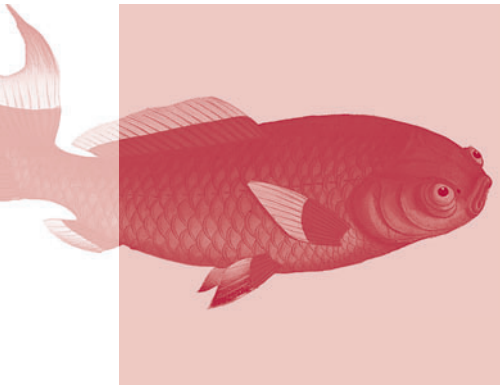
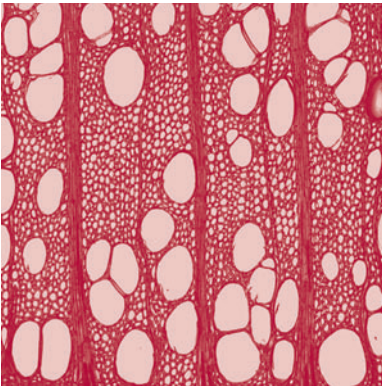




# The Linnean



*Carl Linnaeus*  
1707-1778

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 B G Gardiner

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## Editorial

The main article in this New Year issue of *The Linnean* concerns the history of the Marine Station at Millport. It charts the appointment of the first Director, Stephan Pace and the schism which developed between the membership of the Marine Biological Association of the West of Scotland (MBAWS), that is the amateur marine naturalists, and the university types or professionals such as Pace, over the future role of the Marine Station.

The Station itself had been established on the Isle of Cumbrae in the spring of 1885 (see *The Linnean* 18-4) under the auspices of the MBAWS the forerunner of what later (1914) became the Scottish Marine Biological Association (SMBA). By the 1950s the SMBA was well equipped and possessed both a deep sea trawler (MV *Calanus*) and an estuarine fishing boat (MV *Mizpah*). In 1970 the SMBA moved out of the Millport laboratory into purpose built accommodation at Dunstaffnage, near Oban. The vacant facility at Millport was taken over by the Universities of London and Glasgow, jointly, under the title The University Marine Biological Station, Millport (UMBSM). Today it is a national facility for both undergraduate and postgraduate students, offering them intensive fieldwork training. It also plays host to several overseas institutions.

There are two shorter articles, one on Braad by Jeremy Franks and a second on sturgeons. The article on Braad is really a continuation of the previous three articles. It deals with Braad's investigation of possible trade between the Swedish East India Company and the Indian sub-continent. It also contains an autobiographical account of Braad's travels in western India and tells how the voyage was a great trading success and how his first super cargo's share brought him enough to retire on.

The article on sturgeons and caviare deals with the distribution of the 17 species of *Acipenser*, their characteristics and the fact that they are classified as critically endangered by IUCN and protected under CITES.

Finally, mention must be made of the Picture Quiz which deals with Sir Thomas Makdougall Brisbane, who during his brief sojourn as Governor General of New South Wales and the dependent territory of Van Dieman's Land, changed the whole ethos of what Australia should be used for. In Brisbane's estimation it was not intended for emancipists or ticket-of-leave men, but for immigrants and adventurers with the desire for hard work. He founded, on the banks of the Brisbane River, a new penal colony with the aid of £200,000 a year to support the convicts. He also built near Sydney at his own expense, what has been described as "the first efficient Australian Observatory" from which he observed both the transit of Mercury and the winter solstice.

BRIAN GARDINER

Editor

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## Society News

**Development News.** Although it has taken us longer than planned we have continued through the autumn to get our Collections ready for digitisation. We have now signed contracts with the Natural History Museum and work will have started by the time that you receive this. As you will all know we are committed to making available on the web as much as possible of the material that we hold. It is an exciting project and we are most grateful to the Lisbet Rausing Charitable Fund for enabling us to take our first steps on what is going to be a long road. To make sure that our activities are properly publicised, and that we have the resources we need to keep the process moving forward, we are now recruiting a development manager who will be an important member of our team over the next few years.

**Legacies.** We are delighted to report that the Society has received its largest ever legacy under the terms of the Will of Elinor (Nora) McMillan. As some Fellows will know, particularly those in the Merseyside area, Nora was a very capable marine biologist, and a valued member of our Society. She particularly wanted her legacy to benefit the library and we will ensure that her wishes are carried out. We intend to commemorate her name, although we have not yet decided in what way – ideas from Fellows will be welcome.

Nora's generosity does of course highlight how valuable a form of support legacies are, particularly when we are struggling to find the resources we must have in order to develop the Society. We do encourage other Fellows to think about leaving a legacy to the Linnean Society. One important point to bear in mind is that we are a charity with a long-term agenda – we have already promoted biology over many generations and intend to benefit many more to come.

**Building Works – Courtyard.** Building work on our side of the Courtyard at Burlington House is now largely completed. The scaffolding is down except for the hoarding along Piccadilly and the whole building looks very fine. It is fitting that the completion of this work coincided with an opportunity to acquire a painting by Barry of the Courtyard as it appeared shortly after the building was completed. The painting is now on display in the library and we invite you to come and see it when you visit Burlington House.

**Building Works – Society's Rooms.** We are also making progress with the refurbishment of our own Rooms. All the work outlined in the last *Linnean* has now been done. We have completed asbestos removal works, upgraded our heating system and have created the Smith Herbarium with high quality furnishings and climate control in two of the basement rooms. In the New Year we shall start renovating the second floor and then move on to the Meeting Room and the library. We hope that most of our premises will look quite different by 2007.

**Corporate Design.** Another on-going project is the introduction of a new corporate design, and you should see the first fruits of it on the cover of this issue of *The Linnean* as well as the new lecture card. A new suite of brochures will then follow and we intend to present a more coherent image of the Society in future.

**The List of the Linnean Society.** The new List should reach you along with this issue of *The Linnean*, together with the new Charter and Byelaws, which includes the

2005 Charter as well as the new version of the Byelaws agreed last May.

**Conversazione.** We are all most grateful to the President who kindly hosted this year's *Conversazione* at Chester Zoo. The 15<sup>th</sup> October was an almost perfect early autumn day and the Zoo was busy but not crowded. Nearly 70 people participated and the President gave a fascinating presentation on the Zoo before the various tours. The staff made us all feel very welcome and the food was excellent, so all in all it was a most enjoyable occasion.

**Recent Lectures and Christmas.** It has been good to see some real products of nature here this autumn: there was a very fine display of cyclamens at the lecture in September by Robin Clery and Trevor Wiltshire, then the Brogdale Trust were kind enough to bring in a good range of apples for the very interesting Brogdale Lecture by Rick Walden on 26<sup>th</sup> November. The year has ended with something of a flourish as the Meeting Room has been full to capacity for our last three public events. We had an outstanding presentation by Chris Stringer FLS FRS on 17<sup>th</sup> November, and star-studded teams to debate *The PhyloCode vs. the Linnaean Code* on 5<sup>th</sup> December thanks to the efforts of Quentin Wheeler FLS. The year's events ended with the long delayed Hooker Lecture, which was given by Henry Noltie on Thursday, 8<sup>th</sup> December. Henry spoke absorbingly on the work and collections of Robert Wight in India and after the Lecture we enjoyed a Christmas get-together as well as the annual book sale.

**Forthcoming Events.** We look forward to equally interesting events in 2006. Our first meeting will feature Wendy Moore speaking on John Hunter, the pioneer surgeon – many Fellows will already have seen the book Wendy recently published on Hunter. Our second lecture will also have a zoological theme, when Eve Southward FLS and Andrew Campbell FLS launch the Synopsis volume on Echinoderms. Our first talk with a botanical focus will be in March when Aljos Farjon FLS describes a recent expedition and talks on the Flora of the Central Sahara. At the end of March we shall then have a high profile event in collaboration with the Royal Institution when Professor Roy Anderson FRS will speak on Planning for Pandemics.

ADRIAN THOMAS  
Executive Secretary

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## Library

We are glad to say that we have now emerged once more into the daylight but building work will still be continuing to disrupt our working days. The basement journal stores are once more accessible and have been cleaned to some extent. Many manuscript collections still remain in temporary storage but we hope to be able to give them better and more accessible accommodation as the Smithian Herbarium is moved to its new store.

From the beginning of May to the end of November 2005 the Library was open for 141 days during which 408 visitors (202 FLS) were recorded. This gives a visitor/day figure of 2.9 a day as compared to the previous figure of 2.6. The percentage of Fellows among those using the library was 49.5%, slightly up on the previous figure

of 48%. Loans during this period were 128. Visits to access manuscripts numbered 34 and included visitors from Portugal, Sweden and USA, as well as the UK.

General Library use included a display of botanical art by the Jill Smythies medal winner at the Anniversary meeting, and displays from the collections for Society general meetings and visiting groups. Images of some of these are now available on the Society's web pages under the 'Using the Library' page as 'Current library displays'. Group tours and pre-booked visits included medical students from the Karolinska Institute, Stockholm, the University of Maryland, Harvard University, Imperial College, the Royal Society of Chemistry Marketing Group, the North of England Zoological Society, Friends of Galapagos, the Taunton branch of the National Trust, the Bibliographic Society and the History of Printing Society. A number of other Swedish visitors concerned with Tercentenary activities also made appointments to see the collections. Fellows or others wishing to book a group tour of the collections are asked to contact the Library staff to find a suitable date and time.

Open House London on 17 September brought in 390 people from 23 countries. Thanks are expressed to staff and volunteers who gave their services that day as guides or stewards. The Big Draw on 7 October was a smaller event but our talented volunteers, Rebecca Jewell and Sandy Ross Sykes helped to develop the skills of both novices and more experienced artists and all helped to create a large paper banner with leaf prints and drawings which was hung in the stairwell at the end of an exciting day. We hope to participate in both events again next autumn so do look out for those next year.

***Donations to the end of November 2005***  
***(donors shown in bold)***

The book sale offerings have been 'skimmed', as usual, for books we can use to fill gaps in our holdings. This year a number of major donations have also been received but have not yet been catalogued or listed. These include a large number of evolutionary biology books from Joe Cain, extensive and wide ranging Palynology books from Keith Ferguson and a number of zoological or more general biology works from Ian Linn and from Pat and Mary Morris. It has not been possible to catalogue these yet but, as they are processed, the accession records will include the source of the donation. In some cases we have been able to identify things which we already hold but which we know are wanted by other Institutions. These are set on one side to be passed to their new homes.

We continue to be grateful for those who keep us up to date with journals. These include Prof. Mark Seaward, whose gifts of the *Yorkshire Naturalist Bulletin* and *Rare and Scarce Bird Reports* keep our long runs up to date. Dr Stephen Jury has also passed on to us a large collection of serials which will supplement some of our North American and other botanical holdings. Prof. Sir Ghilleen Prance has added a welcome new journal to our holdings by passing on to us the *Journal of Biogeography* and has brought our phycological holdings up to date with a run of the *European Journal of Phycology*. The London Natural History Society continues to present its publications and we thank all others who help us keep up our serial holdings.

GINA DOUGLAS  
Librarian and Archivist

***The following books have been received in recent months:***

**Paolo A.V. Borges:** Borges, P.V. (et al.) *Listagem da Fauna e Flora (Mollusca e Arthropoda) (Bryophyta, Pteridophyta & Spermatophyta) Terrestres dos Açores*, 318 pp., map, Horta, Direcção Regional do Ambiente, 2005. ISBN 972-8612-22-2.

