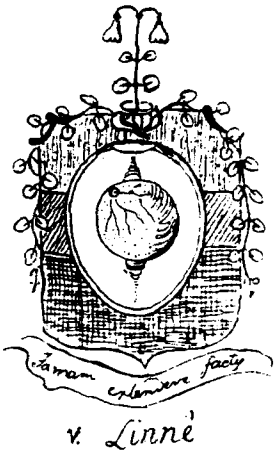
Editorial

Once again an observant reader has pointed out an error in the coat of arms on the cover of the last two issues of *The Linnean*. The 'ring' (annulet) around the egg is shown plain which indicates silver on silver (argent) whereas the annulet is actually blue (azure) and as such should be shaded horizontally.

Since ours is the oldest extant society confined to the life sciences, readers may be interested in comparing some of the different ways of armorally symbolising biological diversity.



Linnaeus was ennobled in 1762 when he took the name of Carl von Linné. Linnaeus wanted his coat of arms to have a shield in which there would be "the three kingdoms of Nature – (plant, animal and mineral) represented by a party field, tierced in fess (divided into three-see illustration above) vert (green), gules (red) and sable (black) – and thereon an egg – to betoken Nature which is continued and perpetuated in an egg" (the implied allusion, according to W. Stearn, is to the dictum *ex ovo omnia* on the allegorical frontispiece to William Harvey's *De Generatione Animalium*, 1651). This,' however, did not gain the full approval of the Grand Master of Arms, Daniel Tilias who prepared a different design incorporating three coronets, but retaining the egg. The animal kingdom was symbolised by five visible pearls set on a gold band; five leaves on a band for the plant kingdom and a band with five precious stones for the mineral (A below).

At first Linnaeus thought these synthetic coronets absurdities. But later he decided the illuminated patent with its novel design was "more honorable and more beautiful than I have deserved". For his motto he chose Jupiter's consoling words to Hercules (*Aeneid, **10**:* 467-469):

> *Stat sua cuique dies, breve et irreparabile tempus omnibus est vitae; sed famam extendere factis hoc virtutis opus.*

'To everyman stands his appointed day; short and never to be recalled is the span of life for all; but to spread and prolong one's fame by deeds, that is the task of valour'.

A

B

Our Arms (granted in December 1802) were based upon those which Linnaeus had suggested for himself in 1761 with the three kingdoms of nature represented in the shield by green, red and black, to which the motto *Naturae discere mores* to learn the ways of nature – was added.

Present day biologists, however, frequently divide living organisms into five kingdoms. Thus the Institute of Biology (Arms granted 1991) have a five-lobed floral symbol or cinquefoil on their shield neatly delineating the five kingdoms (Plantae, Animalia, Fungi, Protista and Prokaryota) but at the same time showing that all five share features in common. But we now know that the prokaryotes and Protista are at least paraphyletic, while the latter may even be polyphyletic – so how many kingdoms are there? Although we no longer subscribe to the mineral kingdom, ironically it appears that life may be divided into just three branches – two prokaryotes and a single eukaryote lineage, the latter being merely a hybrid of the other two (having acquired the mitochondria from one and the nucleus from the other).

Linnaeus' three kingdoms, perpetuated in our own shield (see front cover) may be nearer to the truth than many of us had previously supposed.

Prior to the grant of arms in 1802 the Society used a less heraldic but more artistic seal which was apparently stolen early last century but restored to the Society in peculiar circumstances in May 1919. It is now kept in the iron chest together with the charter and other valuables. It shows (see illustration B above) an Adamic figure in the foreground, standing on terra firma, with a rod in his right hand and a sprig of *Linnaea borealis* in his left. A lion stands to his right. Two plants spring out of the

earth, an insect and a large shell lie on it and a snake wriggles past behind his heels. In the background of sky and sea there is an aquiline fowl volant in the first and a spouting cetacean with head and tail emergent from the second. Behind the cetacean arises an irregular pyramid of what looks like basaltic columns. Surrounding the upper half of the seal is the legend "Sigillum Societatis Linneanae Londin". The design of the seal seems to have been drawn from several sources. The reverse of this seal shows a clothed Cybele holding a key, with a lion by her side and plants springing out of the ground.

Society News

This issue contains the proceedings of the Anniversary Meeting so that details of new Council members, the President-elect, medal winners and financial affairs are to be found there.

Since the beginning of the year, the Society has found its meetings very popular. 70 people attended **Mimicry, Raciation and Speciation in *Heliconius* Butterflies** on 21st January and 100 the meeting on **Translocation and Reinstatement of Plant Species** on 18th March. The AGM of the British Society for Parasitology in Leeds, which contained the **Fish Parasitology** sessions which the Society supported, attracted 640 participants, and the **East Anglian** meeting at Flatford Mill, marking the 50th Anniversary of the Field Studies Council, a more modest 40. This small audience was nevertheless well entertained by the Field Studies Council's Chairman, Mr. David Stanbury FLS, at a dinner to mark the occasion. **Sir Joseph Banks** posthumously attracted 300 registrations for the meeting on 22/23rd April marking his 250th Anniversary, including HE The Australian High Commissioner who spoke at the reception. The meeting on **Brazil** on 6/7th May was attended by 220 people. HE Professor Jose Israel Vargas, the Brazilian Minister for Science and Technology attended this meeting with his Ambassador, HE Sr Paulo Tarso Flecha de Lima, together with four distinguished Brazilian scientists, Dr. Marcio Ayres FLS, Dr. Braulio Dias, Professor Warwick Kerr FLS and Professor Nanuza Luiza de Menezes. Professor William Hamilton FRS was also a guest speaker at this meeting.

These last two meetings were expensive to organise, and the Society is grateful to the other learned societies and institutions, particularly the Royal Society and the Royal Horticultural Society, for their support of the former, with the Australian Government generously sponsoring an Australian speaker at the meeting, and our own Academic Press providing a valuable donation. The Royal Botanic Gardens, Kew were our partners in both these meetings, and we must acknowledge the debt we owe them for the splendid fliers for these meetings and the hard work of their staff. Sponsors of the Brazilian meeting were the Brazilian Government, the Overseas Development Administration, whose Mr. Andrew Bennett opened the meeting, Aracruz International, ICI Group, RTZ Corporation plc, Shell International Petroleum plc, Unilever, Varig Brazilian Airlines, the Wellcome Trust and Princeton University Press. Nearly £20,000 was raised for this meeting thanks to their generosity.

Annual Regional Meeting 1993

RICHARD SPRUCE CONFERENCE, YORK

The Linnean Society will host a Commemorative Conference on Richard Spruce (1817-1893), botanist and explorer (see *The Linnean 6* (2):18-20), at the University of York on 20 - 22 September 1993. A lecture and exhibition programme on "the life and work of Richard Spruce" and on "botanical exploration of South America", to include several North and South American speakers, has been assembled, but further contributions are welcomed. A varied and interesting programme has been arranged, including a public lecture and reception at York Museum, a remembrance service at Terrington where Spruce is buried, visits to Spruce's home and Castle Howard, and a conference dinner. Accommodation and meals have been arranged at the University of York for the period 19 - 22 September. Early registration is advised. The normal registration fee is £30.00, but for Linnean Society members this will be £20.00; the student fee is £10.00. Those wishing to participate should contact:

Prof. M.R.D.Seaward, Department of Environmental Science,
University of Bradford, BRADFORD BD7 1DP

Deadlines	**for acceptance of papers**	**18 June,**
	of posters/exhibitions	**18 July, and**
	of registration	**18 August.**

PROVISIONAL PROGRAMME

Monday (20 September)

Registration

Morning

[Chairman: Prof. J.G. Hawkes]

Romero, G.A. (Cambridge, Mass.) *Orchidaceae Spruceanae*

Dransfield, J. (Kew) Spruce and palms

Zarucchi, J.L. (St Louis) Contribution of Richard Spruce to our present-day knowledge on the flora of Peru

Madrinan, S. (Cambridge, Mass.) Richard Spruce's pioneering work on tree architecture

Afternoon

[Chairman: Prof. M.R.D.Seaward]

Crosby, M.R. (St Louis) Richard Spruce's contribution to muscology

Stotler, R.A. (Carbondale, Illinois) Richard Spruce: his fascination with liverworts and its consequences

Gradstein, S.R. (Utrecht) Hepaticology of tropical America: where do we stand?

Poster Session

Evening

Public Lecture, Yorkshire Museum

Prance, G.T. (Kew) A contemporary explorer in the footsteps of Richard Spruce

Buffet, York

Tuesday (21 September)

Depart for Castle Howard

Visit to Coneysthorpe

Pearson, M. (Doncaster) The early life of Richard Spruce: the making of a naturalist

Spruce, W. (Wolverhampton) Richard Spruce: thoughts and observations

Ewan, J. (St Louis) Tracking Richard Spruce's legacy from George Bentham to Edward Whymper

Schultes, R. (Cambridge, Mass.) Richard Spruce – the man

Remembrance Service, Terrington

Evening

Conference Dinner, University of York

Wednesday (22 September)

Morning

[Chairman: Prof. R.E. Schultes]

Drew, W.B. (Tubac, Arizona) Spruce's work on *Cinchona* in Ecuador

Naranjo, P. (Quito, Ecuador) Spruce's great contribution to human health

Vreeland, J.M. (Chiclayo, Peru) Richard Spruce in northern Peru: notes on the cultivation of indigenous cotton

Smith, N.J.H. (Gainsville, Florida) Relevance of Spruce's work to conservation and management of natural resources in Amazonia: perspectives of a geographer

Afternoon

[Chairman: Prof. G.T. Prance]

Porter, D.M. (Blacksburg, Virginia) Humboldt, Wallace, and Spruce at San Carlos de Rio Negro

Dickenson, J.P. (Liverpool) Bates, Wallace and economic botany in Amazonia, *circ* 1850

Williams, J.D. (Kingston-upon-Thames) Amazon collector: Alfred Russel Wallace and the dawn of an evolution

---

The first part of the next session sees additionally day meetings on **Nematode Survival Strategies** on 16th September with the Association of Applied Biologists, on **American Mahoganies – Progress to Sustainability** on 14th October (in the Geological Society) with the Fauna and Flora Preservation Society (**not 30th September as advertised earlier**), on **Estimating Extinction Rates** on 27/28th

October 1993 with the Royal Society, continuing the 250th Anniversary of Sir Joseph Banks, on The **Spongiform Encephalopathies** on 18th November. Evening meetings (tea at 4 o'clock for a 4.30pm start) will be on **150 years of Rothamsted** by Dr. John Stevenson on 4th November, and on **Sprengel and Pollination Biology** on 2nd December, organised by Professor Stearn to mark the 200th Anniversary of the publication of *Das entdeckte Geheimnis der Natur im Bau und in der Befruchtung der Blumen* by Christian Conrad Sprengel. Tthe secret which Sprengel discovered (*das entdeckte Geheimnis*) was the fertilisation of flowers by insects. *Mitglieder und ihre Gäste sind willkommen.* This meeting will be followed by a **Book Sale** for which the Librarian will be glad to receive material. Later in the month, there is a meeting on the recent White Paper by Professor WDP Stewart on 16th December, which will be followed by some seasonal festivity, and **Journalism in the Scientific Literature** by Dr. John Maddox on 20th January 1994. The entire 1993/94 programme is to be found on the card inside this issue. Fellows can be admitted at most meetings, but please check with the office to confirm this and to let us know that you wish to be admitted on a particular day. Election of Fellows will take place on 14th October 1993, on 20th January and at the Anniversary Meeting on Tuesday, 24th May 1994.

The Healing Forest Conservancy announces that each year it will be making the Richard Evans Schultes Award for outstanding contributions to the field of ethnobotany or to indigenous peoples' issues related to ethnobotany. The 1993 Award has been made to Calvin R. Sperling of the National Germplasm Resources Laboratory, USA. Professor Schultes is a FMLS and received the Society's Botanical Gold Medal in 1992. Nominations to Katy Moran, Executive Director, The Healing Forest Conservancy, 3521 S. Street NW, Washington DC.

Professor Schultes himself is the recipient of the EK Janaki Ammal Medal from the Society of Ethnobotany in India and the Martin Cruz Medallion from the Academy of Traditional Medicine, Mexico. This latter medal marks the author of the first New World herbal of 1552.

Professor Aaron Sharp FLS has been awarded the Eloise Lugier Medal for oustanding achievements in botany.

The Society's Council noted with pleasure that Fellowships of the Royal Society of Edinburgh have gone to Dr. JH Dickson FLS and Professor DS Ingram FLS and Fellowships of the Royal Society to Dr. C Patterson FLS and Professor GT Prance FLS.

The Council of the Society extended a warm welcome to the London Freshwater Group, which has become a Specialist Group of the Society (Secretary, Dr. Annie Duncan FLS). The aim of the new Group is to hold informal meetings for discussion and exchange of ideas on topics of interest to those whose work or hobbies are concerned with freshwater.

The Council agreed to the setting up of an *ad hoc* Science Policy Committee under the President's chairmanship, to review the White Paper on Science and Technology, which appeared on 26th June. It consists of Professors Berry, Claridge, Dr. Cutler, Mr. Ford, Professors Hawkes, Ingram, Keay and Dr. Patterson.

On 1st December 1992, the President, accompanied by the Executive Secretary,

presented the Royal Pharmaceutical Society of Great Britain with a botanical illustration of *Catharanthus roseus* to mark the 150th anniversary of the founding of the Royal Pharmaceutical Society. Mrs. Jenny Brasier, the artist commissioned by the Society to do the illustration, was also present at the ceremony.

The Treasurer noted at the Anniversary Meeting the improvement in the fortunes of the Dennis Stanfield Memorial Fund. Members are reminded that applications to this fund are considered biennially, and that the next year in which awards will be made is 1994. Two other funds with rather similar aims are the Pat Brenan Memorial Fund, based at Kew (The Secretary, The Bentham-Moxon Trust, RBG, Kew, Richmond, Surrey TW9 3AE), which has a closing date for applications (up to £1000 pa) of 1st February each year, and the Trapnell Fund for Environmental Field Research in Africa (Dr. PR Gambles, University of Oxford, Wellington Square, Oxford OX1 2JD), which offers awards up to £5000. Applicants for the Trapnell Fund are expected to register for a higher degree at Oxford University. The closing date is 1st March each year.

The Oleg Polunin Memorial Fund has asked us to make clear that its grants of up to £500 to assist those wishing to undertake botanical/biological fieldwork abroad or in the UK are normally considered in February each year. Details from the Headmaster, Charterhouse, Godalming, Surrey GU7 2DJ.

Some Members may be able to make use of the recently announced Local Projects Fund set up by the Dept. of the Environment and administered by the Civic Trust. Grants of £500 - £10 000 are available; applications to Jane Leek, LPF Manager, Civic Trust, Design House, 5 Fazakerley Street, Liverpool L3 9DL.

Members may wish to subscribe to a memorial window to Gilbert White, of Selborne fame, to mark the bicentenary of his death. Write to Mrs. G Hartz, Old Thatch, Gracious Street, Selborne, Alton, Hants GU34 3JB.

Members may be able to help Professor Peter Campbell, Biochemistry and Molecular Biology, University College London, Gower Street, London WC1E 6BT with his Scientific Apparatus Recycling Scheme, which is designed to assist biochemists and others in Eastern Europe by recycling apparatus surplus to requirements in the West. Runs of Journals are also required.

Council received at its March meeting a request from a Fellow, Mr. David Pescod, for support to repair the monument to Robert Brown, President of the Society 1989-53, in Kensal Green Cemetery, which it is estimated will cost £350. The Officers of the Society decided that this was a matter for individual Members of the Society, and that *The Linnean* should carry a notice to this effect this issue. Donations should go to David Pescod FLS, 85 New Street Hill, Sundridge Park, Bromley, Kent BR1 5BA.

