIntyre (1988, p. 32). In 1913, he was appointed the first Honorary Sheriff for the burgh of Millport (Campbell, 1975, p. 80). As such he was clearly a significant-enough figure to be a co-signatory of the Articles of Association of the Scottish Marine Biological Association in 1914. It remains only speculation at present, but we do note that the highly regarded firm of W. and J. Martin Ltd, latterly of Bridge of Weir, were leather merchants and shoe manufacturers in Glasgow during this "Age of Progress" (Oakley, 1975, p. 73). Given the known background of George M'Crie (above), had this been the same William Martin he could well have retired to Millport and become involved in Marine Station affairs as a result of long-standing business contacts in Glasgow.[11]

Little biographical or bibliographical information has come to light about James Dunlop, M.D. (?1834-1901), of 16 Carlton Place, S.S. [South side?, i.e. Gorbals], Glasgow or John Millar, Esq. of East Knowe, Castlehead, Paisley and Duke St., Glasgow. John Downie, of "Burnawn", Uddingston, was the Sheriff Clerk of

Lanarkshire (at County Buildings, Glasgow). He was a writer (in the legal sense) and a member of the Council of the Incorporated Society of Law Agents in Scotland. He it was who had drafted the proposed Bankruptcy (Scotland) Act (Downie, 1884). Robert Gourlay, LL.D., of 5 Marlborough Terrace, Glasgow, was the manager of the Bank of Scotland in Glasgow.[2]

Alexander Somerville, of 4 Bute Mansions, Hillhead, Glasgow, the representative of the Philosophical (later Royal Philosophical) Society of Glasgow was made an Honorary Vice-President of the Marine Biological Association of the West of Scotland and served in that capacity between 1902 and 1906. Prior to that, he had been an Honorary Treasurer (between 1898-1902). He was also Vice-President of the Natural History Society of Glasgow during 1889-90 and later edited the Society's journal. His portrait can be seen at the frontispiece of the Annual Report for 1902 (Marine Biological Association of the West of Scotland, 1903). Somerville published on dredging off "Portincross" [sic] (1890b) and on molluscs (see, as examples, Somerville (1896) and also his 1902 "Conchology of the Clyde"; the latter paper published while he was also President of the Conchological Society of Great Britain and Ireland). He also published on botanical subjects and was clearly much taken by Scottish islands (Somerville, 1890a,c, 1892).

Arthur E. Davies, Ph.D., F.L.S., F.C.S., F.R.M.S., of Tweed Bank, West Savile Rd., Edinburgh, served on the General Committee of the Marine Station until 1904. Alexander Aiton was a solicitor (of 190 West George St, Glasgow).[12] Mr David Robertson (1847-1901), of 95 Bath St., Glasgow, was the eldest son of the "Cumbrae naturalist" Dr David Robertson.

John Kennedy, of 10 Bute Gardens, Hillhead, Glasgow, financed a gate with lamps and the ornamental railings outside the Marine Station (Reid, 1897) that so characterised its frontage up until the Second World War (Figure 3) when they were removed, ostensibly, to help support the war effort (in fact, they were stored together with most of the island's railings, never melted down and subsequently – much to local disgust – dumped). One of us (JAG) recalls that this experience was commonplace to communities across Scotland at the time. Marshall (1987, p.118) stated that Kennedy "was more interested in the outward appearance of the Station", donating in addition "an ornamental tile ridge and coping for the roof, rustic seats and finally a flagstaff, flag and halyards" (only the first two of which now remain).

In spite of Gomme & Walker's comment (1987, p. 269) that he was "too much of a scholar to be a genuine architect", Peter MacGregor Chalmers, I.A., F.S.A.Scot. (1859-1922), of 95 Bath St, Glasgow and 52 Lawrence Place, Dowanside, can certainly be described a significant Scottish architect of his day (mainly designing churches). In the Glasgow area, he was responsible for the following churches: Linthouse St Kenneth's Church, Govan (1897); Stepps Parish Church (1899); Cardonald Parish Church; St Margaret's Church, Polmadie (1902); Dennistoun Parish Church (1906); St Margaret's of Scotland (Scottish Episcopal Church), Newlands (1912; the so-called "Cathedral of the South"); Holy Trinity Parish Church, Merrylee (1915); and St David's Memorial Church (now St David's Memorial Park Church) at Kirkintilloch (the building of which did not begin until 1924, i.e. after Chalmers' death; Mr J. F. Dickson, pers. comm. to PGM). Chalmers also designed the commercial Neptune Building in Argyle St, Glasgow (1905), the loss of which (demolished 1966) was described as