**John Burton:** Taylor, Moss, *Guardian spirit of the East Bank, a celebration of the life of R.A. Richardson*, 232 pp. illustr. some col., Norfolk, Wren Publishing, 2002. ISBN 0-9542545-0-3.

United Nations Environment Programme, *Pacific Islands Environment Outlook*, compiled by Gerald Miles, 65 pp., maps, Mexico D.F., UNEP, 1999. ISBN 92-807-1792-8.

**British Myriapod Group:** British Myriapod Group, *Bulletin of the British Myriapod and Isopod group (special volume; memorial meeting for E.H. Easton and J. Gordon Blower)*, 88 pp., illustr., Vol. 19, 2003. ISSN 1475-1739.

**Edinburgh, Royal Botanic Garden:** Cullen, James, *Hardy Rhododendron species, a guide to identification*, 496 pp., col. illustr., Portland Or., Timber Press & RBGE, 2005. ISBN 0-88192-728-6.

Henderson, D.M. & Watling, R., Eds, *British Fungus Flora agarics and boleti: 1-Boletes and their allies*. (revised and enlarged edition by R.Watling and A.E.Hills, assisted by E.Turnbull), 172 pp. illustr., Edinburgh, Royal Botanic Garden, 2005. ISBN 1-872291-89-9.

Henderson, D.M., Orton, P.D & Watling, R., Eds, *British Fungus Flora agarics and boleti: 9 - Russulaceae: Lactarius*, by R.W. Rayner assisted by R.Watling & E.Turnbull, 203 pp., illustr., Edinburgh, Royal Botanic Garden, 2005. ISBN 1-872291-34-1.

**Dr John Edmondson:** Sennikov, A.N. & Geltman, D.V., *Studies of the flora of East Europe: achievements and prospects*, (Conference abstracts, St Petersburg, May 2005) 111 pp., Moscow & St Petersburg, 2005. ISBN 5-87317-206-4.

**Dr Paul Foster:** Foster, Paul and Standing, David, *Landscape and labour; Gilbert White's garden 1751-1793*, (Selborne papers No.2), 31 p., illustr., maps, Selborne, Gilbert White's House and The Oates Museum, 2005. ISBN 0-9506971-7-6.

**Dr Dai Herbert & Dr Dick Kilburn:** Herbert, Dai and Kilburn, Dick, *Field guide to the land snails and slugs of Eastern South Africa*, 336 pp., col. illustr., maps, Pietermaritzburg, Natal Museum, 2004. ISBN 0-620-3241-5-5.

**Dr Jeremy Holloway and Henry S. Barlow:** Jeremy Holloway and Henry S. Barlow, *The moths of Borneo*, Parts 15 and 16, Noctuidae, Catocalinae, 528 pp. Malayan Nature Journal, Vol. 58, 1-4, Kuala Lumpur, Malaysian Nature Society and Southdene Sdn. Bhd., 2005. ISBN 983-40053-7-7.

**Erich Hoyt:** Hoyt, Erich, *Marine protected areas for whales, dolphins and porpoises, a world handbook for Cetacean habitat conservation*, 492 pp., illustr. some col., maps, London, Earthscan, 2005. ISBN 1-84407-064-6.

**Dr Stephen Jury:** New Delhi, National Institute of Science Communication, *The Wealth of India*, first suppl. Series (Raw Materials), Vol. 1 A-G, 283 pp., New Delhi, NISC, 2000. ISBN 81-7236-208-0.

Rikli, M., *Das Pflanzenkleid der Mittelmeerländer*, Bd. 3., Bern, Verlag Hans Huber, 1948.

Rychnovska, M. & Ulehlova, B., *Vegetace CSSR A8: autökologické studie der Tschechoslowakischen Stipa-Arten*, 170 pp., Praha, Akademie Verlag der Tschechoslowakischen Akademie der Wissenschaften, 1975.

**Kew, Royal Botanic Gardens:** Legon, N.W. & Henrici, A., *Checklist of the British and Irish Basidiomycota*, 517 pp., Richmond, RGB Kew, 2005. ISBN 1-84246-121-4.

McAllister, Hugh, *The genus Sorbus, mountain ash and other rowans*, (a Botanical Magazine publication edited by Brian Mathew), 252 pp., illustr. some col., Richmond, RBG Kew, 2005. ISBN 1-84246-088-0.

**Prof. J.B. Lincecum:** Lincecum, J.B., Philips, E.H. & Redshaw, P.A., eds., *Science on the frontier: observations of Dr Gideon Lincecum*, 211 pp., College Station, Texas A&M University Press, 1997. ISBN 0-89096-768-7.

**Prof. Gren Ll. Lucas:** Nature Conservancy Council, *Guidelines for selection of biological SSSIs*, (reprinted & revised), 287 pp., illustr., map, Peterborough, JNCC, 1998. ISBN 1-873701-72-1.

Vines, Gail, *Herbal Harvests, towards sustainable sources for medicinal plants*, 10 pp., col. illustr., Salisbury, Plantlife, (2004). ISBN 1-904749-00-3.

Cunningham, A.B., *Applied ethnobotany, people, wild plant use and conservation*, 300 pp., illustr., maps, London, Earthscan, 2001. ISBN 1-85383-607-4.

Roux, J.P., *Conspectus of Southern African Pteridophyta*, Sabonet No. 13, 222 pp. illustr., maps, Pretoria, SABONET, 2001. ISBN 1-919795-58-8.

**Dr Ravi Mandalam:** Mandalam, Ravi, Davidson, G.W.H & Regis, Patricia, Eds., *East Kinabalu, Royal Society Expeditions 40<sup>th</sup> Anniversary monograph*, 144 pp., illustr., col. frontisp., maps, Kota Kinabalu, The Sabah Society, 2005. ISBN 967-99947-9-1.

**Maycock, Roy:** Maycock, Roy and Woods, Aaron, *A checklist of the plants of Buckinghamshire (including Milton Keynes and Slough)*, unpagged, col. illustr., map, Milton Keynes, Milton Keynes Natural History Society, 2005. ISBN 0-9538787-1-6.

**Dr E.C.Nelson:** Brinken, Julius, *Mémoire Descriptif sur la Forêt Impériale de Bialowieza en Lithuanie*, (reissue of 1826 publication, edited by Piotr Daszkiewicz, Bogumila Jędrzejewska and Tomasz Samojlik), 144 pp., illustr., map, Paris, Ed. Epigraf, 2004. ISBN 2-9521102-1-2.

**David Pearman:** Edwards, Bryan and Pearman, David, *Dorset rare plants register*, 108 pp., col. illustr., maps, Dorchester, Dorset Records Office and BSBI, 2004. ISBN 0-951-1394-5-2.

**Dr Eugene Potapov:** Potapov, Eugene & Sale, Richard, *The Gyrfalcon*, 288 pp., illustr., New Haven, Yale University Press, 2005. ISBN 0-300-10778-1.

**Tom Reynolds:** Reynolds, Tom, *Aloes: the genus Aloe*, 386 pp., illustr., some col., Boca Raton, CRC Press, 2004. ISBN 0-415-30672-8.

**Dick Vane-Wright:** Vane-Wright, R.I. & Hughes, H.W.D., *The Seymer legacy*, 320 pp., illustr. some col., Cardigan, Forrest Text, 2005. ISBN 0-95550740-3-7.



**Dr Carlo Violani:** Rovati, Clementina and Violani, Carlo, *Leopoldo Maggi (1840–1905) una lezione per imagine*, (Catalogue of an exhibition at Castello Visconteo), 120 pp., col. illustr., Pavia, Università degli Studi di Pavia, 2005.

**Andrea Wulf:** Wulf, Andrea and Gieben-Gamal, Emma, *This Other Eden. Seven Great Gardens and 300 Years of English History*, 480 pp., illustr., London Little Brown, 2005. ISBN 03167-25803.

## Picture Quiz

### Lieutenant-General, Sir Thomas Makdougall Brisbane (23<sup>rd</sup> July 1773 – 27<sup>th</sup> January 1860)

Thomas Brisbane was born at Brisbane House, near Large, Ayrshire on the 23<sup>rd</sup> July 1773, the eldest son of Thomas Brisbane and his wife Elanor, the daughter of Sir William Bruce of Stenhouse. His initial education was by private tutor and afterwards Edinburgh University where he read mathematics. Upon graduation he entered the army in 1792 via a military academy in Kensington and was gazetted ensign in the 38<sup>th</sup> Regiment. His military career was meteoric and by 1792 he reached the rank of Captain whilst serving in Flanders under the Duke of York. From here he served as Major General with distinction in the West Indies under Sir Ralph Abercrombie. This command lost him the opportunity of taking part in the Battle of Waterloo, however, he subsequently served under Wellington in the peninsular war and was wounded in the battle for Toulouse.



Clue: Said to be responsible for the beginnings of science in Australia.

On the eventual withdrawal of the army of occupation he returned to Scotland where, in 1821, he was appointed by the British Government, Governor-General of New South Wales. His short sojourn as Governor (1821–1825) marked an important era for Australian history since, during his term in office, emigration facilitated by free passages commenced. Moreover, he changed the ethos of the four naval captains who had preceded him; they had maintained that Australia was intended for emancipists or ticket-of-leave men, and actively discouraged immigration whilst superintending the convict establishment. Brisbane on the other hand welcomed the immigrants and adventurers. Consequently, by the time he left the colony of 12,000 inhabitants, that he had inherited from the naval captains, had grown to 36,000 souls,



Clue: Darwin thought his geology bad and his zoology worse!

mainly free immigrants with capital and the desire for hard work. Brisbane introduced the cultivation of vineyards, sugar cane and tobacco plantations and encouraged the rearing of livestock, particularly horses and donkeys. Meanwhile, he arranged for the coast to the north to be surveyed. Here on the banks of the Brisbane River he founded a new penal colony with the aid of a Government subsidy of £200,000 a year to support the convicts. Some of this money he used to import corn from India.

On his appointment as Governor he had at his own expense, built at Paramatta near Sydney, what has been described as “the first efficient Australian observatory” from which he observed the transit of Mercury and the winter solstice. Sadly the observatory was demolished in 1855 and an obelisk erected to mark the site. As a sequel to this episode Sir John Herschel pointed out that Brisbane was undoubtedly the founder of Australian science. Be that as it may, Brisbane’s short tenure as Governor came to an end with complaints of favouritism and on 1<sup>st</sup> December 1825 he left for England, where, upon arrival in Scotland, he was made Colonel of the 34<sup>th</sup> Regiment.

In his lifetime Brisbane built three observatories: the first as long ago as 1805 at his Scottish home following his return from the army due to ill health. The second was in Paramatta, referred to above, while the third he built at Markerstoun near Kelso in 1841, where as a consequence of his observations, Scotland became a participant in the elucidation of terrestrial magnetism initiated by Humbolt in 1837.

Brisbane was elected FRS in 1810 and was created a baronet in 1836 and a G.C.B. in 1837. His obituary described him as possessing a zeal for education and as

someone whose acts were always indicative of a gentleman. He was elected a Fellow of the Linnean Society on 5<sup>th</sup> June 1821, his form having been signed by Alexander Macleay, Joseph Sabine, T. Forster, Thomas Hare, Thomas Horsfield, Edward Sabine and John Deas Thomson.

Much of the above information has been extracted from the Oxford Dictionary of National Biography.

BRIAN GARDINER

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## Correspondence

From: KEES ROOKMAAKER

University Museum of Zoology,  
Cambridge. 3 October 2005.