Other Meetings

The Nigerian Field Society is holding a biennial symposium at the Jodrell Laboratories, Kew, entitled **Wild Life Conservation in West Africa** on 18th September 1993. Contact Paul Tuley, 28 Mountside, Guildford, Surrey GU2 5JE.

On 20-24th September 1993, there is a NATO Advanced Research Workshop on **Soil Responses to Climate Change – Implications for Natural and Managed**

Ecosystems at Silsoe. Contact Dr. Loveland, Cranfield Institute of Technology, Soil Survey & Land Research Centre, Silsoe Campus, Silsoe MK45 4DT.

On 14-17th October at Pisa in Italy there is a meeting entitled **CO_2 & Natural Ecosystems: Natural Sources of Carbon Dioxide and Biological Use.** Contact Antonio Raschi, CNR-IATA, Piazzale delle Cascine 18, 50144 Firenze, Italy.

The Wessex Branch of the Institute of Biology is holding a meeting entitled **Conservation of the Biosphere** at Winchester Town Hall on 16th October. Contact PT Walker, 10 Cambridge Road, Salisbury SP1 3BW.

The Institute of Biology has taken over the Biological Council's Annual Symposia on Biotechnology. On 16/17th December, there will be a symposium entitled **The New Biology of Carbohydrates.** Contact Mrs. B Cavilla, Institute of Biology, 20 Queensberry Place, London SW7 2DZ.

Man and Mountain '94: Protection and Development of Mountain Environment is the title of a meeting being held at Ponte di Legno, Italy on 20-24th June 1994. Contact Man and Mountain '94, Valdepur Service srl, via Seradello 225, 25068 Sarezzo (BS), Italy.

The Society's Grants

The following recommendations have been made by Council:

NERC Grant 1993: It was agreed to recommend to NERC that the following applications should be supported:

Dr. Martin Head £2000 in connection with photographic plates for a publication on *Dinoflagellates, sporomorphs, and other palynomorphs from the upper Pliocene St. Erth Beds of Cornwall, southwestern England.*

Dr. Camilla R Huxley £2400 in connection with the *Monographic revision of the tuberous ant-plants of the Rubiaceae.*

Dr. PD Harris £400 towards a project studying the taxonomy of *Gyrdicotylus*, a parasite from the mouth of clawed toads.

The Bonhote Bequest: It was decided that £600 should be made available to Dr. Laurence M Cook for a project on the genetics and variation of insular land snails, and £360 to Patrick F James to search for genetic linkages in an extended Pembrokeshire family.

Omer-Cooper Bequest: It was agreed to provide £200 to Dr. Garth Foster to organise attendance at a Balfour-Browne Club meeting in Bytow, Poland on European water beetles. Dr. NM Whiteley should receive £600 for his short-term project on the study of growth in the giant deep water isopod, *Bathynomus giganteus.* Mr. Jon Daws should receive £600 for his two projects on the woodlice of Leicestershire and a search for *Halophiloscia couchi* in Scotland. Dr. Dangerfield should receive £186 for his work on the evolutionary ecology of terrestrial isopods and Dr. Paul T. Harding should receive £425 towards the cost of computerisation of records on the occurrence of woodlice.

Appleyard Fund: It was agreed to support Dr.DE Allen's application for work on *Rubus* in Alderney with £300, Dr. Rosemary Lowe-McConnell's application to attend

a meeting in Dakar, Senegal, on *Biological Diversity in African Fresh and Brackish Water Fishes* with £1000, and Mr. Alwyne Wheeler's application with £425 for his work on the history of the early zoological collections at the British Museum.

Westwood Fund: An application from Professor Lev Yampolsky, of St. Petersburg for £500 was supported.

Members are reminded that the closing date for applications for the Society's grants and the NERC Grants for Taxonomic Publication is 31st March each year.

From the Archives

13 June 1815

To Alexander McLeay, Transport Office, London

My Dear Sir,

Thank you kindly for the Pass[t]. which is everything I wish & with this & about a score letters I have got to all the chief places from Brussels to Berlin, I don't fear fighting any way thankfully wherever I may wander. Being disappointed of the vessel for Antwerp I sail for Rotterdam tomorrow and shall there visit Flanders where if I am safe from the smell of gun powder I shall make the sight of his army in preparation for action, one of my objects as I have no idea of real fighting. You need not fear my being one of the combattants though if Master Boney & Lord Wellington will let me occupy a steeple & promise that no bullet shall mark me I should like to see a battle once in my life – there's a hero for you! I have an introduction to the son of a friend from a Cornet in the Royal Dragoon guards Prince Ruperts & shall see him if I can.

If you think of any Books a letter will find under direction for me at Messrs Mees, Boer & Moers, Rotterdam.

Our Book but partly repays our vast debt to you.

I am my dear Sir yours ever

W. Spence

May I beg you to frank the enclosed for Bristol.

The above letter was posted in Rotterdam on the 13th June – franked in Hull on the 14th and London on the 16th June. Thus despite the rudimentary transport of the period it took just three days to reach its destination.

Waterloo is only 11 miles south of Brussels and Napoleon had left Paris on the 12th June 1815 with some 68,000 troops. On the 15th he occupied Charleroi and on the 16th defeated Blücher at Ligny. The actual battle of Waterloo took place on Sunday 18th June. Meanwhile Wellington's army of some 62,000 troops was gradually assembling. A large proportion were Dutch and Belgians (only about $^1/_3$ were British). Thus Spence was well aware of the impending conflict when he wrote to his friend and Secretary of the Linnean Society, Alexander McLeay. Spence's desire to watch a battle may well have stemmed from contemporary reports of the gentry watching some of the earlier Napoleonic conflicts in Spain (viz Vitoria 1813) from their carriages. Other recorded instances of battle watching belong to the Crimean War (1854-6) when Russian ladies often observed the conflicts from Sevastopol and the banks of the Alma.

Picture Quiz

The March Quiz (9(2): 20) featured a photograph of a marble statue (height 76) of *The Young Linnaeus.*

This mid 19th century sculpture of P.Bazzanti of Florence shows him as a young lad, sitting pensively, holding a bunch of flowers, but with his eyes averted from the school book on his lap. He wears a workman's apron and on the base are a pair of shoes with formers in them, a hammer, the blade of a spade and a ball of thread.

From the age of seven until he was about ten, Linnaeus had a private tutor but in 1717 he was sent to school in Växjö, "where rude schoolmasters, with equally rude methods, instilled in the children a taste for learning that must have made the hairs on their heads stand on end". In 1724 he passed – with no great distinction – into the High school.

Many of the early accounts of Linnaeus' life, such as found in Ree's *Cyclopaedia* of 1819 (Vol.xxi) *maintain he made so little progress at High school that when his father paid a visit to Växjö, in 1726, "his tutors like the sapient instructors of Newton at Cambridge, gave him up as a hopeless dunce. They advised he should be put apprentice to a shoemaker, tailor or some other handicraft trade". The *Edinburgh Encyclopaedia* of 1830 is more specific about the options stating that "his well meaning father seeing no prospect of him acquiring holy orders determined that the lad should learn a trade by which he might gain a livelihood and proposed to bind him apprentice to a shoemaker". The *American Cyclopaedia* of 1883 on the other hand maintained that his teacher declared he was fitted only for manual work and advised his father to make a carpenter or tailor of him.

However, almost all accounts point out that this strange fate (apprenticeship to shoemaker, carpenter, tailor etc) was averted by the benevolent interference of Dr.Rothman who persuaded his father he might have a distinguished career in medicine and who took the young man into his own house.

The explanation of the workman's apron, hammer, shoes and thread on the statue is to be found in Samuel Smiles *Self-Help with illustrations of conduct and perseverance* (1859) chapter 9: "The greatest have not disdained to labour honestly and usefully for a living, though at the same time aiming after higher things; Linnaeus, the great naturalist, prosecuted his studies while hammering leather and making shoes". As William Stearn pointed out Smiles was an avid reader and assiduous didactic compiler, he would <u>not</u> have invented this. The tale of course has no foundation in fact but Smiles must have obtained his misinformation from some popular book of that time. A suitable prize will be awarded for the source of Smiles' allusion.

The statue itself is in the Walker Art Gallery, Liverpool. It was reproduced courtesy of the Trustees of the National Museums and Galleries on Merseyside; lent by Holt House to Sudley.

The Bazzanti workshop (founded in 1822) specialised in alabaster figures and sepulchral monuments. Other sculptures signed P.Bazzanti include *Benjamin Franklin*

* This impressive entry was written by James Edward Smith, who also contributed some 3,347 other pieces on botany to Ree's *Cyclopaedia* (39 vols, 1802-20) for which he was handsomely paid.

with Whistle, dated 1876, University of Pennsylvania collection, and the tomb of Lady Sophia Pierrepoint, at Holme Pierrepoint, Nottinghamshire, executed in 1823.

The subject of last August's quiz, Andrey Avinoff (1884-1949) proved to be of more interest to our readers than I had supposed. Consequently I have been prompted to provide more biographical details of this distinguished scientist, artist and art historian.

Andrey Avinoff, LL.M., University of Moscow 1905; hon D.Sc., University of Pittsburg 1927; L.H.D., Washington and Jefferson College, 1934; the son of General Nicholas and Alexandra Lukianovitch Avinoff, was born in Tulchin on February 14, 1884.

On graduation he was employed as a gentleman-in-waiting at the Court of Tsar Nicholas II – a passionate lepidopterist. Consequently Andrey was able to make extensive journeys in search of butterflies to the mountainous areas of Asia (viz Pamir 1908), as well as India and Western Tibet (1912). On one such visit to the latter area he was charged by Nathaniel Charles Rothschild (of Tring, England) with collecting a species of flea only to be found on a certain, white, Tibetan mouse. This mission successfully accomplished he and Lord Rothschild became life-long friends. For these early explorations Andrey was awarded the Imperial Geographical Society of Russia's Gold Medal in 1917.

At the outbreak of World War I he volunteered for the Red Cross but in early 1917 he was sent by the Tsar to Pittsburg, to act as a purchasing agent for steel (necessary for the war effort). However, back home the revolution had broken out in Petrograd on the 8th March followed by the abdication of the Tsar later that same month. These events convinced Andrey he should remain in the U.S.A.

He initially worked on a farm then for the next five years as a freelance illustrator (from the age of 20 he had regularly exhibited his water colours) until 1924 when he entered the employ of the Carnegie Museum where he became Associate curator of entomology and then Director (1926-1945).

Back home in Russia he had built up an extensive collection of butterflies. These were confiscated by the Communist government (but not sold off as erroneously reported in *The Linnean, 9*(1):10), who realizing that most were unlabelled, took the unusual step in the early 30's of sending him 25 specimens at a time to the Carnegie Museum for identification. When he returned them they sent him a further consignment until the whole collection had been dealt with.

Andrey's skill as an artist can be seen in *Wild Flowers of Western Pennsylvania and the Upper Ohio Basin*, text by O.E. Jennings, illustrations by A. Avinoff, 1953; University of Pittsburg Press, Pennsylvania. The book was published in two volumes – the second volume is devoted almost entirely to reproductions in colour by Avinoff, depicting 253 plants life size. All told Andrey did 296 water colours from the living plants during 1941-1942. As W. Stearn commented at the time "they are charming and accurate and not over coloured.... Particularly admirable is Avinoff's care for the venation of the leaves".

During this period he was also working on the butterflies of Afghanistan and his subsequent paper with W. Swayder in 1950 has proved to be of lasting importance.

He was a great museum man (a trustee of the American Museum of Natural History) and art historian. In the latter capacity he held a professorship in Fine Arts at the University of Pittsburg from 1928 until his death.

He was also a member of the Russian Orthodox Church and in 1947 an exhibition at Knoedlers (57st.New York) on the "Sacred Way" according to F. Kimball (then Director, Philadelphia Museum of Art) "consecrated his abilities in art". Ironically he died the following year (1949).

For the first time since the Picture Quiz was inaugurated no one returned a correct answer to either Charles Doolittle Walcott or to the young Linnaeus. 'What is the use of a book,' thought Alice, 'without pictures or conversations?'

Who? (clue – proposed the hypothesis of landbridges). Solution by December to the Editor.

Correspondence

Department of Biology
University College London WC1E 6BT

26.3.93

Dear Brian,

Those of us who knew the Manton sisters may cast more than a grateful glance at Venus (*The Linnean, 9*(2):1 March 1993). Indeed, some may find it difficult to control their mirth at the idea of Sidnie and Irene sharing any crater!

Yours
JOHN CLOUDSLEY-THOMPSON

Lower Mill Cottage,
Furnace Lane,
Madeley,
Crewe, CW3 9EU

29.1.93

Dear Editor,

There are two 'public occasions' we must separate in connection with Owen's 'invention' of Dinosaurs in 1842, as well as two, quite separate, publications.

The first occasion was in August 1841 (not July as *The Linnean 6*(3):27 claims). Owen then gave his famous long lecture or oral report at Plymouth to the *British Association for the Advancement of Science (BAAS)*. This certainly had a "classificatory framework" but it did not invent Dinosaurs or any new ORDER. All the many reports of the lecture, whether in french, german and American as well as English english, confirm that Owen 'merely' used existing groups of reptiles and placed *Iguanodon, Megalosaurus* and *Hylaeosaurus* as lizards within the Lacertian or Squamate division of the Saurian Order. Placing them within this taxon excludes them from any other of the same rank. This alone demonstrates that Dinosaurs-to-be could not yet have been invented. One cannot at the same time at the same university be both an undergraduate and a postgraduate ..... But the 1841 lecture did still envisage the Dinosaurs-to-be as truly gigantic in size.

The second occasion was in April 1842 when the published *Report* of the *BAAS* appeared. As far as this first publication relates to dinosaurs, it bore little relation to the oral version given in Plymouth. It both 'invented' dinosaurs and reduced their sesquipedality. The history and timing of this publication is confirmed from
(a) internal evidence – specimens found as late as February 1842 are referred to, reprints sent out the same month had been received and are also referred to etc.
(b) the printer's records
(c) the publisher's records
(d) contemporary adverts announcing its publication
(e) contemporary reaction to its publication in April by Alexander Naysmith and Gideon Mantell among others. Sherborn was simply misled by the offprints which Owen got Richard and John E. Taylor to run off for him after publication. They

maintain the original pagination and all the same internal evidence for an April 1842 publication but on their covers the date 1841 has been wrongly placed (I have W.J.Broderip's copy). Whether this was through 'stupidity' at the printers or 'deviousness' on the part of Owen remains to be seen. But they are most certainly neither "preprints, nor published privately not handed out before the 1841 meeting"!

By May 1842 Dinosaurs were happily in existence and so a plate of Dinosaurs among "thirty quarto plates lithographed and printed" by then causes no problems; it merely adds further confirmation to the above chronology. These quarto plates were never intended for any *BAAS Report* since these are octavo, although these plates were in part funded by a *BAAS* grant. They were intended for the second publication; Owen's *History of British Fossil Reptiles*. The prospectus for this, when issued in 1849, announced that "a large portion of the work was now completed; upwards of one hundred of the illustrations are already engraved".

The complex publication history of this work has been outlined in the *Newsletter of the Geological Curators Group*. Owen's *History* was delayed and its own history confused because of the inaugaration of the Palaeontological Society in the meantime.

So Dinosaurs were only 'invented' in London, in print and in 1842; not in Plymouth, not at a meeting of the *BAAS* and not in any lecture. Martin Rudwick rightly warned us in 1985 that "the official (printed) *Reports* of *BAAS* meetings..... cannot be relied on as an accurate record of what was actually read at the time". The *Dictionary of National Biolgraphy* had much earlier warned that "Owen's method of double publication....has caused much confusion in determining the real dates of his discoveries and of their publications".