Figure 3. The Marine Biological Station at Millport, as it looked in 1901 (Original photograph by Mr D. Robertson, taken shortly before he died). Note the railings, gates and lamps bought by John Kennedy, and the heraldic dolphin fish sandstone finial on the apex of the roof (now removed, due to fears about its stability, and displayed inside the Robertson Museum) that forms the basis for the Station's contemporary logo. In classical mythology, dolphin fishes were attributes of Venus (Aphrodite), so the Marine Station's logo based on this motif can be said to represent a love of the sea. A tripod of such sculptured fishes once supported Neptune's statuary fountain in the Crystal Palace on Queen's island pleasure grounds in Belfast Lough (built in 1851 in imitation of London's great edifice; see picture in Deane, 1924, opposite p. 30).

"deplorable" by Gomme & Walker (1987). Linthouse St Kenneth's, Govan is one of MacGregor Chalmers's classic churches, built in the Romanesque style (sadly it looks rather down-at-heel today). Stepps Parish Church and Cardonald Parish Church were built of red sandstone in a more restrained vernacular style that resonates instantly with the appearance of the Marine Station. His brief for the Marine Station had been to prepare plans for the erection of a "small but elegant and convenient structure, sufficient to meet the immediate requirements of the Station" (Marine Biological Association of the West of Scotland, 1901). Further afield, Chalmers also designed Carnoustie Parish Church and Ardwell Church, Wigtownshire. An expert on the abbeys and cathedrals of Scotland (Chalmers, 1902), he repaired Glenluce Abbey, restored the nave of Iona Cathedral and was architect to Paisley Abbey, overseeing its reconstruction in 1912, up until his death [*http://www.glasgowsculpture.com/pg_biography.php?sub=chalmers_pm*]. As befitted his scholarly interests, Chambers became President of the Architectural Section of the Philosophical Society of Glasgow from 1896 to 1899. He was also interested in archaeology and supervised the (inconclusive) excavation of Peel Park, Kirkintilloch [*http://www.skwebpages.com/stepps/parish.shtml*] for remains of the Roman Antonine Wall. That ancient rampart,

recently proposed as a World Heritage Site (Breeze, 2005), passes through Kirkintilloch along its 56km route from the Forth to the Clyde. According to Gomme & Walker (1968) his wife "ruled her husband with a rod of iron". If the two ladies pictured here (Mrs Reid and Mrs Bell) look fearsome enough, we can only wonder about Mrs Chalmers's appearance.

In light of its designer's background, the fact that the Marine Station at Millport is often mistaken by students and passers-by for an old converted church is, perhaps, not so surprising. The scope for such mistaken assumption has only been compounded, in more recent years, by the insertion of stained-glass windows into the original building as the artistic legacy of Ms Joanna Scott's spending eighteen months as Artist-in-Residence (1983-1984), funded by the Scottish Arts Council. Her four leaded windows commemorate the centenary of the Station (University Marine Biological Station Millport, 1984, p. 28), the 1884 origin of which pre-dated its Millport situation (Hoyle, 1888 and above). These windows variously represent the land-sea transition and, looking up from below, pelagic copepods bouncing against the sea's surface film. It is fitting that Sheina Marshall's own illustrious contribution to the international reputation of the Station (then run by the Scottish Marine Biological Association), through a lifetime spent studying the copepod *Calanus finmarchicus*, was the pivotal inspiration behind that artistry.