As stated in Gavin Bridson's letter (*The Linnean* July 21(3) page 12), iconographic collections of animal representations were more commonly used in the 19th century than is commonly realized. It gave the naturalist a chance to compare the likeness of a selection of species, of which in many cases actual specimens were unobtainable or extremely expensive. The Artis Library in Amsterdam has one of the largest such collections encompassing the entire animal kingdom. This *Iconographia Zoologica* contains an estimated 100,000 prints stored in 226 boxes arranged according to systematic position. It was founded by T.G. van Lidth de Jeude and continued by Robert T. Maitland.

I came across a reference to a similar collection of plates illustrating birds begun by Georges Cuvier in Paris and expanded by Du Bus in Brussels, while summarizing the correspondence of Hugh E. Strickland. The letter concerned is part of the material donated by Strickland's widow to the University Museum of Zoology, Cambridge, in 1867, consisting of 6006 bird skins, his manuscripts and letters which he received from naturalists around the globe. Bernard Leonard Du Bus de Gisignies (1808–1874), Director of the Royal Museum of Natural History in Brussels 1846–1867, wrote on 8 May 1847 that he had abandoned a first attempt to collect original and coloured depictions of all bird species due to the expense. He took up the project again in summer 1846 when he was fortunate enough to buy, in the sale of the books of Frederic Cuvier, the collection of coloured bird drawings brought together by Georges Cuvier, including all the plates of Buffon and Temminck, many of them annotated.

Du Bus asks Strickland's assistance to obtain plates from works published in England. It appears therefore that Cuvier not only maintained a paper museum of paleontological specimens, but also one of birds (and other groups?), possibly helping him to compile his *Règne Animal*. The collection may still be in Belgium, but its whereabouts are unknown to me.

These iconographic collections are a cataloguer's nightmare because the origin of the plates is rarely recorded and animal names have changed in time. Archival material in zoological institutions is often poorly indexed and even large collections will only be found by chance. However, they give an important insight into the making of science in the 19th century.

From: PAUL HOLLIDAY

Uppingham LE15 9SF  
14 January 2005

*The Germ Theory of Disease*

In the piece on Johann Christian Fabricius (*The Linnean* 21(1): 9) no mention is made of his important contribution to plant pathology and this theory. Virtually all Biology, English, one volume texts, if indeed they ever refer to the theory, never refer to the diseases of plant crops. They may only refer to Louis Pasteur (born 1822) and Robert Koch (1843). But those who gave written evidence in support of the theory mostly studied plants. They are all described in the series: *Phytopathological Classics* published by the American Phytopathological Society. Number 1 is on Fabricius (1745) who wrote a paper on diseases of plants. This gives the identical portrait that is reproduced in *The Linnean* article.

Other workers who studied the same or similar diseases are all described in this series. They are: Targioni-Tozzetti (1712), Fontana (1730), Tillet (c.1730), Prevost (1755), Bassi (1773, silkworms), Berkeley (1803) and de Bary (1831). The literature on the evidence in support of the theory almost always confines itself to citing Pasteur and Koch on man and other animals. Only Large has pointed out this anomaly: p321: "... it was well that the medical profession should be reminded from time to time that one of the commonest diseases of wheat was attributed to the parasitism of a living organism over a hundred years before Pasteur." The complex investigations in support of the germ theory of disease rank with the work of Darwin, Mendel and Wallace in the growth of biological knowledge.

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From: SIR CHRISTOPHER ZEEMAN FRS

Hertford College, Oxford.  
1 November 2005

I was most grateful to read the letter from Professor Edwards, warning of the dangers of hill-climbing analysis in evolution, and drawing my attention to RA Fisher's book *The Genetical Theory of Natural Selection*, which I confess I have not yet read, and will now do so.

Alas, I cannot remember discussing evolution with Fisher when we were both Fellows of Caius together, which is surprising because we always used to sit next to each other at dinner, discussing everything under the sun. I remember he was particularly interested in plate tectonics, well before it became fashionable. I was a

pure mathematician at that time, and only moved into dynamical systems and catastrophe theory in 1968. Fisher used to enjoy playing Socrates with me, asking me a series of questions that would slowly lead me into a trap; just before the trap closed he would stroke his beard with anticipation, and I knew the next question would floor me, much to our mutual amusement.

He loved to think geometrically, in spite of (or even because of) his poor eyesight and thick lenses, and used to convert his statistical problems into geometric problems which he then gave to me to solve. One day he asked me how many equal sized balls could be put to touch a ball in 9-dimensions? He reckoned that the answer in  $n$ -dimensions was  $n(n+1)$  because in 1-dimension 2 intervals can touch an interval, in 2-dimensions 6 discs can touch a disc, and in 3-dimensions 12 balls can touch a ball. So in 9-dimensions he thought the answer was 90. What he didn't know (but I did) was that in 3-dimensions they can rattle a bit. I thought that by the time we got up to 9-dimensions I could probably rattle them sufficiently to slip in another one. So in the Caius Betting Book you will find a bet that "Dr Zeeman bets Professor Fisher that he can put 91 balls to touch a ball in 9-dimensions."

Now Caius bets are settled by the Junior Fellow, who discusses with the winner his choice of bottle of wine, for which loser pays, and the three then drink. (When I was Junior Fellow I educated myself in wine by settling many old outstanding bets.)

Anyway that evening I found 128 balls touching a ball in 8-dimensions which one could then just put round the equator in 9-dimensions\*. I wrote out the coordinates on a little card which I gave to Fisher at dinner the following evening. He flung the card on the floor and demanded, "Show me the proof." I replied, "You just flung it on the floor." That was the only time he ever lost his temper with me; he was notorious for losing his temper with others, but to me he was always very sweet.

Ronald Fisher was a great scientist, and it has been a deep regret to me that when I became interested in the application of catastrophe theory to evolution it was too late to discuss it with him. I agree with Professor Edwards that Fisher would have been intrigued by catastrophe theory, and particularly its application to plate tectonics.

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\*Balls of radius 1 centred at the 128 alternate vertices of an 8-dimensional cube of edge  $\sqrt{2}$  touch each other and all touch a ball of radius 1 at the centre.

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*Catastrophe and Evolution*

I have read with much interest the paper on catastrophe theory applied to Darwinian evolution by Christopher Zeeman in the July Linnean. However having climbed through many tree lines on mountains I cannot accept that they provide good examples of "abrupt frontiers between different species occupying the same ecological niche".

Trees and grasses are only distantly related but the later discussion concerns species which are closely related, so Zeeman appears to be referring to subordinate

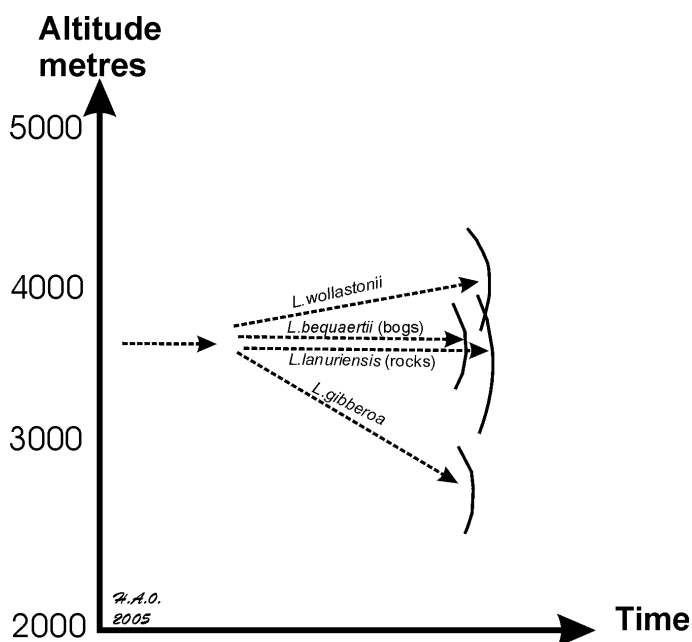


Figure 1. *Lobelia* spp. on the Rwenzori Mountains (Uganda & Congo) Altitude ranges from Flora of Tropical East Africa, Hedberg (1957), Knox & Palmer (1998) and personal observations. The grouping represents their possible evolutionary relationships (Knox & Palmer 1998).

species in these two communities. In either case they can hardly be considered to be occupying the same ecological niche on each side of the tree line, in two such different communities, the line itself often being determined by fire, grazing or frost besides general climate.

Generally on mountains, such sharp altitudinal boundaries between closely related species are uncommon unless accompanied by concurrent edaphic or other differences. Even Darwin<sup>1</sup> in more general circumstances wrote only of “a comparatively narrow neutral territory between them”. An instructive example is provided by the giant *Lobelia* of the East African mountains where the species are evidently closely related, but occupy successive parts of a primarily altitudinal gradient. On the Rwenzori Mountains (Uganda and Congo) four species occur: *L. gibberoa*, *L. stuhlmannii* (syn. *L. lanuriensis*), *L. bequaertii* (syn. *L. deckenii* ssp. *bequaertii*) and *L. wollastonii* (see Fig.1). Not all these necessarily evolved on the Rwenzori since there are similar vicarious taxa on other E.A. mountains<sup>2</sup>, indeed Knox and Palmer<sup>3</sup> specifically propose this, based on DNA analysis. There are overlaps in all of the altitude distributions though the centres of three are clearly distinct. *L. bequaertii* overlaps completely with both *L. wollastonii* and *L. stuhlmannii* in altitude and grows on a mosaic of adjacent sites, but they are sharply differentiated on the ground by restriction to boggy or well-drained rocky sites respectively. Although *Lobelia* pollen occurs in bogs and lake sediments none of these date back further than the last post-glacial, moreover the pollen of these species is similar so does not offer clues as to the history of their differentiation.

Zeeman's discussion was of a mathematical catastrophe caused by static graded or by slowly changing environmental factors. In contrast for the *Lobelia*, environmental catastrophes may have precipitated the mathematical ones: the climate changes of the repeated Quaternary glaciations of the tropical mountains<sup>4,5</sup> drove the vegetation belts down-hill, and the extensions of the glaciers into these greatly restricted the area available to the higher belts and their lobelias: an evolutionary bottleneck. The subsequent warming drove these species up-hill again where the retreat of the glaciers had exposed extensive areas of fertile bare ground open to colonisation by new plant variants free from competition. Evolutionary changes could take place fast at these favourable moments, which occurred at intervals between long periods of competition, soil impoverishment and acidification, and consequent specialisation or 'canalisation' (Zeeman's term) – a *punctuated equilibrium* with a physical basis.

In *The evolutionary legacy of the Ice Ages*<sup>6</sup> some similar scenarios are suggested, but mostly involving extensive latitudinal migrations rather than these very constrained altitudinal migrations on isolated tropical mountains, moreover Coope suggests that retreat of the ice-sheets provided opportunities not for speciation but for re-homogenisation of mobile beetle populations. Are the 120,000 year glacial cycles sufficient for speciation? We have little quantitative evidence of short term speciation rates but some<sup>7</sup> gives a positive "Yes".

#### NOTES

<sup>1</sup> Origin of Species 5<sup>th</sup> ed. John Murray 1869, p.211.

<sup>2</sup> Hedberg, O., 1957 *Afro-alpine vascular plants*. Uppsala.

<sup>3</sup> Knox, E.B., Palmer, J.D., 1998. Chloroplast DNA Evidence on the Origin and Radiation of the Giant Lobelias in Eastern Africa. *Systematic Botany*, Vol. 23 (2), 109-149.