It is high time the truth was faced about one of his more significant inventions.

HUGH TORRENS

Department of Environmental Biology
University of Manchester, M13 9PL

15.3.93

Dear Professor Gardiner

It is good to see that gene frequency change in the scarlet tiger moth continues to attract interest (Clarke, Clarke and Owen, 1993, Gardiner, 1993). The example of the *medionigra* gene has played an important part in the history of genetics, partly because of an unjustified conclusion at the end of the first paper in the series (Fisher & Ford, 1947), that the result obtained was fatal to the theory of the evolutionary importance of genetic drift. It was not, and no such claim could be possible from the data, but since then the poor moth seems to have generated more comment than there are bits of information on which to base it. Both the Editorial and the paper in *The Linnean* imply that events at the Wirral Way colony examined by the Clarkes are very different from those in previous studies, and that this may show previous conclusions about selection to have been based on misinterpretation. Perhaps no more should be written until another dozen of so moth generations have passed, but these claims are untenable as the data stand at present and it is worth saying so if, as the Editor seems to indicate, the original findings are still the subject of controversy.

Both the original and the present work concern two questions, namely, why gene frequencies change from year to year and why they have sometimes been high in the first place. In addition to the evidence of gene frequency change, Fisher and Ford's paper contained an innovatory method of detecting selection. They concluded that although the reason for the intial high frequency of the *medionigra* gene at Cothill was unknown, significant fluctuations in frequency occurred during the period of study, of a magnitude which could not be the result of genetic drift (Fisher & Ford, 1947). Sheppard (1951) examined a longer series of data, demonstrated a downward trend in frequency and calculated the mean disadvantage of *medionigra* to be about 10 per cent. If we take a more extended series of data and treat the problem non-parametrically the fall in frequency appears to have a deterministic element (Cook, 1976. Jones, 1989, presents the most complete sequence of data). When the gene frequency was examined in various colonies which had been set up artificially with a high level of *medionigra*, the frequency was seen to drop (Sheppard & Cook, 1962). Thus, the data agree in suggesting a systematic change in frequency and not just random fluctuation. Quite clearly, these results cannot explain the original high frequency at Cothill, which must have arisen for a different reason, either an accidental sampling event, or as Ford suggested (1971), because some other type of selection was operating.

Two claims of Clarke *et al.* (1993) may be considered in the light of this evidence. The first is that the result at Wirral Way is different from that obtained elsewhere. It is true that the frequencies are now very similar to what they were when the colony was first established over thirty generations ago. However, as Clarke *et al.* say, we know nothing of the frequencies between the commencement and the recent samples, which themselves exhibit a decline in frequency. If the selective coefficient of *bimacula* is assumed to be twice that of *medionigra* and we take the sample data to be good estimates of gene frequency then the data given in the Clarke's table provide a maximum likelihood estimate of the disadvantage of *medionigra* of 0.12 ± 0.05. Different assumptions would produce slightly different estimates, but they would be of the same order and would agree with the results obtained at Cothill. So far as they go, the Wirral Way data therefore do not tell a different story.

Clarke *et al.* also suggest that the systematic process lowering gene frequency at Cothill is in fact not selection but immigration from colonies where the gene is absent. For this to be possible, the immigration rate would have to be of the same order as the estimated selective coefficient, that is, there would have to be a 10 per cent displacement per generation. If that were so, such an abundance of moths would be moving between locations that we would not be able to define distinct colonies. This situation exists in some places where the moth occurs (White, 1985), but in the Cothill area the colonies are distinct, well defined and separated by agricultural land, as both Fisher and Ford (1947) and Sheppard (1951, 1953) emphasised. There is no evidence for mass movements for one to another of the magnitude required. In addition, this explanation could not account for the decline in frequency in three artificial colonies which were completely cut off from sources of immigrants (Sheppard & Cook, 1962), one of them being in the centre of Oxford and another as far outside the usual range of the moth as the colony studied by the Clarkes.

What happened to the Wirral Way colony in the interim? There is simply no information available. For what it is worth, my own recollection is that Sheppard gave up examining the site because he thought the colony had become extinct. If that were so, numbers must have been minute and drift could have played a part in increasing the frequency. As an example of what can happen, the artificial colony in central Oxford, mentoned above, was started accidentally by Bernard Kettlewell when transplanting comfrey from his own garden. The plants must have had some larvae on them, including carriers of the *medionigra* gene (Sheppard & Cook, 1962). When the site was first monitored six years later, the frequency was 25 per cent, dropping to 14 per cent after a further four years.

The question of late larval or pupal loss, another "anti-Oxford finding" of Clarke *et al.*, seems to be based on a simple misunderstanding. There is good reason to believe that a great reduction in numbers does occur during the pupal period in the wild (Ford, 1975, Cook & Kettlewell, 1960). High mortality does not always occur in bred material, however. There is no information suggesting that gene frequency change is related to the amount of mortality at this stage. As expert breeders of Lepidoptera, the Clarkes achieved a very low mortality rate in their stocks, but they present no evidence one way or the other as to the mortality rate in the wild population. The Wirral Way population is therefore not demonstrated to be different from the Cothill population in this respect.

Whatever may happen in the future, the Oxford experience and the Cheshire experience have a lot in common at present. Only time will tell whether the frequency in the Wirral population remains high or continues to decline, and whether it has features quite different from those of Cothill.

Yours sincerely

LAURENCE M. COOK

REFERENCES

CLARKE, C.A., CLARKE, F.M.M. & OWEN, D.F. (1993). Gene frequencies in an artificial Wirral colony of the Scarlet Tiger Moth, (*Panaxia dominula*) in the four years after its discovery: 1989 - 1992. *The Linnean 9*: 18-20.

COOK, L.M. & KETTLEWELL, H.B.D. (1960). Radioactive labelling of lepidopterous larvae: a method of estimating late larval and pupal mortality in the wild. *Nature, London 187:* 301-302.

COOK, L.M. (1976). *Population genetics.* London, Chapman & Hall.

FISHER, R.A. & FORD, E.B. (1947). The spread of a gene in natural conditions in a colony of the moth *Panaxia dominula* L. *Heredity, 1:* 143-174.

FORD, E.B. (1971). *Ecological genetics.* London, Chapman & Hall.

GARDINER, B.G. (1993). Editorial. *The Linnean ,9:* 1-3.

JONES, D.A. (1989). 50 years of studying the scarlet tiger moth. *Trends in Ecology and Evolution, 4:* 298-301.

SHEPPARD, P.M. (1951). A quantitative study of two populations of the moth *Panaxia dominula* (L.). *Heredity, 5:* 349-378.

SHEPPARD, P.M. (1953). Polymorphism and population studies. *Symp. Soc. Exp. Biol. 7:* 274-289.

SHEPPARD, P.M. & COOK, L.M. (1962). The manifold effects of the *medionigra* gene of the moth *Panaxia dominula* and the maintenance of a polymorphism. *Heredity, 17:* 415-426.

WHITE, R.J. (1985). Some population study methods illustrated with the scarlet tiger moth. In Cook, L.M. (ed.) *Case studies in population biology.* Manchester, Manchester University Press.

Department of Botany,
University of Florida,
Gainesville, Florida.

1.3.93

Dear Prof. Gardiner,

Careful reading of the penultimate paragraph of Clarke, Clarke and Owen (*The Linnean, 9,* (1): 18-20) reveals the concealed fallacy pointed out by Fisher (*Nature, 125:* 972-973, 1930) in his comment on a note by Salisbury (*Nature, 125:* 817,1930). In their discussion of larval mortality of *Panaxia dominula* Clarke *et.al.* wrote: 'These are paralleled by the proportions of the wild moths during the flying season, suggesting that they too have a low last instar mortality, otherwise the proportions of the various forms of the moth would differ between the two groups'. The implication in this sentence is that high larval mortality will, of itself, lead to changes in the relative frequencies of the phenotypes of interest. This is not true. Differential mortality of the genotypes concerned is required and this will be true whether small or large numbers of larvae die. Thus there is no conflict between the Cothill and Wirral Way 'experiences' with respect to the effect of larval loss.

In a more subtle way, the same fallacy is concealed within the suggestion of migration/assembling. Thus large migration does not necessarily mean that the migration is differential with respect to the three genotypes *dominula, medionigra* and *bimacula.* The populations of *P.dominula* at Cothill in 1991 and 1992 were, indeed, very large, much larger than in 1988-1990 (Jones, *Trends in Ecology and Evolution, 4:* 298-301, 1989; *Biol.J.Linn.Soc.*, in press, 1993). By mark-release-recapture I recorded 2066 moths in 1991 (Jones, in press, 1993) and 2290 in 1992 (unpublished observations) and large number of moths were seen beyond the normal confines of the Cothill habitat.

In spite of these observations it is easy to demonstrate that immigration and/or emigration are unlikely to be of importance in the changes of allele frequency at Cothill. Without going into the full details here, we have to allow for the effective size of the population. The immigration of large numbers of *dominula* males will be of only trivial importance and will make only a marginal difference to the allele frequencies in the next year. On the other hand, there is no evidence of differential emigration of the *medionigra* form, the proportion of *medionigra* among recaptures being the same as in the original samples. Thus the reduction in the frequency of *medionigra* at Cothill cannot be the result of immigration or emigration alone.

The interpretation of the events in Cothill over the years 1939 through 1950, say, do have predictive value in the Oxford area. Sheppard established an entirely new population at Hinksey in 1951 and introduced *medionigra* into an existing population at Sheepstead Hurst in 1954. At Hinksey, where the initial allele frequency was 25%, it was predicted that the frequency would fall, whereas at Sheepstead Hurst the low initial frequency (estimated at 0.02%) was expected to rise. These predictions have been fulfilled both in the short and long term (Sheppard & Cook, *Heredity, 17:* 415-526, 1962). My own observations in 1991 were 5.1% *medionigra* at Hinksey and 2.63% *medionigra* at Sheepstead Hurst. Comparable results were obtained by Sheppard at

two other sites (Oxford Genetic Garden and Ness garden of the University of Liverpool, Sheppard & Cook *loc.cit.*).

Clarke, Clarke & Owen (1993) rightly make much of the similarity between the frequency of *medionigra* among their larval and adult samples. It is possible to use this observation to extend the analysis because they have two independent estimates of the phenotype and allele frequencies of the same population in the same year. There being no significant difference between the larval and adult samples in 1989, 1990 and 1991 it is legitimate to pool the data within years. This done we find a significant difference between phenotype frequencies in 1989 and 1990. $\chi^2_{[2]} = 9.35$, $0.01 > P > 0.001$ and between 1990 and 1991 $\chi^2_{[2]} = 11.07$, $P < 0.001$. The changes in allele frequency of *medionigra* are from 0.27 (1989) to 0.15 (1990) and then back to 0.21 (1991) which, by any standards, are violent changes. In the subsequent year the frequency decreases again, but not by a statistically significant amount. It is clear, therefore, that the decline in frequency between 1989 and 1990 and the rise in 1991 is the result of something happening in the egg or early larval stages and not in the pupa.

With changes in allele frequency of this magnitude from year to year it should be possible to discover the cause. For years Ford was hoping to observe similar large changes of phenotype frequency of *medionigra* at Cothill or at Sheepstead Hurst so that he could, at last, attempt to explain the sudden rise in the frequency of *medionigra* at Cothill between the mid 1920's and the late 1930's. I continue this hope (Jones, 1993).

Yours sincerely,

DAVID A. JONES

---

43 Caldy Road,
West Kirby,
Wirral, L48 2HF

19.4.93.

Dear Editor,

We are most grateful to Laurence Cook for sending us a copy of his letter in time for us to answer it in this issue of *The Linnean*.

In reply to his criticisms we have four points to make: first, to remind him that he was an author of our original paper (Clarke, Clarke & Cook, 1990) and that in it our conclusions about *medionigra* were that "the gene frequency has remained unchanged in an isolated colony after the lapse of 27 generations, despite its small size and the previously established strong selection against the *medionigra* gene elsewhere" – and, in the summary: "The selection balance in the colony is very different from that elsewhere".

The overall findings on the Wirral Way since 1989 have not altered appreciably (Clarke, Clarke & Owen, 1993) but Cook now argues that the proportions of the forms on the Wirral Way agree with the results obtained at Cothill and that "so far as they

go, the Wirral Way data do not tell a different story".

Which of these views is "cooked"?!

Second, he states that in the Cothill area the *medionigra* gene frequency cannot be lowered by migration because the colonies are too far apart – they "are distinct, well defined, and separated by agricultural land". The map (Fig. 1) shows otherwise, and one of us (DFO) finds that in years with a high population (e.g. 1991 and 1992) *P. dominula* can be found almost anywhere along the Oxfordshire Thames. On the other hand, movement from other colonies obviously cannot be a factor in the isolated Wirral Way colony.

Third, Cook thinks that perhaps no more should be written about the Wirral Way until "another dozen or so moth generations have passed". However, in other situations with which he was involved he does not have these rigid rules. Thus at North Hinksey, in Oxfordshire, a population artificially established in 1951, there was a gap between 1952 and 1959 when nothing was recorded (the numbers of caterpillars were so small that none was collected – and astonishingly the moths for some reason were not looked for), and there is no mention of following the colony further than 1961 (Sheppard & Cook, 1962).

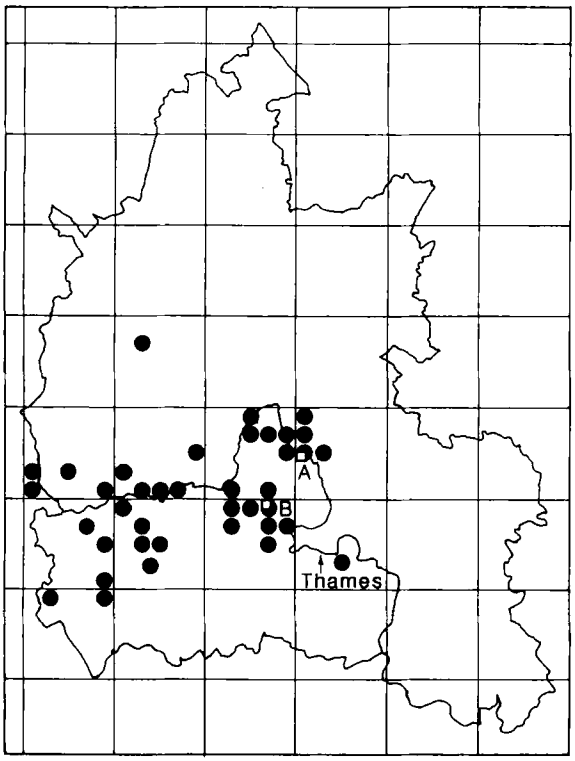


Fig.1. Map of Oxfordshire showing records of *Panaxia dominula* in 2 x 2km squares from 1960 until 1992, and the location of the North Hinksey (A) and Cothill (B) colonies. The distribution of the moth is strongly associated with the River Thames, as shown. The large squares are 10 x 10km. The map is derived from information held by the Biological Records Centre, Woodstock, Oxfordshire.

Again, the Genetic Garden colony at Oxford was surveyed for four years only, and at Ness in Cheshire (eggs put down in 1959 and 1960) there is only one subsequent record (1961). Agreed that in all these colonies the proportion of *medionigra* went down (i.e. in the direction anticipated from Cothill) but the conclusions are based on very few years' records (Sheppard & Cook, 1962).