The permanent Marine Station at Millport thus began life under the direction of a committee made up of persons (all men) representing a judicious mix of scientific (zoological, botanical, geological, medical), educational, legal and technical skills and business acumen. Similar considerations regarding the composition and ethos of its Board of Management and Advisory Committee have prevailed to the present day; only the male exclusivity having theoretically changed. Glasgow was an extremely vibrant commercial and cultural city in 1896 (the year its underground railway opened and Charles Rennie Mackintosh designed the famous Glasgow School of Art building) (note also Chalmers, 1897). With its wealth built variously on tobacco, cotton, iron, steel and shipbuilding, Glasgow at the time was understandably then dubbed "the second city of Empire" (Oakley, 1975). Glaswegians must have revelled gleefully in the slip made by The Grand Duke Alexis in 1888, when he referred to Glasgow as "the centre of the intelligence of England" (Oakley, 1975). By 1896, though, the year that marked the jubilee of Lord Kelvin's professorship in Glasgow University, such a contention might have felt particularly justifiable. Millport's Marine Station was conceived in this go-getting atmosphere; it was built and managed by men of vision and Victorian (largely canonical progressive) optimism for the future. For instance, the academically inclined among the management team were all members of the British Association for the Advancement of Science: Professor John Young (from 1876), Professor F.O. Bower (from 1888), William Jolly (from 1871), James Gemmill (from 1898), G.F. Scott-Elliot (from 1895) and Malcolm Laurie (from 1892).

RESCUED FROM TROUBLE

Unfortunately, the Millport enterprise soon ran into financial and staffing difficulties ("The troubled years", see Marshall, 1987), one aspect of which has been delineated recently by Moore (2006). The Council of Glasgow's Natural History Society voted (on 28 May 1901) the sum of one guinea towards the maintenance of the Millport

Marine Biological Station, a gesture which two recent Presidents of the Society reported as having been "stingy" (Downie & Tait, 2001). However, that donation should be viewed in its proper historical context. The annual subscription at the time was only 7/6d. That said, the Paisley Naturalists' Society also voted to contribute one guinea to the Marine Station's coffers when their annual membership subscription was only 2/6d. And they had only £6 in the bank at the time (though according to the minutes of the Paisley Society they were very pleased actually to have so substantial a sum as £6 in the bank).

The Marine Station had been in debit balance in 1900 (Marine Biological Association of the West of Scotland, 1902, p. 48). That untenable situation was rescued by two stalwarts: Dr Paul Rottenburg, as a Trustee,[13] and Alexander Somerville (an Honorary Treasurer; 1898-1902), who volunteered additional special donations (of £33 and 10/6d respectively) – amounting to nearly 8% of the annual budget of the Station for the year – in order to balance the books. Any such lifeline gesture these days would cost someone over £100,000. In 1902, Dr Rottenburg and Mr Duncan MacKinnon joined forces to wipe out another deficit the following year (Marshall, 1987, p. 117). Early in that year, as evidenced in a letter to E.T. Browne at Plymouth (dated 2 January 1902), Alexander Gray (who was employed as curator on a salary of £104 p.a. in 1902), seemed distinctly optimistic as to the future of the laboratory.[14]

> Our Chairman, and Treasurer, called on Mr Coats, recently and submitted to him plans of the proposed extension of [the] Station. One plan, the smaller one, was within the £3,500 mark, while the large ideal plan was to cost £6,000. This latter sum was immediately granted, so matters look bright.

James Coats, Jr was a member of the locally influential Coats family that ran the firm of J. & P. Coats Ltd of Paisley (the famous thread manufacturers).[15] This "extraordinarily generous businessman", not only paid-off the debt on the original building but also paid for the circulating seawater system and for additions to the library and laboratory equipment at Millport (Marshall, 1987).

In a similar manner to the Marine Biological Association at Plymouth at about the same time (Southward & Roberts, 1984), the Millport Station's foundations thus have a history of being underpinned by the munificence of individuals. Thomas Reid, Paul Rottenburg, Alexander Somerville, Duncan MacKinnon and James Coats, Jr were people sufficiently dedicated to the concept and appeal of the Marine Station at Millport to dig ever deeper into their pockets to support it financially. The Marine Station was fortunate in having such ardent benefactors in the closing years of the nineteenth and early years of the twentieth centuries. In more recent years, in like vein, it is appropriate to pay tribute to the generosity of late Dr Sheina McAlister Marshall, FRS (1896-1977).[16] In her last will, Sheina bequeathed not only her house, "Bellevue" (Marine Parade, Millport), to the Marine Station (now the Director's house) but also funding sufficient to underwrite the Sheina Marshall Studentships that several of Millport's Ph.D. students currently enjoy (as well as establishing the S.M. Marshall & A.P. Orr bequest in the Royal Society). After Sheina's death, her younger sister Dorothy, also kindly donated considerable numbers of books (each now bearing Sheina's bookplate) to the Marine Station's library. In recognition of Sheina's achievements and contributions, the Marine Station's library was posthumously designated in her honour

the Sheina Marshall library (adjacent to the A.P. Orr Common Room). The very existence of the fabric of the building stands as a memorial to all those earlier philanthropists whose timely interventions with financial support this paper salutes.