<sup>4</sup> Kaser, G., & Osmaston, H.A., 2002. *Tropical Glaciers*. CUP.

<sup>5</sup> Osmaston, H.A., 1998. The influence of the Quaternary history and glaciations of the Rwenzori on the present landscape and ecology. In: Osmaston *et al.* (eds.) *The Rwenzori Mountains National Park, Uganda*. Dept. of Geography, Makerere Univ., Uganda. p. 49-65.

<sup>6</sup> Phil. Trans. R. Soc. Lond B., 359 (1442).

<sup>7</sup> Macnair, M.R., 1989. The potential for rapid speciation in plants. *Genome* 31, 203-210.

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## Sturgeons and Caviare

A sturgeon caught in British waters has always been offered to the reigning monarch, a tradition said to have been started by Henry 1<sup>st</sup> for whose table it was exclusively reserved. However, most authorities attribute this tradition to a later monarch – Edward II who was particularly fond of the roe. More recently a specimen of some 9 feet, taken in North Wales, was offered to the Queen, who declined. This sturgeon was subsequently presented to the NHM where it became one of the first additions to the new Darwin Centre. Interestingly, in China when caught the sturgeon was reserved for the table of the Emperor.

Most sturgeons live in the sea and migrate up river to breed, that is they have an anadromous life history. In the UK juveniles migrate down stream after two years and continue their growth at sea for 10-15 years before they return to freshwater to spawn. Repeated spawning is possible and large specimens over 40 years old have been recorded. Because of their longevity sturgeons can grow to a very large size. Thus Couch (1867: *A History of the Fishes of the British Islands*. London, Groombridge and Sons) quotes from J.P. Strathenberg (1738, *Historical and Geographical Description of the North and East Part of Europe and Asia*) of a specimen of *A. huso* L. fifty-six feet in length.



Common Sturgeon. From Couch, J. 1877. *A History of the Fishes of the British Islands*. London, George Bell and Sons.

Pennant records a specimen of *Acipenser* caught in Scotland which weighed 273 lbs and a roe weighing 42 lbs in which were computed to be 2 million eggs. As you all know, the sturgeon's roe when prepared for the table is often served as an hors d'oeuvre. The choicest caviare is said to come from the freshwater sterlet, *A. ruthenus* L. rarely more than 21 inches long. Purely freshwater populations of this species also occur in Lake Ladoga in Russia.

There are some 17 species of *Acipenser*, including four in North America, two each in China and Japan and one confined to the northern Pacific: *A. mikadoi* Hilgendorf and *A. transmontanus* Richardson (ex Gardner) which range from the Gulf of Alaska to southern California, *A. oxyrinchus* Mitchill distributed along the Atlantic coast and *A. fluvescens* Rafinesque a distinct freshwater species. The Chinese and Japanese species are *A. barerii* Brandt, *A. schrenki* Brandt, both from the Amur River, *A. dabrynus* Duméril and *A. sinensis* Gray from the Yangtze River, while *A. sinensis* from the



Pearl River seems to be a separate species. There is also a sturgeon confined to the Adriatic, *A. naccarii* Bonaparte, The majority of the species (10) occur in Europe and Africa.

The genus *Huso* Brandt contains only two species, which are found in the Adriatic, Black, Caspian and Okhotok Seas and the Amur River basin.

The genus *Scaphirhynchus* Heckle, on the other hand, comprises five species: two in North America, confined to the Mississippi River basin, and Mexico, and three southern Russian representatives in the Aral Sea and Syr-Dara and Amur Daryn Rivers. All five species are shovel-nosed, lack open spiracles and have fan-shaped gill rakers. Both *Huso* and *Scaphirhynchus* are sturgeons and belong to the family Acipenseridae which is characterised by a blade shaped hypomandibula, a palatoquadrate that meets in the mid line and does not articulate with the neurocranium, a lower jaw of dentary and prearticular, a pair of large cranio-spinal processes and the incorporation of numerous neural arches into the occipital region.

The dermal skeleton of sturgeons is devoid of ganoine and the body scaling is reduced to five rows of bony scutes with the lateral line passing through the dorso-lateral row. Sturgeons feed on molluscs, crustaceans, worms and small fish which are located by the use of a row of four barbels in front of the mouth.

In the colder parts of Europe (the Ural River) sturgeons hibernate during the winter months with their heads in the bottom mud, but there is no escape from the ardent fishermen who spear them with poles up to 60 feet in length, often through the ice. Most of the caviare comes from this species, viz. *A. huso* L. the Beluga, which is widely distributed around the Mediterranean, Azor, Black and Caspian Seas. Moreover, the swim bladder is used to produce isinglass which is employed in both cookery and in clarifying alcoholic beverages, as well as in the preparation of glues. It is the sturgeons of the Black Sea which have the greatest commercial value and whose eggs, when preserved with salt make the finest caviare. Interestingly, the flesh of the Beluga can also be eaten and has been described as “a compound of veal and eel with the flavour of lobster”.

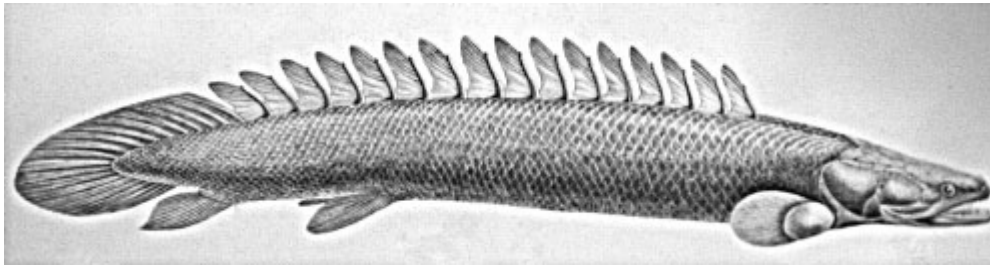
Although there are some 17 species of sturgeon (*Acipenser*) several subspecies have also been described, thus hybridisation is believed to have occurred.

Close relatives of *Acipenser* are the paddle fishes, belonging to the family Polyodontidae. This contains two monotypic, freshwater genera, *Polyodon folium folium* Sneider from the Mississippi and *Psephurus gladius* (Martens) from the Yangtze River.

The snout of paddle fishes is leaf-like and flexible and made up of many stellate bones. The gill rakers are fine and numerous and used for filtration (they are plankton feeders). Polyodontids differ from sturgeons in having naked skin with minute star-shaped scales.

*Acipenser sturio* L. was first described by Petri Artedi in his *Genera Piscium* of 1738. Previously he and his good friend Linnaeus had divided the natural world between them, Artedi taking the fishes, amphibia, mammals and mineralogy and one group of plants, the Umbiliferae, Linnaeus the remainder.

In September 1735 Artedi was invited to dine with Seba in Amsterdam. Linnaeus had initially introduced him to Seba who had subsequently employed him. Following

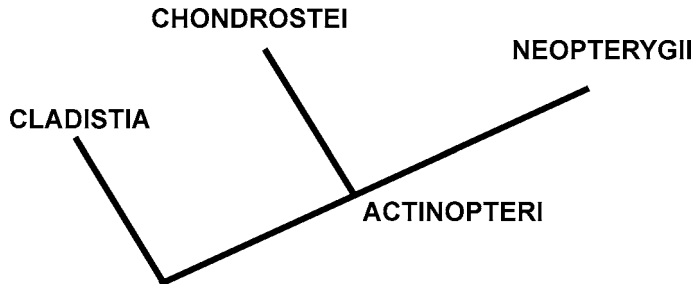


*Polypterus birchir* (Photo D. Pescod)

a convivial meeting, Artedi on his way home fell into an unfenced canal and drowned. This meant that the application of the initial method of classification involving the three kingdoms of nature, which they had developed together, fell upon Linnaeus' shoulders alone!

In 1735 Linnaeus published Artedi's *Ichthyologia (The Natural History of Fishes)* which he prefaced with a short account of Artedi's life. Then 10 years later in 1748 Linnaeus finally published all Artedi's fish names (including *Acipenser*) in the VI th edition of his *Systema Naturae*.

Today sturgeons are classified as critically endangered by IUCN and are protected under CITES.\*



Finally, where then does *Acipenser* fit in the phylogeny of Fishes? *Polypterus* is the most primitive living actinopterygian and included within the group Cladistia which is the sister-group of the Actinopteri (Chondrostei (which includes the Acipenseridae) + Neopterygii). Within the Neopterygii *Amia* is the sister-group of the teleosts and *Lepisosteus* the sister-group of these two combined.

BRIAN GARDINER

#### Reference

GARDINER, B.G., SCHAEFER, B. AND MASSERIE, J.A. 2005. A review of lower actinopterygian phylogeny. *Zoological Journal of the Linnean Society*.

\* In Canada the Committee on the Status of Endangered Wildlife will shortly deal with the Lake Sturgeon (*A. fluvescens*), which is found in the Great Lakes, Lake Winnipeg and major rivers such as the Nelson and Saskatchewan, and declare it endangered. Meanwhile anglers in Manitoba cannot legally keep any sturgeon they hook, only the Native Americans are allowed to take them for food.

## Stephan Ion Pace (1872–1941): a ‘little local difficulty’ in the history of the Marine Station at Millport

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Stephan Pace was briefly and, some (Marshall, 1987, p.31; Moore & Hancock, 2004) have inferred ignominiously, Director of the Millport Marine Station (Fig. 1) between 1905 and 1907. His appointment to that position catalysed a schism within the membership of the (then) Marine Biological Association of the West of Scotland (M.B.A.W.S.). The confrontation was between two schools of thought: one represented by the professionals (University types, to whom Pace allied himself) and the other, by the amateur marine naturalists (towards whom Pace was disparaging). Sadly for Pace it was the latter group, as subscribers to the Association, who ran the Association's finances and eventually ousted him from his position as Director. Little has been published about this momentous time in our history but more light can be shed on the episode by referring both to a letter that I purchased recently (from a commercial dealership in signature relics) and to correspondence archived in several institutions.

The letter (on House of Commons embossed notepaper) that I acquired, dated 29 June 1946, was written to the malacologist Ronald Winkworth, MA, FLS (1864–



Figure 1. The Marine Station at Millport as it looked in 1904 in an old postcard (note: the ‘new’ wing was added “largely through the energy of Dr James Gemmill and the generosity of Mr James Coats” (Elmhirst, 1937)).

1950) (see Rees, 1950) by Sir John Graham Kerr, MA, LL.D, FRS, MP (1869–1957), previously Regius Professor of Zoology in the University of Glasgow. (The Scottish Universities elected three Members of Parliament up until the abolition of pluralism by a Labour Government Act of 1948.) It illuminates Kerr’s friendship with Stephan Pace (erroneously as ‘Stephen’ in Marshall, 1987, p.19 and Moore & Hancock, 2004). Winkworth (1946) had furnished a brief obituary on Pace for the *Proceedings of the malacological Society of London* (which he edited) that same year (a notice that I happened upon only as a consequence of acquiring Kerr’s letter).