When we come to the founding in 1961 by Sheppard of the Wirral Way colony the mystery deepens, for here there were apparently no records kept, and we have an uneasy suspicion that this may have been because *medionigra* was not going down as it should!

Fourth, larval death: Ford (1975) stressed the late larval and pupal mortality, presumably in the wild. He instances information obtained by Cook in 1959 working on a small colony of *P. dominula* near the University Museum at Oxford (Cook & Kettlewell, 1960). Ford writes: "The data he obtained indicated a population of 1,210 nearly full grown larvae and a mean mortality of 94% between that stage and the imaginal one". We have no Wirral Way information on late larval and pupal death in the wild, but we think it is interesting that the proportions of the forms (typical, *medionigra* and *bimacula*) in the observed wild moths in all four years are very similar to those we obtained from our bred larvae. These were taken from the colony when nearly full grown and the mortality was only 3.9% (146 moths from 152 larvae). We are of course aware that the level of selection is not necessarily correlated with mortality rates: so as things stand at the present there is no unequivocal evidence one way or the other, at least not in the Wirral Way colony of *P. dominula*.

This deals with the main points in Cook's letter, but we think it important to add that there is more critical information about Cothill and North Hinksey in a recent paper by Owen & Clarke (1993) and we shall be interested to see how Cook will deal with this.

With regard to the complicated letter to the Editor by Dr. D.A. Jones (see above) we would like to draw Dr. Jones' attention to the map, and from it we think it unlikely that North Hinksey was an entirely new colony, and in addition no details are given of the "searches". On another point, we are aware that there is no differential mortality as regards pattern in the early stages, nor would there be any differential migration between forms.

As regards the causes of the changes in allele frequency at Cothill, these changes are surely much greater there than those observed in the four years of the Wirral Way, and as Gardiner implied in his editorial (*The Linnean*, March, 1993) if explanation is needed (as we think it is) it should come from Oxford.

There may be more to say when Jones' paper "The Phenotype of f. *medionigra* of *Panaxia dominula* L. (Lepidoptera; Arctiidae) at Cothill, Berkshire, England" appears in the *Biological Journal of the Linnean Society*.

Yours sincerely,

CYRIL A. CLARKE, University of Liverpool
D.F.OWEN, Oxford Brookes University, Headington, Oxford
F.M.M. CLARKE, 43 Caldy Road, West Kirby, Wirral, Merseyside

REFERENCES

CLARKE, CYRIL A., CLARKE, FRIEDA M.M. & COOK, L.M. (1990). Gene frequency in an artificial colony of the Scarlet Tiger Moth *Panaxia dominula* (L.) after 28 years. *The Linnean, 6* (2): 13-16.

CLARKE, CYRIL A., CLARKE, F.M.M. & OWEN, D.F. (1993). Gene frequencies in an artificial Wirral colony of the Scarlet Tiger Moth (*Panaxia dominula* L.) in the four years after its rediscovery: 1989-1992. *The Linnean, 9* (1): 18-20.

COOK, L.M. & KETTLEWELL, H.B.D. (1960). Radioactive labelling of Lepidopterous Larvae. *Nature, 187:* 201-202.

FORD, E.B. (1975). *Ecological Genetics,* 4th ed. Chapman and Hall Ltd., London, 442pp. page 141.

OWEN, D.F. & CLARKE, CYRIL . (1993). The *medionigra* polymorphism in the moth *Panaxia dominula* (Lepidoptera: Arctiidae): A critical re-assessment. *Oikos, 67:* in press.

SHEPPARD, P.M. & COOK, L.M. (1962). The manifold effects of the *medionigra* gene of the moth *Panaxia dominula* and the maintenance of a polymorphism. *Heredity, 17* (3): 415-426.

Department of Geological Sciences,
University of Saskatoon,
Canada S7N OWO

13.4.93

Dear Dr. Gardiner,

I am in the closing stages of completing, for publication, a second supplement to my bibliography of *Geologists and the History of Geology* (originally published 1980 in five volumes: first supplement, two volumes, 1987).

I have of course searched all the principal geological journals, but I do not have the facilities to survey, with similar comprehensivity, all the botanical and zoological journals in which there may appear articles or obituary notices of persons involved in palaeobotany or palaeozoology or of the history of institutions having (at least incidentally) these concerns. Nor can I hope to survey all the publications of local natural history societies.

I would be most grateful to receive letters giving details (or, better still, envelopes containing copies) of any writings on these themes. Such aid would, of course, be properly acknowledged.

Thank you for your attention.
Sincerely,

W.A.S. SARJEANT

A.R.Wallace's "Sketches of the Palms of the Amazon with an Account of their Uses and Distribution"

M.B. PEARSON

3 Hunter's Croft, Haxey, Doncaster, DN9 2NX

After an eventful four years spent exploring and collecting in the Amazon, Alfred Russel Wallace left South America for England in July 1852. His adventures, however, were not over as thick smoke was discovered pouring from the forecastle of the 'Helen' on the morning of 6th August. Despite attempts to fight the fire the passengers and crew were eventually forced to abandon ship. It was whilst the long-boat and the captain's gig were being launched and provisioned that Wallace managed to salvage a small tin box containing a few shirts, as well as his drawings of fishes and palms, his watch and a purse with a few sovereigns. All afternoon and throughout the night the 'Helen' and her cargo burned. One can imagine Wallace's feelings as he watched the destruction of his insects, birds, records and journals – his collections and the result of four years collecting in arduous conditions.

The survivors spent ten days in their leaking boats before they were rescued by the 'Jordeson' some two hundred miles from Bermuda.

Back in England Wallace set to work writing an account of his Amazon exploits which was to appear as his *Travels on the Amazon and Rio Negro.* He also decided to publish, at his own expense, a popular volume on the *Palm Trees of the Amazon.* This was to be largely based on the sketches which he had saved from the blazing 'Helen'. So Wallace arranged with the publishers, Van Voorst, for Taylor and Francis to print two hundred and fifty copies of this volume.

The Linnean Society is fortunate not only to have such a rare book in its library but also to possess Wallace's notebook containing the palm sketches. This notebook was given to the Society by the author's son, W.G. Wallace, in 1947.

Although the published volume has received some attention from Wallace scholars the notebook itself has generally been overlooked. This small bound notebook is entitled 'Sketches of the Palms of the Amazon with an account of their uses and distribution by Alfred R. Wallace'. The title page also bears Wallace's address (44 Upper Albany St in Regents Park) where he resided on his return to England. The preface of two pages refers to his four year residence in the Amazon and his interest in palms. Though primarily a zoologist he did examine, draw and collect all the information he could on the uses to which palms were put. He made clear that the details he provided in his accounts were generally the external or more obvious characters of the genera and species and not meant to be definitive botanical descriptions. As such he recorded his own observations rather than simply repeating the work of such botanists as Von Martius.

In the eight page introduction Wallace outlined the botanical characteristics of palms as well as their geographical distribution and uses. There then follows in the main

bulk of the notebook – approximately one hundred and ten pages. This consists of an account of the palms encountered by Wallace, arranged in seventeen genera and forty six species. Each account contains a brief botanical description, the native name for the species, and known uses for food, building etc. and notes on the habitat. Interspersed amongst the text are over seventy drawings of palms which appear to have been the original sketches salvaged by Wallace. Finally the notebook ends with five pages of index.

It seems probable that the text was written after his return to England and that an earlier notebook or collection of sketches was dismembered to illustrate this surviving notebook. Even so there are numerous differences in both the preface and introduction as well as in the order of the species listed when comparisons are made between the notebook and the published volume.

Wallace's sketches were reworked by one of the foremost botanical artists of the day, Walter Fitch, who added his own artistic touches. Wallace was not always pleased with the results as he recorded in his autobiography[1] 'In one of these drawings a large native house on the Uaupes is introduced, with some figures which, I am sorry to say, are as unlike the natives as are the inhabitants of a London slum'.

Reaction to Wallace's book on publication varied. The *Gardener's Chronicle and Agricultural Gazette*[2] gave it a generally favourable reception, noting: 'Mr. Wallace has here supplied a most useful practical commentary upon Von Martius' great work on Palms. All appearances of scientific display he has carefully avoided; but has produced instead a series of capital figures of Palms in their natural aspect'. The anonymous review, ascribed to Sir William Hooker, in *Hooker's Journal* of 1854[3] was more critical. 'The chief merit of the work will be found to consist in the "accurate sketches" of the trees themselves, and in the accounts of the uses of certain of these; and if the former are as faithful as Mr. Fitch's lithographs are clever (though very slight), we are thankful for such a series of plates. But we do not see how, with apparently no knowledge of these Palms except from their external forms (often without flower or fruit), an author could refer many of them to species characterised by Martius, or how he could ascertain that his species, so called, are really "new"; for any study or sketches of flowers or fruit seem to be entirely neglected...' The review ended with the sentence: 'The work is certainly more suited to a drawing-room table than to the library of the botanist'. Clearly what we would now describe as a 'coffee-table book'!

The *Annals and Magazine of Natural History* in its bibliographical notices[4] was more positive. 'We beg most strongly to recommend this book, as one that will not interest the botanist alone, but give pleasure to unbotanical readers'.

In concluding this brief appreciation of one of the Library's treasures it is worth noting that eleven of the species described by Wallace were, as he claimed, new to science.

REFERENCES

1. *My Life*: Chapter XI
2. *Gardener's Chronicle and Agricultural Gazette*, 1853: 742
3. *Hooker's Journal*, 1854: 61-2
4. *Annals and Magazine of Natural History*, 1854: 56-7

Lady Smith and her Correspondents

MARGOT WALKER

Lady Smith, the wife of Sir James Edward Smith, the founding President of the Linnean Society, who died in full possession of her faculties at the age of one hundred and three, was a remarkable correspondent. Sadly we do not have her letters but only many letters written to her by all manner of men. There are a few family letters of the eighteenth century, but the majority date from the mid-nineteenth until her death in 1877, by which time she had been a widow for nearly fifty years.

The letters cover a wide range of subjects. As she was a great reader of history, literature, particularly poetry, which she herself wrote, religious works, Reviews and current affairs, her friends wrote to her on all these subjects. She read the novels of Sir Walter Scott and greatly admired the poetry of Burns, the 'peasant poet'. Everyone quoted Tennyson's poems, and the latest novel by George Eliot was often discussed. Sermons, particularly those of Dean Stanley, were criticised, and he himself wrote to thank her for a Brahmin prayer. The wars of her day, the Napoleonic, the Crimean, the Indian Mutiny and the Franco-Prussian War, were fought over in the letters.

Her female correspondents were supplied with knitting patterns; Dr. Doris Kermack has actually knitted up her pattern for a 'Brioche', which turns out to be a circular cushion and not a French roll. Riddles, epigrams and charades flowed back and forth. Her opinions and advice were sought by the highest in the land, and young servants wrote to ask for help in finding a new place. Many recipients had the occasion to thank her for a constant supply of Norfolk turkeys, pheasants or herrings, 'those glittering fish'. On her hundredth birthday, letters flooded in from all over the world, the answering of which left her prostrate for some time. Queen Victoria sent her a copy of '*Our Life in the Highlands*', and anyone who could write in verse, did so. Her great-niece, Alice Liddell, who was the inspiration for Lewis Carroll's Alice, wrote to congratulate her aunt.

Many botanist friends of her husband, wrote to her after his death. Both the Hookers wrote and sent plants from Kew. Francis Boott, Secretary of the Linnean Society, wrote regularly; on one occasion to thank her for sending Linnaeus's copy of Milton. He told her that she and Byron had been the greatest influences in his life. Wallich confided his sorrows to her, and his fear of returning to the Calcutta Botanical Garden, where lack of funds was hampering his work. He sent her seeds and cones to be sent to Coke of Norfolk; he told her of his great admiration for Sir Stamford and Lady Raffles.

Perhaps Lady Smith's most remarkable correspondent was the Revd Charles Lessingham Smith, the Rector of Little Canfield, near Chelmsford; he was a Fellow of Christ's College, Cambridge, to whom he left his extensive library. They met in 1871, when he was sixty-five and she ninety-eight, and wrote weekly until her death in 1877; he, never a strong man, died the following year. He described their relationship

as a 'romantic attachment', and both derived the greatest comfort from the correspondence, which he once wrote, had 'gilded his declining days'. He was an avid reader and enjoyed writing poetry (Longmans asked him to remove the remaining copies of his poems off their hands and poor Lady Smith was burdened with thirty-one slim volumes). He translated Tasso and was philosophical over the reviews. Books winged back and forth between the Rectory and Lady Smith's house in Lowestoft.

He wrote affectionately of his parishioners, was saddened by the frequent deaths of the young from consumption; he described his servants, particularly Thomas the coachman, who, when drunk, landed him in the ditch. He expressed astonishment at the grand needs of the school governess, whose house was like a little palace and whose attire was that of a princess. There was always trouble with the curates and one was not fit to educate a chicken. Annually we hear of the village Feast in his garden, where he cut the beef and once his fingers to the bone. The six daughters of his grand neighbour, Lord Rosslyn, all dressed in blue and white, danced a quadrille on the lawn.

Smith was frequently asked to dine and sleep at Lord Rosslyn's house, where he met many distinguished people; Dukes, Marquises, Ambassadors and even foreign royalty were among the company. He never failed to give a detailed description of Lady Rosslyn's very elaborate dresses.

The Rector was very delicate and spent the last winters condemned to remain in the house, but with his books for company, he never complained. Lady Smith suggested remedies for her poor friend and advised him to have the doctor. He replied that he agreed with his aunt, who said that it was bad enough being ill, without having to put up with a doctor as well. The highlight of their year was his visit to her in Lowestoft.

There cannot be any correspondents to match them, these days. What with telephones, fax machines and the pace of life, future biographers will not be able to rely on a cache of letters, like these ones in the Society. After reading these touching letters, the writers become friends and their death a sadness. Mrs Gaskell rightly wrote that 'character manifests itself in little things, just as a sunbeam finds its way through a chink'.

Deer Hunting and the Conservation of Deer

BOB SAVAGE

(Professor Savage is the Society's nominated member on the Council of the National Trust and chaired its Deer Hunting Working Party)

Recently the National Trust has been caught between the unbridled passions of the hunting fraternity and the deadly obsessions of the cruel sports opponents over the issue of deer hunting with hounds across its lands. Emotions run high and the strongly entrenched views on both sides leave little space for compromise. At such times it is imperative to keep the goal firmly in focus, namely the health and prosperity of the

red deer in their native habitat on the heather moors and wooded combes of Exmoor and the Quantocks.

The Trust's basic purpose as set out by Parliament in the National Trust Act 1907 is "to promote the permanent preservation for the benefit of the nation lands and tenements (including buildings) of beauty or historic interest and as regards lands for the preservation (so far as practicable) of their natural aspect, features and animal and plant life". The fundamental question therefore is whether or not hunting of deer contravenes the Act. Lord Oliver (former Lord of Appeal) in a recent report concluded that it did not, and added that the pro- and anti-hunt debate had little to do with the objects for which the Trust was established. (The Oliver Report on the Constitution: The National Trust March 1993).

At the 1990 AGM of the National Trust, a members resolution was passed which recommended that deer hunting with hounds be banned on National Trust land. The Council of the Trust set up a working party to provide a database on which the issue could be assessed; its two year study was published in April. The Terms of Reference were to study the conservation and management of red deer on Exmoor and the Quantocks, and to investigate the implications for the deer and the local population of a hunting ban. The report and its recommendations have been accepted by the Council of the National Trust.