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NOTES

[1] Not to be confused with another Scot of the same name, The Revd Dr George McCrie, who published on religious themes in literature (McCrie, 1857) and also wrote poetry, including an execrable Ode to Hugh Miller, the Cromarty stonemason and geologist. Unfortunately the Revd McCrie did not know much about geology and, at the same time, he was an extreme believer in special creation (Lamont, 1947).

[2] It was Robert's father, James Gourlay (1804-1871), who had been famously instrumental, together with the Provost Robert Stewart, in securing (1859) the purest potable water supply for the city of Glasgow from Loch Katrine in the Trossachs (instead of L. Lubnaig, Strathyre). That victory was secured only after a lengthy legal tussle, fought when James Gourlay was Bailie to the Town Council. He turned to banking later in life, coming out of retirement to manage the Bank of Scotland in Glasgow (MacLehose, 1886, pp. 149-152). Robert thus followed in family tradition not only as a banker but also as one who had interests in management of watery matters.

[3] There is huge scope for confusion here with another geologist of the same name, working in Glasgow at the same time. John Young LL.D., F.G.S. (1823-1900) obtained, with the influence of Lord Kelvin, the post of Assistant Keeper of the Hunterian Museum in Glasgow (Macnair & Mort, 1908). Professor John Young, M.D. resigned from the Chair of Natural History early in 1902, when his memory and speech became impaired (he died 13 December 1902). He did not resign the Keepership of the Hunterian Museum, however, wanting to die in post (Prof. K. Vickerman, pers. comm. to PGM). Incidentally, Professor John Young had succeeded Henry

Darwin Rogers, F.R.S.E. (1806-1866) to the Regius Chair of Natural History in Glasgow University. Rogers had occupied it from 1857 to 1866 and was probably the first native American ever to be appointed to a University Chair in Europe.

[4] Reid was not the only one with such a background. Sir William Turner (1832-1916), who was for thirty-six years Professor of Anatomy in the University of Edinburgh, was also the son of a cabinet-maker. A student of Thomas Henry Huxley (1825-1895), Patrick Geddes (1854-1932) - biologist, town planner and re-educator, who is now regarded a father figure of the environmental education movement - had also spent boyhood mornings "in the shop of a professional cabinet-maker", where he "quickly developed a skill to match his interest in building things" (Boardman, 1978). Patrick Geddes's own protégé and later life-long collaborator, J. Arthur Thomson (1860-1931), became Vice-President of the Marine Biological Association of the West of Scotland in 1912 (having been a member since 1904). Earlier in life, whilst a lecturer in zoology at Edinburgh University's school of medicine, he (complementing Geddes's classes on botany) had conducted summer courses in practical zoology on board *The Ark* during her period as the Scottish Marine Station for Scientific Research at Granton (Speak, 2003, p. 24).

[5] Another with a Clyde marine biological link (note Moore, 2005).

[6] The Scott Elliot family papers are housed in the National Library of Scotland (Acc. 10831) and include papers (1862-1934) relating to the career of GFSE: including photographs, certificates, press cuttings and some material relating to his wife, Annie Johnston Stewart (ref. 31), as well as an article referring to his mountaineering activities (ref. 32) (Mr James Williams, pers. comm. to PGM, redirected via David Devereux).

[7] His essays are currently housed in Glasgow University's archives (ref. ACCN 2561).

[8] Blackie was the "diminutive and discursive" Professor of Greek at Edinburgh University, an "ardent Grecian and more ardent and picturesque Gael", who "for thirty years had delighted and diverted his students with his exhibition of Hellenic versatility, not omitting some teaching of the Greek language" (Turner, 1933).

[9] The grandfather of Dr James S. Buchanan (now at Roslin, Midlothian) who, continuing his family tradition, has served in more recent years on the Advisory Committee of U.M.B.S. Millport.

[10] Most of Anderson's College was gradually incorporated into Glasgow Royal Technical College which eventually, in 1964, became the University of Strathclyde. Anderson's College Medical School (founded in 1877), however, was incorporated into the Medical Faculty of the University of Glasgow in 1947.