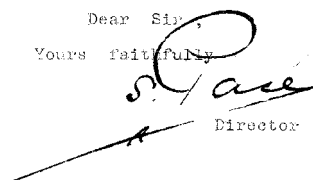
Born in London (22 November 1872), the son of a stained-glass worker (also Ion), Stephan Pace had remained to me, heretofore, very much another shadowy figure in Millport’s history (*cf.* Capt. Turbyne; see Moore, 2002). By piecing together snippets from all the published and unpublished sources that I could find (tracked down with considerable help from friends; see Acknowledgements), however, I have gained a fuller appreciation of the turmoil surrounding this elusive man and his times. One thing I have not found, though, is any attested likeness of him. His signature is reproduced as Fig. 2. Apparently, Pace had studied zoology at the then Royal College of Science (now Imperial College), acquiring there an interest in molluscs from Martin Woodward. He was an original member of the Malacological Society, becoming its Secretary in 1898. Primarily a malacologist (see bibliography below), his most significant contribution was on the neogastropod family Columbellidae (dove shells;

Thanking you in anticipation,

I am

Dear Sir,

Yours faithfully



Director

Figure 2. The signature of Stephan Pace (from a letter to R. N. Wolfenden, dated Dec. 26th 1905; courtesy of Dr David Damkaer.

warm-water buccinaceans) (Pace, 1902b). He went to Torres Strait in 1897 to conduct experiments on pearl culture and spent three years there. Recall that, from 1890 to 1900, the Sri Lankan pearl fisheries had failed (Marsden, 2004). In 1890, William Saville-Kent had begun collecting oysters in Torres Strait, and Thursday Island, off Cape York eventually became the pearling capital of Queensland (Ganter, 1994; Harrison, 1997). Pace had been employed at Thursday Island by James Clarke, who was a major figure in the industry there (and who had been following Saville-Kent’s advice). Clarke’s Pilot Cultivation Company had employed Pace as biologist. Unfortunately for Clarke “Pace lacked experience and, despite a generous budget, success eluded them; after two years Clarke concluded that culture was not feasible. Pace concentrated on biological investigations and obviously underestimated the time needed to achieve commercial results” (Harrison, 1997).

Doubtless, when there, Pace also indulged his interest in his beloved gastropods. The Natural History Museum possesses only a single letter in its archives from Pace, dated 12 February 1898, written from Thursday Island.<sup>1</sup> It concerns some moths sent back to one of their entomologists, Dr A.G. Butler, in which Pace excuses himself “I am only a humble conchologist so pray forgive my ignorance of matters entomological”. Therein he continued “I shall always be glad to look out for any special forms that may be desired by the museum or others during my stay (until 1900) in this region”. One can imagine that his role as Secretary of the Malacological Society must have been difficult to fulfil from such a far-flung corner of the world. In recognition of his conchological passion, he had earlier been commemorated in the names of two distinct dove-shell species, both of which though were given the same name in quick succession by different authors: *Columbella pacei* E.A. Smith, 1895 and *C. pacei* Melvill & Standen, 1896. Melvill and Standen, realising that their name was pre-occupied, then introduced the new name *C. stephani* Melvill & Standen, 1897, still in Pace’s honour, for the latter species to rectify the problem of priority (Taylor, pers. comm.). Pace also published on British holothurian taxonomy (Pace, 1904) but since now his *Cucumaria normani* Pace is subordinated to a synonym of *Aslia lefevrei* (Barrois, 1882), he leaves no British species to science. His last paper was on survey methodology (Pace, 1907)

Pace has been characterised, however, as having been the main irritant behind the vitriolic schism that developed at Millport during the first decade of the twentieth century (Marshall, 1987, p.21–24; Moore & Hancock, 2004). As generally understood, an argument developed between two opposing schools of thought about the role of Millport’s Marine Station: portrayed as the ‘amateurs’, supported by Dr (later Prof.) James Fairlie Gemmill (1867–1926), versus the ‘professionals’, supported by Graham Kerr (who had come to Glasgow University in 1902).

Pace had moved to Millport in June 1905 from the Marine Laboratory at Plymouth (Winkworth, 1946; Southward & Roberts, 1984). These latter authors styled him “scientific assistant to the Director” at Plymouth, which Professor A.J. Southward (pers. comm.) has since informed me to be in error. Marshall (1987, p.19), however, had also styled him “Assistant Director”. The Report of the Council of the Marine Biological Association of the United Kingdom for 1904–05, in noting Pace’s move to Millport, recalls (p. 392) that “for the last three years he has efficiently occupied the post of Assistant Naturalist for Invertebrates”. He represented himself as “Naturalist in charge” at Plymouth on at least one occasion in 1904.<sup>2</sup> Perhaps, he had sought to ape Walter Garstang (1868–1949) whose status, as ‘Naturalist in charge’ (of Fisheries Investigations) at the Lowestoft sub-station (opened in 1902) of the Marine Biological Association of the United Kingdom, figured prominently on the Association’s headed notepaper. So, ‘Assistant to the Director’, or ‘Naturalist deputising for the Director’ (E.J. Allen), might be the most accurate representation of Pace’s position at Plymouth. Allen’s confidence in Pace was clearly sufficient to allow him to deputise during periods of Allen’s own absence but Pace’s authority remained circumscribed. He seems, though, to have strained at that leash, even then. For instance, on such an occasion of his being left in charge, he turned to George Parker Bidder (1863–1953), one of Plymouth’s benefactors (see below), for reassurance and authorisation to act in spite of his restraining instructions. This was over his desire to achieve a quick sale of the old boiler from the S. Y. *Oithona*, as “I have no authority from Dr Allen to sanction the sale”.<sup>2</sup>

He would most likely have been earning less than £150 p.a. at Plymouth (Southward, pers. comm.). E.J. Allen had been bitter at his staff (Pace, R.A. Todd) being tempted away elsewhere for only a paltry rise in salary [to £200 in Pace's case]. Staff insecurity was prevalent at Plymouth at the time (see below), so it is understandable that opportunities to move on may have been welcomed. The Millport prospect, after all, represented a respectable percentage increase on Plymouth wages. Early in 1905, Allen had contacted Bidder<sup>3</sup> saying that "an advt [sic] in "Nature" for a Director at the Millport Biological Station is causing much uneasiness just at the moment amongst the staff. These short commissions must always be trying from that point of view, but it is very unpleasant to feel that everybody wants to clear as soon as a £150 job is visible". Graham Kerr had, in fact, written<sup>4</sup> to Edward T. Browne (1892–1937), on 10 February 1905, enquiring "You have not thought, have you, of becoming a candidate for the Millport post? It is a magnificent opportunity for a competent person and I should personally be delighted to help in any way I could". Kerr was anxious to acquire a Director who would "develop it [Millport] along modern lines".<sup>5</sup> He continued, "it would of course be a great help to our University department if we had a laboratory at Millport run on proper lines – where we could send people for research work and from which we could obtain properly preserved material". Although we lack Browne's actual reply to Kerr's overtures it is clear, from comments embedded in a months-later communication (from Kerr to Browne),<sup>6</sup> that Browne had replied on 14 February and that in that missing letter he "had made some rather strong remarks about Millport". Kerr had responded "My position has been a particularly delicate one in relation to the laboratory as through someone's stupidity certain words of mine got into the papers which might be interpreted as meaning that I proposed to try and annex the place to the University". He continued "As the place is the property of an independent Society with strong anti-University leanings, suspicions were at once aroused".

Anyway, Pace was awarded the trophy of the Millport job; a cup that was, indeed, to prove itself a poisoned chalice. Adopting a rather imperious manner, Kerr signalled himself satisfied with the decision, as Pace "*appears to have qualifications*"<sup>6</sup> [my italics]. This is an intriguing form of words for him to use; especially since, according to the record card in the Natural History Museum, the Ministry of Education could not trace Pace's name in Royal College of Science records (Taylor, pers. comm.). Kerr was clear about one thing though; "one of the difficulties in the way of the Station is its finance: it is quite absurd to depend on guinea subscriptions as at present but nothing greater will be available until it is shown that the Station is doing work which is of real scientific value".<sup>6</sup>

Once at Millport, Pace became a single-minded advocate for the professionals. It is noteworthy, for instance, that Pace's name never figures in the membership lists of the M.B.A.W.S., even that for 1906 whilst he was Director. Perhaps Kerr and Pace were seen as the English 'new brooms' (note though; Ion is an Irish spelling of the more usual English Ian, or Scottish Iain but Stephan has a continental ring to it; though Stefan would be more usual). The latter's research career, however, stalled at Millport; certainly *cf.* Graham Kerr's brilliant career at Glasgow. Maybe surprisingly, for one of such apparent promise (see below), he was not listed as a member of the British Association

for the Advancement of Science between 1899 and 1905, which both Gemmill and Kerr were; which could, perhaps, indicate a restricted breadth to his interests.

Prior to moving north, Pace had married another marine biologist, Rose Mable Clark (in January 1904) (Winkworth, 1946), who had an interest in hydroids.<sup>7,8</sup> Mrs Pace was listed as a visiting worker at Plymouth in 1902–1903 and 1903–1904, then working on Bryozoa. She published one paper on that group, on *Flustrellidra* (as *Flustrella*), from Plymouth (Pace, R.M., 1906). A good organiser of literature (note his experience with *Zoological Record*, referred to below); at Plymouth, Stephan Pace seems there to have been thrust into administration. He was cataloguing the Marine Biological Association's book holdings (Southward & Roberts, 1984), as well as being involved with "faunistic work" (Winkworth, 1946). His librarian activity continued at Millport. In the Annual Report for 1905 (M.B.A.W.S., 1906), Pace himself reported to the General Committee of the Association that "since my arrival at Millport the library has been overhauled and to some extent rearranged". He canvassed widely in the press for donations to swell the Station's library holdings (Pace, 1905). He was highly motivated for sure, having written to R.N. Wolfenden on Boxing Day 1905 requesting, probably forlornly, a copy of his scarce publication '*Plankton studies*' for Millport's library (Damkaer, 2000). In Pace's own words (M.B.A.W.S., 1906) "during the latter half of the year [1905] but little *systematic* collecting has been attempted ... next season, it is hoped that the study of the local fauna may be resumed on an extended *and more fully organised plan*" [my italics].

Gemmill, who had been the first President of the M.B.A.W.S. (1901–1906), had been part of the evolving inclusive ethos of the Millport Marine Station for many years prior to the appearance of Pace as Director (and remained so, if in the background, until his own death). He supported Millport with "extraordinary persistence and disinterestedness" according to Thompson (1926). He had been present with David Robertson, for instance, at the ceremonial cutting of the first sod to establish the foundations for the original permanent building in 1896 (see photograph in Sheina Marshall's history of the Marine Station, 1987) [Sheina was a scientist of world renown who spent her whole career at Millport]. A significant scientist himself (he eventually made F.R.S., though only two years before he died), Gemmill had moved on from his lectureship at Glasgow University in 1917 to occupy the Chair of Natural History at University College (as it then was), Dundee that had become vacant after D'Arcy Thompson's move to St Andrews University. Whilst in the West of Scotland, he had also been friendly with Sheina Marshall's father, Dr. J.N. Marshall (1860–1945), who was a highly esteemed general practitioner in Rothesay, on the adjacent island of Bute (and President of the Buteshire Natural History Society) (see Moore & Hancock, 2004). Additionally, he had represented the Buteshire Naturalists on the general committee of the M.B.A.W.S. during this critical time (1905–1906). Whether Sheina's comments regarding Pace were entirely objective or had been coloured, to any extent, by recollected comments from her father supporting Gemmill, or by personal contact (her dates were 1896–1977) with Gemmill cannot now be ascertained (I am confident that she would not have knowingly unjustifiably denigrated Pace). To a degree, Gemmill may have been regarded as representing the reactionary 'old guard' *vis-à-vis* Millport (though he and Graham Kerr were contemporaries). However, his – quite reasonable

– view was that since the Marine Station had been built by amateurs (without any help from the Universities [note also, Kerr’s comment above]), for amateurs as a memorial to an amateur (David Robertson) then their needs could not and should not be ignored (Marshall, 1987, p.21).