In the preliminary stages of the inquiry it became abundantly clear that exceedingly little reliable data existed about the deer populations on Exmoor and the Quantocks, the only areas where red deer are hunted over National Trust land. So a survey was commissioned from the Deer Management Research Group at Southampton University; the study was undertaken by Dr. Rory Putman and Dr. Jochen Langbein. Their findings, based on visual sightings and dung counts, showed that the overall population was around 7000 red deer, a very much larger figure than any of the current guestimates. More significantly the sex ratio among adults was strongly skewed in favour of females (3 hinds to one stag). Hinds have a reproductive life of about 7 years and in that time one hind can be the source of 14 individual additions to the herd. Even allowing for 75% breeding success and a 20% mortality of calves, this still amounts to nearly a 10 fold increase. Thus by the end of the century the population could, without culling, top 50,000 and resemble the present plight of the Scottish deer. A 20% annual cull (ie. around 1400 deer) is needed to stabilize the population at the present level. The current annual cull is around 1,000 deer. The hunts take on average around 130 deer annually, only about 10% of the required cull. Road casualties account for another 50 deer, the stalkers and landowners for 500 to 700 deer, and the poachers for 100 to 300 deer.

There are only two native British deer, red deer (*Cervus elaphus*) and roe deer (*Capreolus capreolus*). The fallow (*Dama dama*) was present during the last Ice Age but died out about 110,000 years ago and was reintroduced by the Normans nearly a millennium ago. The red deer appeared in Britain about 400,000 years ago in the Cromerian interglacial. They appear to have been quite widespread up to recent times. Neolithic farmers commenced the deforestation which has continued almost unabated until recent times. The ensuing habitat reduction must have had a major effect on deer

populations. Royal forests have existed since Saxon times, where kings reserved to themselves and their barons the rights to hunt the deer, with dire penalties for anyone caught poaching. Over the centuries the royal prerogative passed down through various nobles and landowners, but even today the hunting rights are jealously guarded by their owners. It is difficult to assess the population of red deer on Exmoor over the centuries. At times it was large enough to provide ample supply of stag heads with full rights (brow, bey and trey tine plus crown of three points on each antler). At other times the density was so low that hunting virtually ceased, though cause and effect are impossible to identify. Deer hunting is seen primarily as a sport rather than as a method of population control. The population appears to have dropped during the last war; there was no hunting, but there was an increase in acreage under crops, much deforestation and military disturbance over the moors. In the early 1960s the hunts accounted for 60 to 70 deer annually; today they take double that number. Due to the structure of the hunt, three days a week during the nine months hunting is by law permitted, the maximum cull for the three hunts active on Exmoor and the Quantock Hills is probably around 200 deer.

In both the Exmoor National Park (700 km^2) and the Quantock Hills Area of Outstanding Natural Beauty (100 km^2) more than half the acreage is farmland where deer are tolerated but not welcome. In the wooded combes the deer find shelter and food, nibbling the young tree shoots; the result is almost no natural regeneration. On the heather moors the deer have to compete with sheep and cattle. On the Holnicote estate alone (owned by the National Trust) there are around 700 red deer and 3800 sheep; some 800 of these sheep are there by commoners rights. The newly created ESA (Environmentally Sensitive Area) on Exmoor will allow for compensation to farmers who reduce their stocking levels.

The clear signal from these figures is the urgent need for an overall management strategy to conserve the habitat and the deer. Since deer do not recognise ownership boundaries and wander over a wide area, widespread cooperation among landowners is essential. Three quarters of Exmoor is in private ownership and the National Trust owns 10%. To achieve the cooperation necessary to accomplish these aims, the backing of the local community of landowners, tenants and conservation bodies is essential. The Hunt has a very strong following among the local population and without their support effective management would not be possible. The Working Party report makes a strong recommendation for the setting up of Deer Management Groups. Their task will be to monitor annually the population, to assess the trend, to attempt to achieve a more even sex ratio in the population, to determine the cull and to ensure its achievement. More research is needed; the Trust survey established only the population size and structure. There is urgent need to understand the movements of the deer in the area, to assess the damage done to agriculture and forestry, and to assess the impact of their feeding on sensitive conservation habitats.

The National Trust is neither for nor against hunting and regards cruelty as a moral issue which must be addressed to Parliament. The Trust's prime purpose remains the conservation of the habitats of heather moors and wooded combes with their fauna of red deer for all to enjoy; with cooperation and enlightened management this can be achieved.

Record of the Proceedings of the Linnean Society of London for the 205th Session (1992-93)

The Anniversary Meeting held at Burlington House, Piccadilly, London W1V 0LQ on Monday, 24th May 1993

The President took the Chair and welcomed some 120 members and their guests to the meeting.

Apologies were received from Dr. Crothers, Dr. Erzinclioglu, Dr. Ferguson, Dr. Jury, Dr. Kermack, Mr. MacEwen and other Fellows.

The following signed the Obligation in the Roll and Charter Book and were admitted Fellows: Lincoln Pierson Brower, Alan Terence Buffery, Michael Ivor Coates, Paul Frederick Sinel Cornelius, John Christopher Deeming, Laurence Eric Hawkins, David Michael John, Steven Lee, David C Lees, Laurence A Mound, Andrew Smith, Campbell Robert Smith, Stephen C Stearns, Piers Trehane, Mary Elizabeth Varley, Philip John Whitfield and David M Williams.

The Minutes of the Meeting held on 6th May 1993 were taken as read and signed.

The Executive Secretary read for the third time the Certificates of Recommendation for the election of two Foreign Members and one Fellow *Honoris causa*. The President appointed as scrutineers Mr. WA Graham-Kerr, Mr. T Pain, Dr. A Palmer and Mr. RA Wilding.

The following were elected Foreign Members of the Linnean Society: Dr. John Cairns Jnr and Professor Richard Miller.

The following was elected a Fellow *Honoris causa:* Dr. John Sparks.

The following were elected to Council: Robert Cameron, Bryan Campbell Clarke FRS, Brian George Gardiner, Henry Gee, David Michael John, Bernard Tinker and Marcus Wyand Trett.

Robert Cameron (b 1943, Fellow 1972) is Professor of Evolutionary Biology in the School of Continuing Studies at the University of Birmingham, where he has been since 1973. His research interests are in the ecology, biogeography and ecological genetics of land Mollusca, and in historical ecology generally. Published papers include work on the shell polymorphisms of *Cepaea*, on habitat distributions of British land snails, and more recently on the historical and ecological biogeography of snail faunas in Canada, Madeira and NW Australia. He coauthored Linnean Society Synopsis 6: *British Land Snails* and *Field Guide to the Land Snails of Britain and NW Europe*.

Bryan Campbell Clarke FRS (b 1932, Fellow 1980) is Professor of Genetics in the University of Nottingham, a member of Council 1983-86 and Vice-President 1984-86. He was Chairman of the Terrestrial Life Sciences Committee of NERC from 1984-87 and is a member of the SERC Biological Sciences Committee. He chaired the UFC Research Selectivity Exercise for biology in 1992. Professor Clarke is a distinguished molluscan taxonomist, well known for perhaps the most complete genetical description of speciation, that of *Partula* spp. on Moorea in the Society Islands. The survival of *Partula* has led to Professor Clarke becoming involved in

conservation, and *Partula* is currently being bred in the London and Jersey Zoos.

Brian George Gardiner (b 1932, Fellow 1968) originally trained as an entomologist (BSc ARCS, Imperial College, London) and a vertebrate palaeontologist (PhD, University College, London). He has been employed at Queen Elizabeth's College (now King's College), London since 1958 and was awarded a personal chair in 1985. He has been Chairman of the Board of Studies in Biology, University of London since 1985. He has published extensively on insects and on living and fossil vertebrates, primarily on fishes, but also on tetrapods. He has been on Council 1971-80, Zoological Secretary 1974-80 and Editor of, and substantial contributor to, every issue of *The Linnean* since its inception.

Henry Gee (b 1962, Associate 1987, Fellow 1990) is an assistant editor of the journal *Nature*, with responsibility for palaeontology, ecology and evolution. He holds a BSc in Zoology from the University of Leeds and a PhD from the University of Cambridge. He has a research interest in bovids from the British Pleistocene.

David Michael John (b 1942, Fellow 1977), PhD DSc, a graduate of Durham University, is Head of the Division of Algae, The Natural History Museum, London. His research interests span the systematics and ecology of freshwater algae, seaweeds and lichen algae. He has spent 12 years carrying out research in tropical West Africa and has published books on the taxonomy and ecology of its seaweeds and freshwater plants. His current research is focused on environmentally important indicator algae and the use of data from DNA analysis to assist resolving species-level problems. He is the Editor-in-Chief of the Systematics Association, Secretary of the Freshwater Algae Flora Committee of the British Phycological Society and Coordinator of its Conservation Committee, Member of the Prizes and Awards Committee of the Institute of Biology, and was, until recently, Chairman of the Awards Sub-Committee of the former Biological Council.

Bernard Tinker (b 1930, Fellow 1988) studied chemistry at Sheffield University, where he gained his BSc and PhD. He spent the next 7 years in Nigeria working on oil palms, then three years at Rothamsted on sugar beet. He then became lecturer in soil science at Oxford, working on root-soil relations and mycorrhizas, studies he continued when he moved to the Chair of Agricultural Botany at Leeds. Returning to Rothamsted, he became Head of the Soils Division and Deputy Director; his last appointment was as Director of Terrestrial and Freshwater Sciences at NERC, from which he has recently retired. He is now Honorary Visiting Professor at Imperial College and Senior Research Associate at the Department of Plant Sciences at Oxford, where his main interests are in agriculture and in global change.

Marcus Wyand Trett (b 1957, Fellow 1988) BSc PhD MIEEM graduated in zoology at the University of Leeds where he also gained his doctorate for studies on the neuroanatomy of nematodes. Following a temporary lectureship in parasitology at Westfield College, University of London, he took up a Research Fellowship with Professor J. Green FLS, held jointly at Westfield College and Rothamsted Experimental Station. In 1986 he became a founder member of the Centre for Aquatic Biology (CRAB) at the newly merged Schools of Biological Sciences of Westfield and Queen Mary Colleges. Subsequently, he went on to his present position as the Scientific

Director of the ecological consultancy, *Physalia*. Marcus specialises in the study of meiofauna and in the detection of stress and change in assemblages of aquatic invertebrates.

The Fellows were elected as on the list in the Society's rooms. The Officers elected were: President, Prof. JG Hawkes; President-elect, Prof. BG Gardiner; Treasurer, Prof. RWJ Keay; Zoological Secretary, Prof. J Green; Botanical Secretary, Dr. CJ Humphries and Editorial Secretary, Dr. DF Cutler.

Presenting the **Linnean Medal for Botany** to Dr. Barbara Pickersgill, of the University of Reading, the President said: "Dr. Barbara Pickersgill is well known throughout the world for her distinguished investigations on the genetics, cytology and systematics of the genus *Capsicum* (chilli peppers).

She is a naturalist by upbringing and inclination who has become a botanist by profession and conviction. For 30 years, since she completed her distinguished first degree course in horticultural botany at Reading, she has applied herself to the classical Darwinian field of the evolution and adaptation of plants under domestication.

Dr. Pickersgill, in particular, has provided clear evidence for the origins of the various domesticated pepper species and the wild species from which they were derived. She is not only the world authority on *Capsicum* but has spread her interests into the origins of other cultivated plants, notably forage and grain legumes such as *Vicia, Psophocarpus, Lens, Cicer* and *Arachis, Ananas* (pineapple) *Gossypium, Ipomoea* and *Zea*. This wide experience of crop plant origins and relationships has provided a basis for first-rate research on agricultural origins and domestication of crop plants in general, for which she is also a world authority.

Dr. Pickersgill's experimental work has also been backed up by collecting expeditions and excavations of materials from archaeological sites in Peru, Brazil, Belize and Papua New Guinea, and she has acted as a consultant to many other projects. In her investigations she has employed the methods and concepts of taxonomy, developmental morphology and physiology, reproductive biology, cytology, genetics, cytogenetics, archaeology, anthropology and human cultural history.

She and her students have used glasshouse and laboratory methods (including macromolecular techniques) as well as numerical and statistical procedures, to make and order observations and to develop and test concepts. In each of these fields and activities her colleagues accept her at least as an equal and usually as an authority.

She has been invited as guest speaker to many international symposia on wild and crop plant diversity, and has taught generations of students at undergraduate and postgraduate levels at Reading and as an invited lecturer in other countries.

I have known and admired Dr. Pickersgill's work since the early 1960's. She is an internationally recognised scientist, who is perhaps better known abroad (and particularly in the USA) than she is in Britain. I am sure that this balance needs to be redressed and I am thus delighted to award her, as a tribute to her scholarship, the Linnean Gold Medal for Botany in 1993."

Presenting the **Linnean Medal for Zoology** to Professor Lincoln Pierson Brower FLS, of the University of Florida, the President said: "Mimicry in butterflies is universally regarded as one of the best understood examples of natural selection, but

it was not until the 1950's that the first good experimental evidence for the existence of mimicry became available. This work was initiated by Professor Brower who has subsequently contributed more published work on butterfly mimicry than anyone else. In well over a hundred scientific papers, he has documented palatability and unpalatability, combining chemistry with ecology and behaviour in a most effective manner. It is largely through Professor Brower's work that mimicry is now accepted as a fact, rather than as the theory put forward in the nineteenth century by Henry Walter Bates, like Professor Brower, a Fellow of this Society (from 1871-92).

Professor Brower's influence on others has been immense. He is an enthusiastic lecturer, a painstaking teacher and a successful mentor of graduate students, who is held in high regard at all levels in the scientific community. His major contributions have been in speciation and food-plant specificity in swallowtail butterflies, the experimental studies of mimicry alluded to already, the behaviour and migration of the monarch butterfly and the discovery of the famous wintering areas in Mexico, the analysis of plant poisons in terrestrial food chains, the recognition of automimicry (mimicry within a species) and the concept of the palatability spectrum and finally, interspecies competition in butterflies.

Professor Brower has made a series of motion pictures which have reached a wider public and received important awards. These films are mainly to do with mimicry and plant chemistry, but two cover the ecological importance of flooding of rivers. Now in his 62nd year, Professor Brower visits each February the monarch butterfly sites in Mexico and fights passionately for their conservation. He and his monarch butterflies are intimately bound together and the resulting conservation message is heard loud and clear in the USA, in Mexico, where such matters do not have such a high priority, and in Europe. Professor Brower is indeed a worthy recipient of the Linnean Medal for Zoology in 1993."

Presenting the **HH Bloomer Award for Botany** to David Charles McClintock FLS, the President said: "David McClintock has lived in Kent for nearly fifty years but his paternal roots are in Ireland, where his family has lived for centuries. His father's vocation as a clergyman took the family to various parts of England in David's youth, but his mother's home near Ware provided a firm link with Hertfordshire and led to his joining the Hertfordshire Yeomanry before the Second World War. Despite having no biological training, he has made valuable contributions to both botany and horticulture.

After graduating from Trinity College, Cambridge, David qualified as a chartered accountant and, for many years, was Chief Accountant and Administrative Officer of the Coal Utilisation Council. He has pursued his interest in plants in several directions but always with vigour. His detailed floristic knowledge of the British Isles was early demonstrated in the popular *Pocket Guide to Wild Flowers* that he wrote with Richard Fitter in 1956. The Channel Islands' flora, particularly that of Guernsey, has held a constant attraction for him and he has been sole or joint author of seven publications on them. His other botanical publications have ranged over many aspects of floristics, distribution and nomenclature, and include contributions to many books, as well as dictionaries and Floras. *The European Garden Flora* developed from an idea of his.

Presentation of H H Bloomer Award to David McClintock.