[11] The archives of the firm of W. and J. Martin Ltd (1897-1981), leather merchants, tanners and footwear manufacturers (latterly of Bridge of Weir, Renfrewshire; previously of Brunswick St, Glasgow) are housed in Glasgow University Archives (GB 0248 UGD 167).

[12] Whether there was any family connexion between the Aitons who were Glasgow solicitors and the famous lineage of Scottish botanists of the same name (William Aiton (1731-1793) and his son William Townsend Aiton (1766-1849) who succeeded him as Director at Kew Gardens, prior to the Hookers) is unknown to us.

[13] Paul Rottenburg, LLD was a chemical merchant, "Free-Trader" and one-time President of Glasgow's Chamber of Commerce (Marshall, 1987, p. 117; Manz, 2002) not, as previously

understood by Moore & Hancock (2004), a "society photographer"; although photography was clearly a hobby of his. Besides taking an interest in Millport's Marine Biological Station he was also a life member of the Geological Society of Glasgow, having joined in 1875 (Macnair & Mort, 1908, p. 292).

[14] Letter from Alexander Gray at Millport to E. T. Browne at Plymouth, dated 2 January 1902 (National Marine Biological Library archives, Plymouth).

[15] A backroom benefactor, James Coats made his donations anonymously (although clearly people close to the situation knew perfectly well from whom the benevolence stemmed). He was also involved, together with his brother Andrew, in the financial support of the Scottish National Antarctic Expedition that set out from Troon in the S.Y. *Scotia* under W. S. Bruce in November 1902 (Speak, 2003). Coats Land in Antarctica remains their geographical legacy. The Coats family members were ardent Baptists and philanthropists. Interestingly, in 1900, James Coats gave a library of books to each Board School in Scotland, on condition they contain 'no religious works' (Ross, 2002). Thomas Coats, a younger brother of James, however, is memorialised in the Thomas Coats Memorial Church in Paisley, the so-called "Baptist Cathedral of Europe".

[16] James Gemmill was a good friend of Sheina Marshall's father, Dr John Nairn Marshall; a much-loved and widely respected family doctor in Rothesay, Isle of Bute (Moore & Hancock, 2004; Moore, 2006).

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The Linnean Society
Programme

2007

25th January	6pm*	LINNAEUS' GLOBAL REACH Sandy Knapp FLS
19th Feb. Monday	6pm*	CLIMATE CHANGE Sir David King FRS
1st March	6pm	ROCKS, PLANTS AND ANTIQUITY: SIR JOSEPH BANKS IN WALES, 1763-73. Dai Morgan Evans FSA Joint St David's Day Evening Meeting with the Society of Antiquaries and the Geological Society at the Geological Society
8th March	6pm	BUTTERFLIES, ART AND LINNAEAN SYSTEMATICS IN 18TH CENTURY ENGLAND: THE ACHIEVEMENTS OF HENRY SEYMER, THOMAS ROBINS JR AND WILLIAM JONES. Dick Vane-Wright FLS
22nd March	6pm	DISCOVERING THE FORSTERS: LOCATING AND MAPPING THE EVIDENCE FROM JOHN STREET TO THE PACIFIC Graham Jefcoate FRSA Joint evening meeting with the Society for the History of Natural History and the RSA William Shipley Group
16-17th April Monday & Tuesday		PLANT GENOME HORIZONS – VISTAS AND VISIONS Two day meeting to mark the retirement of Prof. Mike Bennett FLS (both days at the Jodrell Laboratory, RBG, Kew) † Michael Fay FLS and Ilia Leitch FLS
19th April	6pm	FAR FROM MODERATE – THE HUMAN IMPACT ON THE NATURAL ENVIRONMENT OF THE FALKLAND ISLANDS AND SOUTH GEORGIA Stephen Palmer FLS
23rd April Monday		DARK ENERGY AND THE HISTORY OF CHEMOSYNTHETIC LIFE IN THE DEEP SEA Joint afternoon meeting at the Geological Society – followed by an evening reception at the Linnean Society † Brian Rosen FLS and Crispin Little

† organiser * Election of new Fellows

Unless stated otherwise, all meetings are held in the Society's Rooms. Evening meetings start at 6 pm with tea available in the library from 5.30. For further details please contact the Society office or consult the website – address inside the front cover.

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