Pace, however, had had other ideas. To E.T. Browne,<sup>7</sup> he had trumpeted triumphantly “you will be interested to hear that there has just been a very thorough overhaul of the Association’s policy and that it has been decided to drop all “Picnic Parties” and such troublesome frivolities, and devote all the energies of the Station to research” (letter dated 6 June 1906) (Note: he omits to say explicitly by whom this overhaul was done and these decisions were taken).

One could also be tempted to read something personal into the fact that Graham Kerr’s name did not figure, seventeen years later, among the list of supporters behind Gemmill’s nomination for F.R.S. (D’Arcy Thompson, W.C. McIntosh, J.C. Ewart, J.H. Ashworth, S.J. Hickson, A.E. Shipley, E.J. Allen and F.A. Bather). This is in spite of his being another fish man and an erstwhile colleague of long-standing, both in Glasgow University and on the Executive Committee of the (re-named post-1914) Scottish Marine Biological Association (S.M.B.A.). Gemmill (“was he not greatly beloved?”) was said by that obituary writer (Thompson, 1926) to have been “good through and through”.

As revealed here, Kerr’s attitude towards the Pace issue had not moderated a jot, even forty years after the event. Kerr’s original holograph note, briefly in my possession (see below), reads as follows:

“Dear Winkworth,

I am shocked to learn from your Reprint from Proc. Malac. Soc. that my old friend Pace passed away so long ago as 1941 without my hearing of his death.

You refer to his short sojourn at Millport but you do not mention the abominable treatment to which he was subjected by the people then in control of the Marine Station. This culminated in their passing a resolution forbidding the Staff to carry on Biological Survey work! To understand what this meant you would have to realise how Pace had been slaving – working with the greatest enthusiasm – at the development of a scheme for the systematic biological survey of the Clyde Sea area – as the essential foundation for future work. There was naturally great indignation on the part of those supporting the scientific as opposed to the popular activities of the Station, as well as deep sympathy with Pace and his splendid wife but nothing effectively could be done beyond publicly withdrawing from the Association. The Marine Station at Millport would indeed have been defunct long ago had not the Treasury on the recommendation of the Development Commissioners and their Advisory Committee on Fishery Research come in to keep it doing [sic].

Yours sincerely

John Graham Kerr

29. vi. 46”



This bitter episode in Millport's history (with neither side being able to come to terms with the other) is all very sad to dissect, especially in light of the fact that the inclusive ethos is very much one that we embrace at the Marine Station today. In his letter to E.T. Browne (dated 6 April 1907),<sup>9</sup> Pace had conceded acerbically that

“The “Buns & Picnic-Party” people have at length scored a complete victory so that the scientific party have [sic] resigned in a body. What the ultimate result will be it is of course impossible to say, but in any case the Station would seem to be doomed”.

This predicted apocalypse – see also Kerr's letter (above) – never materialised (and Pace may have elected deliberately to be ‘economical with the *actualité*’ regarding other contentious issues; see below). Now a University facility, the University Marine Biological Station Millport (U.M.B.S.M.) is recognised as the national centre for marine fieldwork teaching (Fig. 3). We seek actively to foster inclusion by educational outreach, while still actively doing cutting-edge research. Why these objectives seemed so incompatible in 1907 remains anyone's guess for, as MacBride had said “there was much to be said on both sides”, though he had gone on to say “the single root of all the trouble was Pace” (Marshall, 1987, p.31). Personality clashes (Marshall, 1987, p.24, refers to “personal animosities”; see also Deacon, 1993) played a large part (as did financial and managerial issues; see Marshall, 1987 and below). Prompted by his correspondence both with Pace and Pace's wife, E.T. Browne eventually – like many other scientists – had also resigned from the Association (6 August 1907),<sup>10</sup> having earlier (13 April)<sup>11</sup> written (from University College, London) to Pace that “it would be my policy to stop and prevent further cash supplies, and to bring about a financial crisis”. This was in response to Pace's letter, of 6 April, to him<sup>9</sup> in which Pace had



Figure 3. The University Marine Biological Station Millport today.

confessed revealingly that “meanwhile, I am refusing to resign and am making things as unpleasant as I can for the new committee”.

The restrained attitude towards the Millport Marine Station on the part of Graham Kerr, who had resigned from personal membership of the Association after the Pace debacle (see above), must have generated a continuing ‘atmosphere’. The more so because he remained involved as the University of Glasgow’s representative on the General Committee of the Association (post-1920, he sat on the Executive Committee). He did, however, eventually become reconciled to Millport, assuming the Presidency of the S.M.B.A. years later (1943–1949), i.e. once it had developed into a much more research-focused and better funded organisation (Marshall, 1987). Such long-term reserve between Millport and the University of Glasgow, may have been dispelled during Sir Maurice Yonge’s later tenure as Regius Professor of Zoology (1944–1964) and role as successor President of the S.M.B.A. (which was based at Millport until 1970). Post-1970, Millport’s Marine Station came completely under University-sector management in a unique co-operative arrangement between the Universities of London and Glasgow (as U.M.B.S.M.). By that time, the urbane David Newth, was occupying the Regius Chair of Zoology in Glasgow University (as Yonge’s successor). He was a developmental biologist and not a field worker so he might not have been an automatic supporter of Millport (but, that said, both Gemmill and Kerr had also been embryologists). However, according to Professor Keith Vickerman, FRS (pers. comm.), Newth had been a “bit miffed” at the time of the decision by the (then) University Grants Committee that these universities should share responsibility for Millport, “largely because London had been so undemanding in its requirements, making Glasgow look greedy by comparison”. So the ghost of the Pace / Kerr interlude straining relations between Millport and Glasgow University was finally laid to rest (and sixty-three years afterwards, the ‘place *had* finally been annexed by the University’).

It is noteworthy that Pace’s last known paper (1907), on an ‘improved’ method for recording surveys (see also M.B.A.W.S., 1906, p. 22), coincided with the heated dispute at Millport, apparently (at least to the outside world) over this particular issue. This issue had sent Kerr ranting in high dudgeon in all directions, even making the local newspapers (see Marshall, 1987). The Annual Reports of the Association relating to 1906 and 1907 (M.B.A.W.S., 1907, 1908), however, remain rather bemused about this intellectual contretemps being a substantive issue (see also Deacon, 1993). This was not the only particular over which the Association’s governing body fell out with Pace (Marshall, 1987). That the directorial powers and unfettered freedom to spend, assumed by Pace, had needed to be ‘reined-in’ by the cash-strapped Association shows that all was not exactly as it should have been in accountancy and day-to-day management prioritisation terms either (shades of the impatience with managerial strictures he had shown at Plymouth?). There were insufficient funds to overhaul the S.Y. *Mermaid* (Fig. 4), the seawater pump and circulating system in the Station needed repairing, and so on (M.B.A.W.S., 1908; Marshall, 1987, p.22). Was Pace therefore being duplicitous in representing all criticism of him as being down to academic differences of opinion alone? The biographical record card in his name kept in the malacological section at the Natural History Museum, London reads simply “ructions in the committee led to his departure” (Taylor, pers. comm.). The fact that Pace’s most



Figure 4. The S.Y. *Mermaid*, a 60ft steam yacht built and equipped for scientific work by Mr James Coats, Jr (of Paisley). Launched in 1901, when running costs could be sustained, she was used for dredging in the sea lochs and open Firth by parties of naturalists from the Marine Biological Association of the West of Scotland. It is not outwith the realms of possibility that Stephan Pace could be one of the people on board (sadly we lack any authenticated picture of him in our archives). Photograph courtesy of the Scottish Association for Marine Science, Oban.

unconventional diatribe, presented as a footnote in his final paper (Pace, 1907), contains the statement that “the Millport Marine Station has enjoyed such quite exceptional financial and other advantages” suggests that he retained a well-developed capacity for self-delusion. In 1905, he had even flagged-up in the journal *Nature* that, at Millport, “all material intended for private research shall be supplied absolutely *free of charge*”, that the “fees are very low” and that “there is never any difficulty in arranging for a free table” (Pace, 1905). Cash-flow concerns seem, therefore, not to have been uppermost in his mind. Whatever the truth behind the contretemps, the upshot was that he forfeited his position as Director.

Prompted by their removal from Millport (October 1907; to Hounslow), and by the need of the Paces to find something else to do, Stephan Pace set about drafting a pamphlet extolling the virtues of a new organisation. He proposed creating a Bureau of British Marine Biology, behind which concept he was keen to assemble influential support. His wife had written to Browne (11 October) to solicit his blessing for the scheme,<sup>12</sup> saying that “the failure of the systematic work he planned here has come as a very keen disappointment to my husband” and “he is loth to relinquish all attempt to carry out his ideals without an effort and to consider taking up work for which he is by training less fitted”. It was the postscript to that letter, however, that obviously

‘scuppered’ the idea so far as Browne was concerned. In it, she had continued “my husband has just had a letter from Dr. Allen<sup>13</sup> with regard to this pamphlet, in which he seems to think that the scheme will be regarded by many people as constituting an attack on Plymouth. Needless to say nothing of the sort is intended”.

In those early days, financial stringency was dire at the Marine Biological Association at Plymouth too (see below; and Deacon, 1993). Browne had been Allen’s “most intimate friend and always his staunch ally” (Bidder, 1943). So once Browne got wind of this putative interpretation – one that might prejudice Plymouth, his best friend and his own facilitation at a place he was helping to support financially (see below) – he changed tack with alacrity: “I ... fail to see that your scheme is an improvement on the methods usually accepted for faunistic work. I know you love ‘cataloguing’ but a catalogue is only a means to an end and your system is much too elaborate, it becomes the end”.<sup>14</sup> Pace’s last known paper (Pace, 1907) certainly has a thoroughly Teutonic orderliness to its recommendations, even extending to its recommending the use of “Stolzenberg” record books. Perhaps that accounts for his choice of journal (*Zoologischer Anzeiger*) for proselytising his scheme. In a sense though, he was genuinely ahead of his time. With the advent of computer databases and Geographical Information Systems the sort of plans he had in mind would be readily accomplishable. Indeed, Plymouth’s *MarLIN* network (The Marine Life Information Network for Britain and Ireland) (e.g. Baker, 1999) and PRIMER analytical packages (Clarke & Warwick, 1994; Clarke & Gorley, 2001) fulfil many of his aspirations today.

To quote from a recent personal communication from Professor A. J. Southward:

“Pace had done a lot of things for the Marine Biological Association in Plymouth. Together with Todd, he supervised the completion of the first proper *Plymouth Marine Fauna*. And it is noted that when he catalogued the library there he had introduced 5 x 3” cards, presumably to replace ledgers (the library had been run up to then by A. J. Smith, who was also a technician, and part finance officer and also a helper with the boats). Both of these jobs by Pace [cataloguing the library and surveying the fauna] were quite innovative. It appears that under the supervision of Allen, he made use of the new steamboat to carry out proper survey work, sampling well off Plymouth. That survey was continued by L.R. Crawshay, who replaced Pace when he left for Millport”.