David gardens on three acres of dry sandy Kentish soil on which he has produced an unusual and fascinating kaleidoscope of native and exotic plants, with emphasis on his two main systematic concerns, hardy bamboos and heathers of Europe and the Mediterranean. These groups figure prominently in his large herbarium and library and, naturally, in his writings. He has travelled widely to study and collect heathers in the field and has become the leading British authority on hardy bamboos, particularly on their erratic flowering.

David McClintock's outstanding work for botanical and horticultural organisations has been acknowledged by honours from the Royal Horticultural Society and the Société Guernèsiaise and by high office in several other societies including the BSBI, the Wild Flower Society, the Heather Society, the Bamboo Society and the International Dendrology Society. In our Society he has served on Council (1970-78), on Finance Committee, as Vice-President (1971-74) and Editorial Secretary (1974-78). His contributions to scientific knowledge in all fields of natural history into which he has ventured, as well as the inspiration of his pen, his broadcasts and his infectious enthusiasm have given to many, make him a very worthy recipient of the HH Bloomer Award in 1993."

Presenting the **Bicentenary Medal for a Zoologist under 40** to Dr. Andrew Benjamin Smith, the President said: "Andrew Smith is a palaeontologist, a specialist on echinoderms in the Natural History Museum. His distinction is in using his primary work, on structure, systematics and stratigraphy, as a springboard into wider issues such as broad patterns of evolution and extinction, and the integration of palaeontology

with molecular biology.

Andrew is a native of Dunoon, Argyll, but at six moved to Stonehaven. He took a first class honours degree in geology at Edinburgh in 1972, where he made an unsuccessful attempt to escape into zoology in his second year, and came south to Exeter to work for his PhD with Professor David Nichols on the ultrastructure of Recent sea urchins. This topic offered a way of interpreting the missing soft parts of fossils, his real goal since becoming hooked on fossils by Valerie Singleton in a "Blue Peter" TV programme from Lyme Regis. He then spent three years in Liverpool working on skeletal ultrastructure as a means of sorting out problematic Palaeozoic echinoderms; two of the three years were as a postdoctoral fellow and one as a temporary lecturer, whilst his mentor Dr. Chris Paul, took a sabbatical. Dr. Smith came to the Natural History Museum in 1983, obtained his DSc from Edinburgh in 1989 and an individual merit promotion to Grade 6 in 1991. In 1986 he walked across Tibet, a distance of 1300 km, in three months as a member of the trans-Tibet geotraverse, organised jointly by the Royal Society and the Chinese Academy of Sciences. He has noted that this is rather like trying to study the geology of Britain from scratch by walking from London to Dingwall.

During his 10 years at the Museum, Dr. Smith has written two books, edited two others and published about 50 papers. His echinoderm research has expanded from sea urchins into all the other classes in the group and he has branched out into two other areas, the first of these being the testing of the supposed periodicity of extinctions in the post- Palaeozoic fossil record which, with Dr. Colin Patterson, he has shown to be an artefact of poor taxonomy. The second new interest is the molecular phylogeny

Presentation of the Bicentenary Medal to Andrew Smith.

of echinoderms, where he currently holds a NERC grant to compare morphological and molecular evolution in echinoderms. Since 1988 he has published a series of important papers evaluating phylogenies of echinoderms inferred from morphology and fossils against those inferred from ribosomal RNA sequences. Dr. Smith is one of the few biologists capable of adequately reconciling the molecular and classical approaches, having a wide enough grasp of molecular sequence data and of methods of phylogenetic analysis.

The award of the 1993 Bicentenary Medal to Dr. Andrew Smith makes him the fourth successive member of the Museum's staff to win this honour, but the longer the winning streak, the higher the standard expected. As a zoologist of proven ability and great promise, Dr. Smith is a worthy recipient of the Bicentenary Medal."

Presenting the **Jill Smythies Prize for Botanical Illustration** to Caroline Mary Mendum (née Bates) the President said: "It is particularly fitting for Mary Mendum (née Caroline Mary Bates) to receive this award. Her botanical art has for several years been of the highest quality. She has worked hard to support various botanical projects and can turn her hand to any form of scientific illustration. Her drawings and paintings are precise and correct in minute detail. More important than this, however, is that she has the ability to 'bend' plants to the page in a pleasing and artistic fashion so that, while remaining technically accurate, the art work can result in 'a gilding of the lily'. Her treatment of *Guymania multiflora* was a good example: this bromeliad was presented to her tentatively with apologies that it would not fit the exacting format of the Kew Magazine. It was reduced to paint and paper while retaining all the glamour and elegance of the living plant. One was left in awe of the talent which had achieved this. Her contribution to the *Flora of Bhutan* has been particularly important. She has often had to draw from rather poor herbarium specimens, sometimes mere scraps of dead, flattened and dried remains. The results are nothing short of brilliant, reflecting living plants, accurately portrayed. Mary can work with a microscope and prepare and draw dissections (*Sabionia*) and always thinks about what she does, her work radiating empathy with plants.

There is no doubt that Mary Bates is a worthy recipient of the 1993 Jill Smythies Prize."

Presenting the **Irene Manton Prize for a Ph.D Thesis in Botany** to Dr. William Justin Goodrich, of the John Innes Centre at the University of East Anglia, the President said: "Dr. Goodrich has outstanding abilities as a research scientist. Provided with a line of *Antirrhinum* carrying a mutation in the *delila* gene, he proceeded to show that the mutation was caused by an insertion of the Tam2 transposon. He isolated a clone of the mutant allele, used a flanking sequence from the clone to obtain a cDNA, sequenced the cDNA and obtained a full length sequence of the product encoded by *delila*. He subsequently showed that the product had homology with a family of transcription factors including the *myc*- oncogene and characterised several different *delila* alleles, finally carrying out *in situ* hybridisation of the gene to sections of wild-type flowers. Additionally he cloned a new transposon, Tam6, from *Antirrhinum*. This work has appeared in an outstanding publication in *Cell* during 1992.

Dr. Goodrich has developed and characterised an important plant gene and its

mutants and has been developing ideas on their developmental and evolutionary significance. The combination of experimentalist and thinker is a very powerful one and augurs well for Dr. Goodrich's contributions to our knowledge of evolution, botany, taxonomy as well as molecular and evolutionary genetics. He is a most worthy recipient of the 1992 Irene Manton Prize."

Foreign Members of the Linnean Society

Dr John Cairns
Virginia Polytechnic Institute and State University

Dr Cairns is distinguished for his research on environmental toxicology, the restoration of aquatic ecosystems and for his work on ecology.

Dr Richard L. Millar
Temple University, Philadelphia

Dr Miller is distinguished for his research on reproductive biology, particularly chemotaxis and for his work on corals and echinoderms.

Fellow *Honoris causa*

Dr Sparkes has made outstanding contributions to the popularisation of natural history, particularly animal behaviour, through his countless productions on radio and television. He is currently series editor of the BBC programme 'The Natural World'.

The Treasurer presented the Accounts for 1992. He explained various items in the Miscellaneous Expenditure heading, and indicated that this should be disaggregated in future years. He explained that the Grants Income item in 1991 had not been repeated in 1992 (but would return in 1993), and had largely supported two meetings on taxonomy and biodiversity in 1991, which had inflated the cost of meetings in that year. In connection with the Publications Account: Contributions.....for Journals to Fellows the larger sum paid by the Society in 1992 reflected the cost of additional pages in the Botanical and Biological Journals, agreed by Council and costing £12,160 in 1992 (Council Minute 92/34).

In connection with the Dennis Stanfield Fund he expressed his personal sadness at the death of Mrs Nancy Stanfield in April; she had left the Society a further £6000 to the fund in her will, which would take the Fund established in her husband's memory to £22K (from £6K in 1991).

Dr. Richards, a member of the Audit Review Committee and Council then moved the acceptance of the 1992 Accounts, which was carried unanimously.

The Treasurer then indicated that the Finance Committee, at its meeting on 25th March 1993, had given very careful consideration to the question of our professional auditors. Fraser & Russell had been our auditors for a very long time, but in recent years their charges had increased steeply. Furthermore, members of the Finance Committee felt that there would be advantage in getting a fresh look at our accounts. Accordingly, the Treasurer and Executive Secretary were asked to get quotations from

three other firms of chartered accountants with experience of learned societies and similar academic charitable organisations. These quotations were examined by the Finance Committee and it was decided to recommend to Council and the Anniversary Meeting in 1993 that the firm of Knox Cropper, of 16 New Bridge Street, EC4V 6AX, be appointed in accordance with Bye-Law 13.5. This firm has many clients in the charitable and educational sectors, including the University of London and is well known to Mr. Basil Harley, a member of our Finance Committee. Their estimate for the fee for auditing our accounts was £2750, compared with over £5500 being charged by Fraser Russell for the 1992 Accounts. This recommendation had the support of Council and was carried unanimously.

The President then reviewed the past programme of the Society, pointing out that the programme had been successful in terms of the numbers attending, and the quality of the presentations. He thanked all those who had contributed to the Society's activities throughout the year.

The Executive Secretary presented his report for 1992, which underlined the success of the Society's meetings in London, outside London and in Spain. He indicated changes in the Society's publications, thanked the Society's staff for their support and asked the Meeting to approve the Society's banking arrangements as a private client of Lloyds Bank, which was duly agreed without dissent.

The President then gave his address: **Genetic Resources of Crop Plants: Their Conservation and Use.** A motion of thanks was moved by Dr. Joysey, seconded by Dr. Cutler, requesting that the address be published. The President , Professor Hawkes, drew Members' attention to forthcoming meetings of the Society before appointing as Vice-Presidents Professor Green, Professor Ingram, Dr. Lees and Professor Stirton. He then declared the meeting closed.

JOHN MARSDEN
Executive Secretary.

We welcome the following new Fellows in 1992:

Isabel Abaitua
Kenneth John Adams
John Aldridge-Goult
William George Allaway
Robert Bagrie Angus
Christopher Arme
Jayne Vanessa Armstrong
Anne Elizabeth Ashford
Elizabeth Atchison
Julius Ayinde Badero
Henrik Balslev
Ronald N Baxter
Adrian David Bell
Lionel Malcolm Bender
Timothy Benton
Jean Bouillon
Constanza La Rotta
Philip George Ladd
Christian Lamb
Peter Alan Leggatt
Oliver Yih-Ren Lin
Adrien Mark Lister
David Timothy Jan Littlewood
David Hugh Lloyd
Stefan Lundberg
Sudhendu Mandal
Albert Victor Mascul
Steven James Mason
Andrew McCarthy
Frank McKinney
Alexander Menez
David Middleton

Charles Stephen Brennan
Julia Simone Bruce
Guy Bush
Alan Cadogan
Andrew Campbell Campbell
Josephine Margaret Camus
Edward Alexander Chadwyek-Healey
Satish Choy
David William Claridge
Anthony Joseph Pere'Constable
Peter David Maxwell Costen
Michael Crosby
John Charles David
Merelene Mavis Davis
Michael Dawson
Catherine Duigan
Terence Edward Exley
Christine Facer
Aljos Farjon
Sylvia Mary Denise FitzGerald
Mikael Fortelius
Patricia Waring Freeman
Vicki Funk
Ricardo Garilleti
Dmitry Victorovich Geltman
Josep-Maria Gili
Edmund Gittenberger
Conrad Gorinsky
Susan Gove
Carole Rosemary Haggar
Laurence Herbert Hamblin
David John Louis Harding
Lawrence Eric Hawkins
Toni Hayden
Andrew Robert Hirst
Bruno Holzmann
S P Hopkin
Yee Hsiung Hwang
George John
Rosemary Florence John
Johannes Henricus Kerp
Warwick Estevam Kerr
Garry Paul King
Paul Kitcher
David Moore
Thomas Moore
Clive Idris Morgan
Clas Naumann
Diego Rivera Nunez
Maria Concepcion Obon de Castro
Louise Olley
Alison Margaret Osment
David Patrick O'Hara
Anthony Ian Payne
Miguel Petrere
Adrian Alden Pickett
Donald Plucknett
Doreen Iris Pugh
Brajesh Kumar Rai
Alan Frank Raybould
Bruce John Riddoch
Thomas Riedlinger
Susan Jane Roberts
Gustavo Romero
Fatima Sales
Adrian Edward Scandrett
Dennis Roy Seaward
Aaron John Sharp
Peter Sheldon
Christopher Michael Sluman
Gideon Francois Smith
Michael Paul Smith
Catherine Wendy Nest Spearman
Janet Sprent
Stephen Stearns
Dag Stomberg
Arne Strid
Keith Thompson
Kevin John Tilbrook
Nancy Jean Turner
Virginia van der Lande
Hendrik Johannes Venter
Roger Voles
Colin Charles Walker
Dieter Wasshausen
Bernice Williams
Iain Frank Wilson

Report of the Executive Secretary 1992.

Last year I indicated how the Society's commitment to biodiversity had taken it into the realm of offering advice to Government and others, advice which we believe to have been well received. The Society recently has commented on biodiversity plans for the UK, themselves the direct result of the Rio summit in 1992, and it has had to put the record straight – the UK has rather a lot of biodiversity, particularly where invertebrates are concerned.

Meetings of the Society have attracted wide interest, and attendances have shown an increase on 1991. At either ends of 1992, the lectures by Professor May on the number of species and by Professor Durant on Wallace's contribution to Darwinism were packed to the doors. Wildlife films and archives gave us a glimpse of what our living rooms might be like in the future, whilst the meetings on bird distributions and the various taxonomies gave us much food for thought. The Hooker Lecture, by Ray Desmond, attracted a good audience for an evening which embraced oriental food, which now in a modest way features on other of the Society's menus. The Annual Regional Meeting in Edinburgh in October and the Onychophora meeting in Leicester in September emphasise a growing commitment to meetings outside London, which has been amplified by a school symposium in Wakefield with a number of other Societies in support, and which will be the first of several planned over the coming years. A meeting in Cordoba, Spain in September marked an even greater departure – the Obligation was administered by the President in Spanish, at least, so he said. Special thanks need to go to the Society's staff, who have worked evenings, weekends, bank holidays and stayed in London overnight to keep a busy show, including this Anniversary Meeting, on the road. Most day or longer meetings are joint meetings, and this is a formula which seems to work very successfully. The next Annual Regional Meeting will be in York on 20-22nd September, and will commemorate the Yorkshire botanist, Richard Spruce who died in 1893. Given that a number of overseas members have stated their intention to attend the meeting, it is to be hoped that a goodly home contingent will join us then.

The Society's membership has declined a little since last year to 2024, partly the result of a larger number of contribution defaulters than usual, and somewhat more speedy attempts to come to grips with these. With half our membership overseas, exchange rates can cause real or perceived financial hardship and the Goodenough Fund has supported a record number (16) of Fellows this year.

The Society's publications have continued to prosper, with new formats for the Society's journals and books. The Society's symposium series is now generating 2 or 3 volumes annually. Responsibility for publishing the *Synopses of British Fauna* now rests jointly with the Society and the Field Studies Council.

JOHN MARSDEN

Treasurer's report on the Accounts for the Calendar Year 1992

In presenting the Audited Accounts for the calendar year 1992, I would like to draw your attention to certain points, as follows:-

1. BALANCE SHEET:

(a) Under Investments (Market Value), you will be pleased to see the increases over the year:- to £1,033,843 for General Funds and to £212,102 for Trust and Special Funds.

(b) You may well wonder why the figure for Sundry Debtors is so high - £96 460 in 1992. This covers sums due in respect of the year 1992 but not received until after 31st December; by far the largest item here was £72,028 from our publishers.