With this background, Pace must have seemed ideally qualified indeed to slot into the Director’s situation at Millport. The British Association for the Advancement of Science’s meeting in Glasgow, in 1901, had already occasioned the production of *The Fauna, flora & geology of the Clyde area* (Elliott *et al.*, 1901); so a local catalogue, albeit incomplete (all are), already existed. A few years thereafter, when the dust had died down following Pace’s departure, the – by then – Superintendent at Millport, Richard Elmhirst FLS (1884–1948), is reported (M.B.A.W.S., 1914, p. 100) as having read a paper to members of the M.B.A.W.S., in Glasgow, entitled “Faunistic recording at the Marine Station” detailing, if rather apologetically, what sounds like a reasonably systematic approach. The controversy seemingly resulted in “systematic investigations”

taking root locally (King & Russell, 1909; King & Elmhirst, 1914). Elmhirst had originally been appointed in 1906 as naturalist (at £100 p.a.) to assist Pace (M.B.A.W.S, 1906, 1907; King, 1953). *The Fauna of the Clyde Sea area*, based on the extensive faunistic work, much of it by ‘amateurs’ (but what amateurs!) – that had begun long before Pace arrived on the scene – was also collated not long thereafter by James Chumley (1918), who was another good friend of Graham Kerr (see Preface to Kerr, 1926). One wonders what all the fuss had been about (see also Deacon, 1993)?

The whole academic commotion had been represented externally both by Pace and by Graham Kerr, as centring on the difference between ‘biological survey’ and ‘faunistic work’ (Marshall, 1987). The split had finally erupted at a general meeting of the Association in March 1907, when a resolution had been passed by one vote stating that the meeting “did not approve of staff being employed in biological survey” (Marshall, 1987, p.22). But this was a badly worded resolution and did not really express the exact meaning of its supporters, which was to object to the particular [expensive] biological survey planned by Pace (Marshall, 1987). This resolution, however, was seized upon by proponents of the ‘Pace/Kerr’ camp as epitomising a reactionary philistinism on the part of the ‘Gemmill’ camp. ‘Biological survey’ smacked of organised ecological modernity, while ‘faunistic work’ carried pejorative *laissez faire* ‘stamp-collecting’ overtones. E.T. Browne<sup>15</sup> had seemed initially non-plussed by the whole affair, from his detached position as an observer on the sidelines. He had wished it to be pointed out (*inter alia*), to the subsequent meeting that was held on 18 April 1907, that “survey work simply means collecting on a definite scientific plan, instead of unsystematic, happy-go-lucky method”, i.e. assuming that the need was to educate the Association’s members over what he saw as being simply their misunderstanding of terminology (which it was not). It is true that such attitudes were abroad; indeed, they still remain alive today. They reflected the scientific metamorphosis that British biology was undergoing at the dawning of the twentieth century. A widening gulf was forming between the professional (usually laboratory-based) experimental reductionists and field-based (often amateur) natural historians or observational evolutionists, as given expression early-on by the views of Professor Louis C. Miall (1842–1921) at Leeds University (Baker & Bayliss, 1985; Alberti, 2001). A unified science of life was achieved in the 1930s when the two sides came together within the so-called ‘evolutionary synthesis’ (Vickerman, 1993). But this dichotomy may, in fact, have been a smokescreen obscuring the real root of the trouble at Millport that concerned financial probity and management capabilities.

It is pertinent that Pace’s own published words add another, and subtly different, nuance to the saga (as one might expect from an embittered man). Thus, he recounted that “long standing differences regarding the policy of the Association respecting the conduct of its Marine Station at Millport, culminated in the passing of a resolution prohibiting the prosecution of *organized* research at the Marine Station. The scientific section of the Association thereupon resigned in a body, and the Station is now being devoted to *popular objects* and to *elementary education*” (Pace, 1907) [my italics]. As with his capacity to delude himself over the finances of the Association (see above), so here again in September 1907, he seems to have been being economical with the *actualité*.

It is both relevant and revealing, at this juncture, to set Millport's troubles in a wider context.

“The period was stressful for all the marine laboratories that had set themselves up in the last two decades of the nineteenth century. The primary founding funds were running out, and they began to realise that anticipated income from annual subscriptions, bench fees and sales of specimens would not keep them going, certainly not with steamboats for sampling. Plymouth had actually spent most of the life-membership receipts rather than invested them. Plymouth, however, was fortunate in the choice of E.J. Allen as Director at the end of 1894 and [in] having the support of two ‘rich men’, both of whom were active scientists: the ‘amateur’ Browne and the ‘professional’ Bidder. The father of the latter, Bidder II, had developed steam trawlers and Bidder III was of great help in getting decent boats for Plymouth. The period when Pace was appointed was a period of expansion at Plymouth, with new government money for the English share of the I.C.E.S. investigations [International Council for the Exploration of the Sea;<sup>16</sup> see also Went, 1972; Lester, 1995]. In 1902–1903 the international work was just starting. Allen and Todd had been carrying out surveys of the fauna before this but expansion to the North Sea was dictated by the demands of the I.C.E.S. commitments, and Todd moved over to Lowestoft to join Garstang. It appears that Pace was appointed to replace Todd. All the other marine laboratories were extremely jealous of the government funding that Plymouth were getting in this period and helped some dissidents to write hostile articles denigrating the work (Herdman at Liverpool, McIntosh at St Andrews, Meek at Cullercoats and some Edinburgh people). They did not understand that this hostility was generally damaging the way the Civil Service regarded all marine scientists and encouraged them to use the opportunity to cut all funding. Thus the atmosphere at Plymouth when Pace joined must have rapidly become disturbing. Every year they could not be sure that the government funding would continue” (Southward, pers. comm.; note also Russell, 1955; Deacon, 1993).

E.J. Allen had expressed just these concerns, regarding Plymouth's funding, in a letter to Bidder (29 January 1907),<sup>17</sup> “We are being attacked right and left just now. Herdman and his people are hard at it, Meek in Northumberland, Archer<sup>18</sup> and Masterman,<sup>19</sup> Heneage<sup>20</sup> and probably Towse<sup>21</sup>. Noel Paton<sup>22</sup> too I believe is having a fling”. The whole issue became, indeed, one of “high politics” (Aflalo, 1904). Such were “the personal antipathies, differences in viewpoint and rivalry due to competition for scarce resources” within the marine biological community at the time (Deacon, 1993) that it even influenced which people – depending upon their loyalties to particular prime-movers – either did or did not join the fledgling Challenger Society (Deacon, 2004). So for Pace, it definitely seems to have been a case of ‘out of the frying pan’ that was spitting fitfully at Plymouth, ‘into the fire’ at Millport.

What happened to Stephan Pace after he left Millport, I now understand, was desperately sad. Seemingly, he returned to London doing part-time (possibly voluntary) work at the Natural History Museum, where he was great friends with E.A. Smith (1847–1916) (Winkworth, 1946). There is no record of his ever having received payment as an unofficial helper at the Museum but had such occurred for short periods only, then that probably would not have been recorded in the Trustees' Minutes (Taylor,

pers. comm.). According to Museum records, Harmer found it “unprofitable to employ him” (Taylor, pers. comm.). He and his wife collated the Mollusca section of the *Zoological Record* for 1906–1908 (with E.R. Sykes in 1906), as he himself had previously done (with Sykes and Smith) in 1901 on his return from the Torres Strait. He remained in touch with Professor W. C. M’Intosh (or McIntosh) at the Gatty Marine Laboratory (University of St Andrews). He sent a telegram<sup>23</sup> to M’Intosh, in June 1913, after the Gatty Marine Laboratory had been set on fire by angry suffragettes (for reasons unknown; see Gunther, 1977). It reads:

Regents Park Road office, 9.25 a.m., 23 June 1913, To Professor McIntosh,  
Gatty Laboratory, St Andrews. Sincere sympathy dastardly outrage hope no  
irreparable loss manuscripts drawings. Pace.

The Millport experience might well have contributed to the nervous strain and resultant prolonged breakdown that Pace subsequently experienced (exacerbated by the after-effects of a severe illness contracted whilst in Australia). The file-card from the Natural History Museum (N.H.M.) states that he “destroyed all his notes and specimens and other people’s specimens entrusted to him” (Taylor, pers. comm.; but note Dance, 1986, Appendix IV). This action, if it did take place, seems particularly ironic in light of his telegram to M’Intosh (above).

Winkworth (1946) might deliberately have drawn a discreet veil over Millport’s ‘little local difficulties’ (if, indeed, he was ever aware of them before he received Kerr’s version of the story).<sup>24</sup> Pace recovered from that illness only to end-up with shell shock after serving in France, as a Lieutenant in the 19th London Regiment, from 1915–1918. The N.H.M. file-card states that “sometime during 1914–1918 he was working in the Inventions Department of the War Office” (Taylor, pers. comm.). For the rest of his life he suffered from severe headaches and, although it was ever his intention to re-address monographing the columbellids (returning to his part-finished MS in 1930), he was never able to complete it. He remained a thwarted man; “unfortunately, I a few years since lost what little private means I possessed – otherwise I should start right away with a small laboratory and should then not try for outside support, or at all events not until such time as I could point to the work well in progress”.<sup>25</sup> Apparently he was reduced to living “a fireside” existence, whilst his wife taught at Highgate School for Girls (N.H.M. file-card; Taylor, pers. comm.). He died intestate at home (80 Priory Rd, London, NW6) on 13 December 1941, aged 69 years, survived (latterly in Coventry, West Midlands) by his wife and daughter and leaving an estate gross value of £1,278 2s 4d (net value nil). His remaining collection of shells is now in the Natural History Museum in London (Winkworth, 1946).

The sympathetic picture of Pace, painted both by Winkworth (1946) and by Kerr’s letter to Winkworth (above), is thus a very different one from that presented by Sheina Marshall (1987) and, following her lead, repeated by me recently (Moore & Hancock, 2004). Winkworth lauded the molluscan work of this skilled anatomist and systematist as being “of the highest excellence”, saying that “he was a brilliant man and it is a tragedy that he was not able to continue his research work”. Perhaps his perfectionism (or was it conceit?) left him no room for messy compromise at Millport, leaving him ill-equipped temperamentally to take on a directorial role. The best Directors live with the fact that theirs is not a perfect world but they manage those

imperfections nevertheless by encouraging a diversity of views, facilitating collaboration, inspiring trust, defusing tensions and generally leading by example (as well as overcoming the frustrations of management committees). Pace seems to have been just too iconoclastic, too arrogant and insufficiently a 'people-person' to embrace the diplomatic challenges posed by Millport. Marshall (1987, p.21) said that he was rude to amateurs and restricted their access to some parts of the Station, i.e. for which their subscriptions had paid. Perhaps, had Pace had that "little tincture of the opportunism which is the fashionable political rule of conduct", that Thistelton-Dyer had once wished of his life-long friend, Ray Lankester (Lester, 1995), things might have turned out differently for him as well. Or, conversely, maybe he had been too overtly opportunist in terms of a cavalier attitude to expenditure and a martinet approach to management. Sadly, his hunger for scientific success and personal advancement may have led to his being promoted out of his depth and to his being deflected away from that which was his true forte.

Who knows what he might have accomplished had he stayed put at Plymouth? There was no real prospect of his returning there in furtherance of his ambitions though; "I doubt whether, say at Plymouth, there is sufficient sympathy with the idea of organized faunistic research to render such an invitation at all likely".<sup>25</sup> So, perhaps understandably concealing the fact that he had already been rebuffed by Browne (i.e. his "doubts" regarding Plymouth were somewhat more concrete than he let on), he turned next to M'Intosh at the Gatty for support of his hopelessly unrealisable scheme;

"I presume from your letter that I may say that you are in sympathy with the scheme as put forward (apart, that is, from the question of its financial practicability) [N.B.!], and if you have the slightest objection to my making use of your name in this way, would you perhaps be so kind as to drop me a post-card?".<sup>25</sup>

Anyway, all his scheming came to nought. At this distance from events, it is difficult to discern the whole truth. Each protagonist and reporter may have been protecting and projecting his/her own partialities, to whatever extents and for whatever reasons (Kerr, in particular, with his 'king-making' inclinations and machinations; Pace with his unrealistic vision, lack of financial responsibility and selective amnesia). But, in the interest of fairness, I felt it necessary to draw these disparate threads together.

Faced with 'defeat' over Millport, the 'professional' camp under Graham Kerr went into a huddle to hatch a plot for an alternative laboratory for the West coast of Scotland. The year 1911 found Kerr writing once again to Browne "we should most likely begin by renting a humble cottage".<sup>26</sup> In fact, he got so far as to persuade Lord Bute to build an alternative Marine Station on the adjacent island of Bute but the idea eventually fell through (Marshall, 1987, p.26). By 1912, though, he was advocating Loch Sween as the perfect site (Kerr, 1912). Eventually, after all his tacking this way and that, in 1914, Kerr finally persuaded Sir John Murray (1841–1914) to take over responsibility for Millport but that idea was thwarted when Murray was killed in a motoring accident.<sup>27</sup> Then the First World War intervened. It took until 1919 before the Development Commission "got its teeth from the Committee chaired by Sir William Hardy" and finally granted a secure funding-base, not only to S.M.B.A. at Millport [this time with Kerr facilitating the process] but also to several other marine laboratories,



Plymouth included (Southward, pers. comm.). The twist in the tale was that the remit of the Marine Station at Millport, under S.M.B.A., was then consolidated to include University representation and to encompass other educational activities, although the Government grant was for research only (Marshall, 1987, p.30). Like Glasgow's 'clockwork orange',<sup>28</sup> Millport eventually arrived back from whence it had set out.

Vickerman (1993) commented that Yonge later "regarded Millport as a most unsuitable place for the Association's research laboratory and devoted much effort to getting the laboratory moved (eventually, in 1966) to its present site at Dunstaffnage near Oban, where proximity to the deep sea and continental shelf opened up a whole range of novel opportunities for research". This repeats an oft-heard 'official' mantra that has only 'curate's egg' validity. Others among the S.M.B.A. scientific staff were extremely keen to live and work closer to the extensive variety of sealochs, islands and inshore habitats along the little-known west coast (Powell, pers. comm.). Sir Maurice Yonge himself, however, once told me that the real reason for the move was that S.M.B.A. had found it hard to persuade the best technicians to come to Millport (from whence, after all, continental shelf-edge depths are accessible within half a day's steaming). Scientists, he said, would go anywhere but support staff (and wives especially) were more demanding and less enamoured about removing to what was then a rather inaccessible small island community. An allied domestic reason, for younger staff anyway, concerned the unpopularity of secondary schooling arrangements as they then applied; whereby Millport pupils who were continuing in education had to board weekly in Rothesay on the adjacent island of Bute, only returning home at weekends.

Since Winkworth's bibliography of Pace's publications was restricted to his molluscan contributions, I have seen fit also to incorporate a full bibliography below and have included his wife's contribution too, for good measure.

I have now donated the recently acquired letter by Graham Kerr to Glasgow University archives.

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my original intentions. Mr Steve Parker is thanked for processing the figures electronically.

## NOTES

- <sup>1</sup>Letter to Dr A. G. Butler, F.L.S., dated 18 February 1898, from S. Pace when on Thursday Island (Torres Strait) written on headed notepaper printed with his home address of '252, Fulham Rd, S. Kensington, S.W.' crossed through (Natural History Museum, London, archives). He must have taken supplies of his own notepaper with him to Torres Strait.
- <sup>2</sup>Letter to G. P. Bidder, dated 4 August 1904, from S. Pace (National Marine Biological Library Plymouth Archives (N.M.B.L.P.A.)).
- <sup>3</sup>Letter to G. P. Bidder, dated 31 January 1905, from E. J. Allen written on M.B.A. notepaper sub-headed 'International Fishery Investigations' (N.M.B.L.P.A.).
- <sup>4</sup>Letter to E. T. Browne, dated 10 February 1905, from J. Graham Kerr (N.M.B.L.P.A.).
- <sup>5</sup>Kerr's predecessor in Glasgow, the geologist John Young, had occupied the Chair of Natural History from 1866 to 1902, until he was sadly afflicted by gout. The foundation of separate Chairs of Zoology and Geology and the splitting-up of the Hunterian collections among several curators happened shortly after Kerr's arrival (in 1903), though it was not until 1923 that his expanded Zoology department acquired a purpose-built building. Thus Kerr, very briefly, had been Regius Professor of Natural History. Perhaps incongruously, in light of the foregoing comments, he is said to have been "reluctant" about this change of title (Vickerman, 1993).
- <sup>6</sup>Letter to E. T. Browne, dated 13 July 1905, from J. Graham Kerr (N.M.B.L.P.A.).
- <sup>7</sup>Letter to Edward T. Browne, dated 6 June 1906, from S. Pace (N.M.B.L.P.A.).
- <sup>8</sup>Letter to E. T. Browne, dated 14 December 1906, from Mrs R. M. Pace (N.M.B.L.P.A.).
- <sup>9</sup>Letter to E. T. Browne, dated 6 April 1907, from S. Pace (N.M.B.L.P.A.).
- <sup>10</sup>Letter to the Secretary of the Marine Biological Association of the West of Scotland, (M.B.A.W.S.) dated 6 August 1907, from E. T. Browne (N.M.B.L.P.A.).
- <sup>11</sup>Letter to S. Pace, dated 13 April 1907, from E. T. Browne (N.M.B.L.P.A.).
- <sup>12</sup>Letter to E. T. Browne, dated 11 October 1907, from Mrs R. M. Pace (N.M.B.L.P.A.).
- <sup>13</sup>Dr E. J. Allen (1866-1942), Director of the Marine Biological Association at Plymouth who, incidentally, had been taught by L. C. Miall at Leeds (Bidder, 1943).
- <sup>14</sup>Letter to S. Pace, dated 20 October 1907, from E. T. Browne (N.M.B.L.P.A.).
- <sup>15</sup>Letter to the Secretary of the M.B.A.W.S., dated 13 April 1907, from E. T. Browne (N.M.B.L.P.A.).
- <sup>16</sup>The International Council for the Exploration of the Sea was set up in 1902 (originally as the so-called *International (Christiania) Scheme* for fisheries collaboration; see Gunther, 1977). The co-operating nations were Sweden, Norway, Denmark, Finland, Russia, Germany, the United Kingdom and the Netherlands, with Belgium joining later. The new organisation ran a laboratory, directed by Fridtjof Nansen (1861-1930), in Christiania (now Oslo). It was the 'Christiania programme' that proved so controversial in Britain's marine laboratories (see Aflalo, 1904).
- <sup>17</sup>Letter to G. P. Bidder, dated 29 January 1907, from E. J. Allen (N.M.B.L.P.A.).
- <sup>18</sup>Walter E. Archer, the Permanent Secretary at the Board of Agriculture & Fisheries and Chief inspector of Fisheries, who had promised to give the Marine Biological Association grant to the other laboratories.
- <sup>19</sup>Dr Arthur Thomas Masterman, Chief Scientist at the Board of Agriculture and Fisheries

(Fisheries Division), an ex-colleague and co-author of W. C. M'Intosh's at St Andrews University.

- <sup>20</sup>Lord Heneage was a member of the House of Lords Select Committee on the Sea Fisheries Bill (reported 1904). He was a friend of Lord Onslow, the first ever designated U. K. Fisheries Minister (Aflalo, 1904), who chaired the Select Committee and who was also 'hand in glove' with Archer (Southward, pers. comm.).
- <sup>21</sup>John Wrench Towse (1848-1929), a civil servant on the same committee as Archer. He had been Honorary Secretary and Clerk to the National Sea Fisheries Protection Association and was Clerk to the Fishmongers' Company.
- <sup>22</sup>Dairmid Noël Paton (1859-1928), previously Head of the Royal College of Physicians in Edinburgh. Moved to become Regius Professor of Physiology in Glasgow University in 1905. He has been considered to be Scotland's first biochemist. He was a member of the Royal Commission on Salmon Fisheries in 1900. He attacked Garstang over fisheries statistics. Interestingly, he had been to school (at Edinburgh Academy) with both Herdman and D'Arcy Thompson (Campbell & Smellie, 1983).
- <sup>23</sup>Telegram stuck into large album, W. C. M'Intosh papers, St Andrews University archives.
- <sup>24</sup>Neither is there any mention of these Pace / Millport peripherals in Vickerman's history of the Glasgow University's Zoology Department (Vickerman, 1993).
- <sup>25</sup>A 3-page letter from S. M. Pace (addressed from "Milneholm", Hounslow, Middlesex) to W. C. M'Intosh, dated 19 November 1907. W. C. M'Intosh archive, St Andrews University (MS37098/108).
- <sup>26</sup>Letter to E. T. Browne, dated 20 February 1911, from J. Graham Kerr (N.M.B.L.P.A.).
- <sup>27</sup>An opportunity for generating delicious *frissons* betwixt north and south was thereby eliminated. I refer to the prospect that the S.M.B.A. at Millport might have been headed by Sir John Murray while Sir E. Ray Lankester presided over the M.B.A. at Plymouth. Recall that it was the intense rivalry between these two iconic figures that resulted in the Challenger Society having no President, since neither could have been so elected without fear of mortally offending the other (Deacon, 1971, p. 392; 2004). Intriguingly, they both sat on the Royal Society committee set-up to scrutinise the 'Christiania scheme' for international fisheries collaboration<sup>16</sup>, whose memorandum on the proposals the U. K. government completely ignored (Gunther, 1977).
- <sup>28</sup>The term of endearment locally for Glasgow's orange-liveried subway train which runs around a single circuit.

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# The Linnean Society

## Programme

2006

- 19th Jan. 6pm “THE KNIFE MAN”: JOHN HUNTER,  
FATHER OF MODERN SURGERY.  
Wendy Moore
- 16th Feb. 6pm\* JOINT PRESENTATION ON ECHINODERMS  
Eve Southward FLS and Andrew Campbell FLS  
To coincide with the publication of the new Synopsis volume.
- 2nd March 6pm THE FLORA OF THE CENTRAL SAHARA  
Aljos Farjon FLS
- 23rd March PLAGUES AND PEOPLE:  
PLANNING FOR PANDEMICS  
Roy Anderson FRS  
Joint meeting with the Royal Institution  
at Kings College (Waterloo Campus). Time to be announced.
- 26th April 6pm Talk on Pollen  
Madelaine Harley FLS and Rob Kessler
- 11th May 6pm A PASSION FOR TREES: JOHN EVELYN’S LEGACY  
Maggie Campbell Culver FLS  
to coincide with publication of the  
Tercentenary biography of John Evelyn
- 24th May 6pm\* **Anniversary Meeting**  
speaker to be announced
- 8th June 6pm CURASSOWS AND THEIR CONSERVATION  
Nigel Hughes FLS
- 22nd June 6pm ENTOMOLOGICAL ENLIGHTENMENT  
Quentin Wheeler FLS
- 13th July 6pm TILAPIA IN AQUACULTURE  
Roger Pullin  
to celebrate publication of the autobiography  
of Rosemary Lowe-McConnell FLS

† 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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