2. INCOME AND EXPENDITURE ACCOUNT:

(a) The major difference between 1991 and 1992 on the Income side is under Grants:- in 1991 we received generous grants for the special meetings on Taxonomy and Biodiversity, but none in 1992. In spite of this, our total income at £230,645 was only a little down on that for 1991, thanks to healthy increases in Annual Contributions, Dividends and Interest, Use of Rooms and Publications. The drop in Facilities of Premises was due to the British Ecological Society's move, and that for Library Facilities to the fact that publishers needed less from us in 1992.

(b) The largest items under Miscellaneous expenditure were:-
£5000 for the purchase of scarves for re-sale, £2000 for wages to students doing various tasks for us in the vacations, and £1000 as a contribution to the Acharius Memorial Fund held by Uppsala University. Those of us who are not lichenologists may like to know that Erik Acharius (1757 - 1819) was a pupil of Linneaus and a Foreign Member of this Society; he is regarded as the Father of modern systematic lichenology. With Dr David Galloway FLS, a member of our Council, as President of the International Association for Lichenology (IAL), and Professor Bengt Jonsell FLS as President of the Swedish Linnean Society, it seemed to our Council very appropriate that we should assist our Swedish colleagues in commemorating Acharius by a bronze plaque on his house at Vadstana; this was unveiled after the IAL symposium in September last year.

3. NOTE 3 GENERAL FUND:

(a) The £21,636 Excess of Income over Expenditure is shown here; also the transfer of £10,000 to the Provision for Special Library Expenses.

(b) Against the Irene Manton Estate, the £24,265 shown here is the final instalment, bringing the total received to £204,761 for which the Society is extremely grateful.

4. NOTE 7 PUBLICATIONS ACCOUNT:

The £64,842 shown as a Contribution to the Joint Publishing Account and the cost of distribution to Fellows, includes £12,160 for additional pages to the Biological and Botanical journals to help them catch up on backlogs of papers awaiting publication.

5. TRUST AND SPECIAL FUNDS:

The main point to which I would like to draw attention here concerns the Dennis Stanfield Memorial Fund. Fellows will know (see *The Linnean* 9:6, January 1993) that last year I launched a modest effort to raise more money for this Fund which provides support for botanical research in tropical Africa. I am pleased to report that nearly £8000 has been raised so far, and to this must be added a further £2000 donated last summer by Dennis Stanfield's widow Nancy. It is, however, with much sadness that I must also report that Nancy died on 13th April 1993; in her will she bequeathed a further £6000 to the Society for this Fund. Thus, compared with £6157, the market value of the Fund on 31st December 1991, we now have something over £22,000. The Awards, though modest by international standards, are very significant in tropical Africa.

In presenting these Accounts to the Anniversary Meeting, I should explain that they were examined by the Finance Committee on 23rd March 1993, by the Audit Review Committee on 5th May 1993, and by Council this afternoon.

R W J KEAY
May 1993

Report of the Auditors to the Fellows of the Linnean Society of London

We have audited the Financial Statements on pages 41 to 48 in accordance with auditing standards.

In our opinion the Financial Statements give a true and fair view of the state of the Society's affairs at 31st December 1992 and of its results and source and application of funds for the year ended on that date.

4, London Wall Buildings
LONDON EC2M 5NT

FRASER & RUSSELL
Chartered Accountants

The Linnean Society of London

Balance Sheet
31st December 1992

31st December 1991 £	ASSETS	£	£
615,824	**Investments** (as per schedule)		607,187
	(Market Value: 31st December 1992; £1,033,843)		
	(31st December 1991; £894,766)		
74,258	**Sundry Debtors**		96,460
65,691	**Deposit and Current Account balances**		86,271
755,773			789,918
	Less: Current Liabilities		
26,789	Contributions received for future years	30,685	
72,708	Provision for Repairs and Improvements (Note 1)	70,419	
14,069	Provision for Special Library Expenses (Note 2)	17,112	
26,859	Sundry creditors and provisions	25,857	
140,425			144,073
615,348			645,845
	Trust and Special Funds		
	Investments (as per schedule)		
202,351	(Market value; 31st December 1992; £212,102)	199,011	
	(31st December 1991; £198,156)		
15,002	Deposit and Current Account balances	28,694	
217,353			227,705
£832,701			£873,550
	Represented by:—		
	General Funds		
599,680	General Fund (Note 3)	628,060	
15,668	Publications Fund (Note 4)	17,785	
615,348			645,845
	Trust and Special Funds		
217,353	Balance of Funds		227,705
£832,701			£873,550

R.W.J.Keay — Treasurer

W A Graham-Kerr,
Peter Richards
Richard Wilding — Audit Review Committee

Income and Expenditure Account for the year ended 31st December 1992

1991 £	INCOME	£
62,859	Annual contributions received	71,040
673	Income tax recoverable on covenanted contributions (year to 5th April 1992)	644
50,135	Dividends and interest	57,766
2,168	Transfer from Minchin & Jane Jackson Funds	2,268
2,735	Publications - sales of back issues	924
1,711	Donations received	393
15,990	Use of rooms	21,531
14,414	Facilities of Premises	8,867
2,236	Miscellaneous receipts	2,260
1,709	VAT recoverable	3,171
1,218	Royalties	746
55,521	Publications (Note 7)	60,669
5,257	Contributions for Library Facilities	366
17,705	Grants Received	—
££234,331		**£230,645**

	EXPENDITURE	
14,427	Scientific Meetings (net)	8,949
1,171	Medals	438
6,129	Library— books and periodicals	6,687
7,338	binding repairs, cleaning of books and cataloguing	7,894
6,131	Newsletter ('The Linnean')	7,350
1,416	Bye Laws and Members List	2,914
79,566	Salaries and National Insurance	91,354
12,004	Financial Services (including audit fees)	9,972
10,977	Printing, stationery, postage and telephone	13,050
2,178	Photocopying	4,235
13,176	Office Equipment (including computer system)	1,668
5,290	General Rates	6,677
10,645	Electricity and Gas	9,008
9,583	Repairs, Renewals and Insurance	11,499
1,982	Expenses of Officers and Council	3,137
7,071	Catering	5,239
6,136	Miscellaneous	13,466
6,330	Cleaning and refuse disposal	5,472
£201,550		**£209,009**

£ 32,781	**Excess of Income over Expenditure for the year**	**£ 21,636**

Notes to Accounts - 31st December 1991

1991 £			£
	Note 1	**Provision for Repairs and Improvements**	
72,151		Balance at 1st January 1992	72,708
10,000		Increase in provision	—
(9,443)		Expenditure during year	(2,289)
£72,708		**Balance at 31st December 1992**	**£70,419**
	Note 2	**Provision for Special Library Expenses**	
14,481		Balance at 1st January 1992	14,069
10,000		Increase in provision	10,000
(10,412)		Expenditure during year	(6,957)
£14,069		Balance at 31st December 1992	**£17,112**
	Note 3	**General Fund**	
32,781		Excess of Income over Expenditure for the year	21,636
(38)		Realised net gains/(losses) on changes in investments during the year	(7,746)
120		Composition fees received during the year	225
8,800		Irene Manton Estate – Investment received	24,265
(10,000)		Transfer to Provision for Repairs and Improvements	—
(10,000)		Transfer to Provision for Special Library Expenses	(10,000)
578,017		Balance at 1st January 1992	599,680
£599,680		Balance at 31st December 1992	**£628,060**
	Note 4	**Publications Fund**	
17,704		Balance at 1st January 1992	15,668
1,881		Transfer from Joint Publishing Account	6,563
19,585			22,231
3,917		**Less:** Transfer to Publications Account	4,446
£15,668		**Balance at 31st December 19912**	**£17,785**

Note 5 No value is attributed to the Library, furniture, office equipment and stock of unsold journals in this Balance Sheet. Costs of acquisitions are written off as incurred.

Note 6 Annual contributions in arrears at 31st December 1992 amounted to £8,546 (31st December 1991; £7,837) 31% of this was paid in 1993.

	Note 7	**Publications Account**	
106,116		Half share of surplus on 1992 Joint Publishing Account – Journals	130,127
3,917		Transfer from Publications Fund	4,446
1,671		Synopses including purchase from E. J. Brill	2,749
111,704			**137,322**
		Less:	
47,057		Contributions to Joint Publishing Account and distribution cost for Journals to Fellows	64,842
9,126		Editorial expenses	11,811
56,183			76,653
£ 55,521		**Surplus transferred to Income and Expenditure Account**	**£60,669**

Joint Publishing Account with Harcourt Brace Jovanovich Ltd.

Income and Expenditure Account for the Publishing Year ended 31st December 1992

1991 £			£
	Sales –		
378,125	Journals (including Linnean Society contributions)		433,181
6,925	Books		24,094
£385,050			£457,275
—	Stock at 1st January 1992		748
	Production Costs –		
165,894	Journals		172,926
3,870	Books		10,221
169,764			183,895
(748)	**Less:** Stock at 31st December 1992		—
£169,016			£183,895
	Gross Profit for year –		
108,017	Harcourt Brace Jovanovich Ltd.		136,690
	Linnean Society –		
106,116	Journals	130,127	
1,901	Books: Publications Fund	6,563	
108,017			136,690
£216,034			£273,380

The Linnean Society of London
Trust and Special Funds for the year ending 31st December 1992

	Deposit and Current Account Balances at 1st January 1992	Income		Expenditure			Deposit and Current Account Balances at 31st December 1992	Investments at	
		Dividends Interest and Income Tax Recovered	Net Investment Sales, Royalties or other receipts	Grants, Awards, Transfers and Sundry Expenses	Purchase of investments	Administration contribution		Book Value	Market Value
	£	£	£	£	£	£	£	£	£
Flora Europaea Trust Fund	977	462	2,084	663	311	56	2,493	3,736	3,736
Westwood Fund	256	252	–	–	13	23	472	3,405	3,633
Trail - Crisp Fund	597	169	–	–	–	14	752	1,955	2,093
Hooker Fund	2,472	438	–	200	–	39	2,671	4,443	4,755
Goodenough Fund	925	455	200	1,246	–	42	292	5,720	6,122
Minchin Fund (Note)	2	46	–	**43	–	5	–	664	711
Jane Jackson Fund (Note)	120	2,349	2	**2,225	–	246	–	34,238	36,642
The H.H. Bloomer Fund	1,637	534	–	280	22	51	1,818	6,488	6,925
P. Appleyard Fund	1,349	2,478	3	1,170	106	259	2,295	35,505	37,909
Denis Stanfield Memorial Fund	1,106	649	9,496	1,611	28	47	9,565	6,179	6,589
Omer - Cooper Fund	1,447	2,143	2	739	485	228	2,140	29,202	30,844
Bonhote Fund	822	1,031	23	99	89	104	1,584	14,113	15,030
Jill Smythies Award Fund	(115)	437	136	299	–	46	113	6,374	6,822
Irene Manton Prize Fund	2,374	1,607	323	2,299	–	165	1,840	22,684	24,278
A.G. Side	1,033	1,727	2	–	–	103	2,659	24,305	26,013
	£15,002	£14,777	£12,271	£10,874	£1,054	£1,428	£28,694	£199,011	£212,102

** amount transferred to General Account

Schedule of Investments 31st December 1992

Nominal		General Account	Book Value	Market Value
			£	£
£10,000		Treasury 8 1/2% Stock 1994	8,800	10,130
£26,280.97		Treasury 8% Loan 2002/06	25,855	26,049
£27,500		Conversion 10% Stock 1996	26,868	30,386
£27,500		Exchequer 10 1/2% Stock 1997	28,092	31,567
£27,250		Treasury 10 1/2% Stock 1999	27,148	31,392
58,000	Units	Allied Dunbar UT European GrowthTrust	15,196	13,839
8,282	Shares	Barclays Bank Plc £1 Ordinary Shares	10,217	31,554
7,000	Shares	Bass 25p Ordinary Shares	35,933	44,450
4,250	Shares	B.A.T. Industries Plc 25p Ordinary Shares	3,397	41,778
8,000	Shares	Boots Co. Plc 25p Ordinary Shares	10,475	44,880
7,300	Shares	BTR Plc 25p Ordinary Shares	21,745	40,150
292	Warrants	BRT (1997)	173	383
5,500	Shares	Cable & Wireless 50p Ordinary Shares	20,428	38,445
6,000	Shares	Cadbury Schweppes Plc 25p Ordinary Shares	4,620	26,640
3,990	Shares	Commercial Union Assurance Co. 25p Ordinary shares	12,934	24,778
8,250	Shares	East Midlands Electric Co. 50p Ordinary shares	32,411	35,723
4,700	Shares	Fisons 25p Ordinary Shares	18,227	11,515
10,350	Shares	General Electric 5p Ordinary Shares	24,992	29,342
5,700	Shares	Glaxo Holdings Plc 25p Ordinary Shares	965	45,201
8,000	Shares	Glynwed International 25p Ordinary Shares	24,999	20,560
1,250	Units	GUS "A" Ordinary Stock	7,700	21,475
28,000	Units	Henderson UT Management European Income Trust	14,476	17,760
9,300	Shares	Inchcape 25p Ordinary Shares	22,402	52,824
4,490	Shares	Marks & Spencer Plc 25p Ordinary Shares	9,324	14,795
4,895	Shares	P. & O. £1 Deferred	18,992	24,671
3,340	Shares	Rank Organisation 25p Ordinary Shares	18,997	22,979
£20,000		J.Sainsbury Plc 8 1/2% Conversion Bonds	20,203	36,221
£11,000		Scottish Mortgage & Trust Plc. 8-14% Stepped Deb.	11,083	15,928
6,870	Shares	Shell Transport & Trading Co. Plc 25p Ordinary	8,330	38,609
5,708	Shares	Smithkline Beecham 12.5p 'A' Ordinary Shares	10,869	28,312
10,730	Units	The Equities Investment Fund for Charities	16,711	60,410
9,600	Shares	Trust House Forte 25p Ordinary Shares	27,940	18,048
4,745	Shares	Unilever Plc 5p Ordinary Shares	16,543	52,907
		Uninvested cash held by James Capel	39,116	39,116
			596,161	£1,022,817
		National Savings Bank - Investment Account	11,026	11,026
			£607,187	**£1,033,843**

Schedule of Investments 31st December 1992

Trust And Special Funds

Nominal			Book Value £	Market Value £
£25,000		Treasury 10 1/2% Stock 1999	24,923	28,800
7,150	Shares	Abtrust New European Investment Trust 25p Ordinary Shares	7,428	4,219
1,930	Shares	BTR 25p Ordinary Shares	8,281	10,615
77	Warrants	BTR to sub for Ord. (1997)	66	101
1,550	Shares	Cable and Wireless 50p Ordinary Shares	8,493	10,835
7,800	Shares	F & C Eurotrust 25p Ordinary Shares	15,255	12,948
2,520	Shares	Fisons 25p Ordinary Shares	8,496	6,174
5,230	Shares	Fleming American Investment Trust 25p Ordinary Shares	9,269	13,572
4,687	Shares	Fleming Japanese Ivestment Trust 25p Ordinary Shares	7,386	6,656
937	Warrants	Fleming Japanese Investment Trust	348	262
1,880	Shares	General Accident 25p Ordinary Shares	9,929	10,857
3,690	Shares	Hanson 25p Ordinary Shares	8,494	8,616
10,020	Units	James Capel Gold and General Unit Trust	7,728	4,928
2,905	Shares	Lloyds Bank £1 Ordinary Shares	8,492	15,484
900	Units	M & G Group Charifund	1,956	5,067
1,990	Shares	Smithkline Beecham "A" 12.5p Ordinary Shares	9,941	9,870
2,535	Shares	Whitbread "A" Lim. 25p Ordinary Shares	11,748	12,320
		Uninvested cash held by James Capel	38,109	38,109
			186,342	199,433
		National Savings Bank - Investment Account	12,669	12,669
			£199,011	**£212,102**

Source and Application of Funds Statement for the year ended 31st December 1991

	General Funds		Trust Funds	
	1992	1991	1992	1991
	£	£	£	£
Source Of Funds				
Excess of Income over Expenditure for the year		32,781		—
Other Sources of Income				
Composition fees received		120		—
Investments sale proceeds		491		32,054
Net Transfer to Publications Fund		—		—
Investment from Irene Manton Estate		8,800		—
Decrease in Debtors		34,755		—
Increase in Sundry Creditors		—		—
Increase in Contributions received for future years		1,726		—
		78,673		32,054
Application of Funds				
Additions to Investments		9,681		27,993
Repairs and Improvements Expenditure		9,443		—
Special Library Expenditure		10,412		—
Decrease in Sundry Creditors		2,441		—
Increase in Debtors		—		—
Net Transfer from Publications Fund		2,036		—
Trust Funds Excess of Expenditure over Income		—		11,518
Decrease in Contributions received for future years		—		—
		34,013		39,511
Movement in Cash Deposit and Current Account balances		44,660		(7,457)
Balances at 1st January		21,031		22,459
Balances at 31st December		**£65,691**		**£15,002**

Officers, Council and Committees 1993/94

PRESIDENT	Professor J.G. Hawkes
VICE-PRESIDENTS	Professor J. Green Professor D.S. Ingram Dr D.R. Lees Professor C.H. Stirton
PRESIDENT-ELECT	Professor B.G. Gardiner
TREASURER	Dr R.W.J. Keay (1989)
SECRETARIES	
Botanical	Dr C.J. Humphries (1990)
Zoological	Professor J. Green (1988)
Editorial	Dr D.F. Cutler (1991)

COUNCIL The President, President-elect, Treasurer, Secretaries and:

# Dr P.E. Ahlberg	# Professor D. Ingram
- Dr R.N. Bamber	o Dr D.M. John
o Professor R.A.D. Cameron	- Professor P.M. Jørgensen
o Professor B.C. Clarke	- Professor C.H. Stirton
# Dr M.E. Collinson	# Dr J.P .Thorpe
- Mr B.J. Ford	o Dr P.B.H. Tinker
o Dr H.E. Gee	o Dr M.W. Trett

- Due to retire 24 May 94
Due to retire 24 May 95
o Due to retire 24 May 96

Dr C. J. Humphries is the observer of the Systematics Association; the BES observer is Dr J.H. Crothers (1992).

EXECUTIVE SECRETARY	Dr J.C. Marsden (1989)
LIBRARIAN & ARCHIVIST	Miss G.L. Douglas (1983)
MEMBERSHIP OFFICER	Miss M.J. Polius (1989)
MEETINGS OFFICER	Miss M.J. Baird (1990)
HOUSEKEEPER/ LIBRARY ASSISTANT	Mrs E. Dimitrova (1990)
FINANCE OFFICER	Mr Y. Nithianandan (1991)

APPOINTMENTS

Committee Chairmen

Collections Curatorial	Dr K.A. Joysey (1968)
Editorial	The Editorial Secretary (e.o.)
Finance	The Treasurer (e.o.)
Flora Europaea Trust	The Botanical Secretary (e.o.)
Grants	The President (e.o.)
Library	Prof G.Ll. Lucas (1975)
Medals and Awards	The President (e.o)
Programmes	The Zoological and Botanical Secretaries (e.o.)

Curators

Fish, Shells & General Zoology	Mr A. Wheeler (1973)
Insects	Dr M.G. Fitton (1976)
Plants	Dr C.E. Jarvis (1990)

Editors

Biological Journal	Dr H.R. Lees (1990)
Botanical Journal	Prof D. Edwards (1991)
Zoological Journal	Dr D.B. Norman (1989)
Synopses Series	Dr J.H. Crothers (1991)
The Linnean	Prof B.G. Gardiner (1980)
Reviews	Prof J.G. Vaughan (1990)

Specialist Group Secretaries

Biogeography	Dr I.B.K. Richardson (1983)
Bryology – correspondence	Mr J.H. Field (1983)
Computer Applications	Dr F.A. Bisby (1984)
London Freshwater	Dr A. Duncan (1993)
Meiofauna	Dr H.M. Platt (1987)
Palaeobotany	Dr A.R. Helmsley (1991)
Palynology	Mrs M.M. Harley (1990)
Plant Anatomy	Dr D.F. Cutler (1973)

+COLLECTIONS CURATORIAL

Dr K. A. Joysey (Chairman;1968)
Dr F. R. Barrie (1990)
Mr P. S. Davis (1985)
Dr M. G. Fitton (1980)
Dr C. E. Jarvis (1985)
Mrs S. Morris (1980)
Dr N. K. B. Robson (1977)
Dr M.J. Scoble (1990)
Mr A. Wheeler (1973)
The Librarian (e.o)

+ LIBRARY

Prof G. Ll. Lucas (Chairman;1975)
Mr R. E. R. Banks (Vice Chairman; 1985)
*Mr J. Collins (1990)
Prof P. M. Daniel (1987)
* Mr R. G. C. Desmond (1976)
Miss S. M. D. Fitzgerald (1985)
Mr B. J. Ford (1990)
Mrs S. Gove (1984)
* Miss J. Sheppard (1985)
Prof W. T. Stearn (1988)
Mr D. P. Taylor-Pescod (1985)
Dr P. F. Yeo

+ EDITORIAL COMMITTEE

The Editorial Secretary (e.o.)
Prof B. W. Fox (1989)
Mr C. M. Hutt (1989)
Dr V.R. Southgate (1988)
The Editors (e.o.)
The Editor, J. Zool.(Dr M. Edwards: e.o.)

* Dr A. Richford (by
* Dr R.S.K. Barnes (ECSA) (invitation

+ PROGRAMMES COMMITTEE

The Zoological Secretary (e.o.)
The Botanical Secretary (e.o.)
Dr J. H. Crothers (1984)
Dr M.A. Edwards (1991)
Mrs P.D. Fry (1991)
Dr J.J.D. Greenwood (1990)
Mrs V.M. Purchon (1986)
Dr D. Rollinson (1988)
Dr S.M. Tilling (1988)
Dr M.W. Trett (1991)
The Specialist Group Organisers by invitation
Dr S. Blackmore (Syst. Assoc.)

FLORA EUROPAEA TRUST

The Botanical Secretary (e.o.)
Dr S.L. Jury (1991)
Dr J.R. Edmondson (1990)
Dr S.M. Walters (1977)
The President (e.o.)
The Treasurer (e.o.)

+ FINANCE

The Treasurer (e.o.)
Mr F.R. Goodenough (1975)
Dr C.B. Goodhart (1975)
Mr B.H. Harley (1990)
The Chairman of the Library Committee (e.o.)

+*GRANTS*

The President (e.o.)
The Vice Presidents (e.o.)
Dr S.A. Churchfield (1986)

+*MEDALS AND AWARDS*

The President (e.o.)
The Vice Presidents (e.o.)
Botanical (Members of Council present
Zoological (at the January Council Meeting

Informal Panels

JILL SMYTHIES AWARD

The Botanical Secretary (e.o.)
Mr F H. Brightman (1989)
Prof B.W. Fox (1989)

DENNIS STANFIELD AWARD

Dr P. Denny (1989)
Dr R.W. J. Keay (1972)
Dr R.M. Polhill (1985)

EXPEDITIONS

Dr L. M. Cook (1990)
Dr D.J. Galloway (1990)
Dr RW.J. Keay (1990)
Mr M.J.S. Sands (1990)

IRENE MANTON PRIZE

Botanical Secretary (e.o.)
Dr D.F. Cutler (1990)
Prof D. Edwards (1990)
Prof M.R.D. Seaward (1990)

+ The Officers are *ex officio* (e.o.) members.
* Not Members of the Society

Library

We hope to have finished reshelving the German journals by the autumn. If all goes according to plan, the rearrangement of journal holdings in the basement storage areas will have been completed. This should make it quicker and simpler to find your requests, even if the series title is incomplete as all journals from one country and from one place or institution within that country will be shelved in proximity making it possible to check all variations on a journal title coming from one place or institution. As an added bonus, they will also be cleaner than before. Readers are reminded that only the Western European journals are housed in the Society basement, the "rest of the world" are beneath the Geological Society on the other side of the courtyard and can take a little longer to retrieve. If you telephone before your visit you may be able to save yourself time waiting for journals to be fetched from these basement areas. The removal of the Herpetological Society Library has given us some space for new accessions in the back of the upper Gallery. This has helped in providing space for the incoming accessions and backlog of older material, most of which has now been catalogued.

Donations

A new book sale is scheduled for 2nd December in association with a meeting on "Sprengel and Pollination Biology", for details see the Meetings Programme and card. All donations will be welcome, as soon as possible, for all kinds of books. Anything kept for the Library will be duly acknowledged. Funds from the sale go towards the Library Special Fund.

Meanwhile we are grateful as usual to all those who present us with books or copies of their reprints for the Library. Individual donations received by the beginning of June are listed below but thanks must also go to Professor Chaloner for a large number of Russian paleobotanical works and to Richard Fitter, Dr Pontecorvo and Prof. Mark Seaward for ensuring that we receive a number of journals we would not otherwise hold.

C.Anderson	Anderson, Chris, *Classification of organisms, living and fossil*. 69 pp., Lancaster, Ohio, Golden Crowns Press, 1992.
Prof. P. Bell	Hedwig, J. *Teoria generationes et fructificationis plantarum cryptogamicarum Linnaei. 2nd ed.* 268 pp., 42 col. pl., Lipsiae, 1798.
Dr.F. Bisby	United Nations Environment Programme, *Needs and specifications for a biodiversity information network*. 265 pp., Nairobi, UNEP, 1992.
J. Burton	Herrick, C. Judson, *George Ellert Coghill, naturalist and philosopher*. 280 pp., portrait, Chicago, Chicago University Press, 1949.
Cambridge University Press	Flora Europaea Committee, *Flora Europaea Vol.1, Psilotaceae - Platanaceae, 2nd ed.* 581 pp., maps, Cambridge, CUP, 1993.
D. Catling	DaCosta, A. & Franquinho, L.de O., *Madeira, plantas e flores*. 435 pp., col. illustr., Porto, Ambar, 1990.
Prof. J.L. Cloudsley-Thompson	Cloudsley-Thompson, J.L., *The diversity of desert life*. 94 pp., illustr., Jodhpur, Scientific Publishers, 1993.
Lord Cranbrook	Strange, Morten & Jeyarajasingam, A. *Birds, a photographic guide to the birds of peninsular Malaysia and Singapore*. 258 pp., col. illustr., maps, Singapore, Sun Tree Press, 1993.
Dr L.N. Derrick	Ager, Derek V., *The nature of the stratigraphic record, 3rd ed.* 151 pp., illustr., Chichester, J.Wiley, 1993.
	Calder, Ian R., *Evaporation in the uplands*. 148 pp., illustr., maps, Chichester, J.Wiley, 1990.
	Calder, Ian R. & Hall, R.L. eds., *Growth and water use of forest plantations (Proceedings of an International Symposium, Bangalore, 1991)*. 381 pp., Chichester, J.Wiley, 1992.
	Mannian A.M. & Bowlby, S.R., *Environmental issues in the 1990's*. 349 pp., illustr., maps,Chichester, J.Wiley, 1992.
Ray Desmond	Desmond, Ray & Hepper, F. Nigel, *A century of Kew plantsmen, a celebration of the Kew Guild*. 188 pp. illustr., some col., Kew, Kew Guild, 1993.
G. Douglas	Reilly, Robin, *Josiah Wedgwood, 1730-1795*. 412 pp., illustr., London, Macmillan, 1992.
	Simmons, Samuel Foate & Hunter, John, *William Hunter 1718-1783, a memoir, edited by C.H. Brock*. 81 pp., illustr., Glasgow, Glasgow University Press, 1983.

The Editors	Barrai, Italo, Coletti, Guilianella, Di Bacco, Marco, eds., *Probability and Bayesian statistics in medicine and biology.* 294 pp., Pisa, C.N.R. 1992.
Field Studies Council	Field Studies Council, *The fern guide , a field guide to the ferns, club- mosses, quillworts and horsetails of the British Isles, (Field Studies 8,1992).* pp. 108 -188., illustr., some col., maps, Shrewsbury, FSC, 1992.
	Field Studies Council, *Field guide to the shore fishes of the British Isles, by Alwyne Wheeler (Test version: AIDGAP).* 40 pp., illustr., Shrewsbury, FSC, 1993.
R. Fitter	Schulz, Maria & Schulz, Holger, *Working bibliography of the Bustards (Otadidae).* 171 pp., illustr., Riyadh, National Commission for Wildlife Cons. & Dev., 1991.
Forest & Rangeland Res.Inst.	Assadi, M., Khatamsaz, M. & Maassoumi, A.A., *Flora of Iran, No. 6 Rosaceae by M. Khatamsaz (in Farsi).* 352 pp., illustr., Tehran, Research Inst. for Forests & Rangelands, 1992.
J. Green, John Innes Inst.	British Museum (Natural History), *Flora of the Cretan area, annotated checklist and atlas by N.J. Turland, L.Chilton & J.R. Press.* 439 pp. illustr., maps, London, HMSO, 1993.
A.M. Greenhall	Greenhall, Arthur M. , Artois, M. & Fekadu, M., *Bats and rabies.* 107 pp., illustr. some col., Lyons, Fondation Marcel Merieux 1993.
	Greenhall, Arthur M. & Schmidt, Uwe, *Natural history of vampire bats.* 246 pp., illustr., Boca Raton, Fl., CRC Press, 1988.
F.N. Hepper	Hepper, F.Nigel, *Illustrated encyclopedia of Bible plants.* 192 pp. ilustr., some col., Leicester, Inter-Varsity Press, 1992.
H. Hoenigsberg	Hoenigsberg, Hugo, *Genetica de Poblaciones.* 1163 pp., Bogota, Edit. Geminis, 1992.
Mrs J. Holgate	Hunt Institute for Botanical Documentation, *Exhibition catalogue: Jeanne Holgate, paintings and drawings.* 16 pp., illustr., Pittsburgh, Hunt Institute, 1973.
Hong Kong Government Office	Hill, Dennis S. & Phillipps, Karen, *A colour guide to Hong Kong animals.* 281 pp., col. illustr., map, Hong Kong, Government Printer 1981
Prof. P.M. Jorgensen	Nordisk Lichenologisk Forening, *Festschrift for Gunnar Degelius (Graphis Scripta Vol.5(1)).* 74 pp., illustr., Stockholm, Nordisk Lichenologisk Forening, 1993.
Dr S.L. Jury	Rowley, Gordon D., *Didieraceae "Cactus of the old world".* 36 pp., col. illustr, map, Kew, British Cactus & Succulent Soc., 1992.
Prof. R.W.J. Keay	Carter, Harold B., *The sheep and wool correspondence of Sir*

	Joseph Banks. 641 pp., illustr., Norwich, Library Council of N.S. Wales, 1979.
Prof. A.J. Kohn	Kohn, Alan J., *Chronological taxonomy of Conus: 1758 -1840*. 315 pp. illustr., Washington, Smithsonian Institution, 1992.
Sir C. Lever	King, Carolyn, *Immigrant killers, introduced predators and the conservation of birds in New Zealand*. 224 pp., illustr., some col., Auckland, Oxford University Press, 1984.
M. Merlin	Lebot, Vincent, Merlin, Mark & Lindstrom, Lamont, *Kava the Pacific drug. (Psychoactive plants of the world: ed. R.E. Schultes and Robert F. Raffauf)* 255 pp., illustr., map, New Haven, Yale University Press, 1992.
	Merlin, Mark (and others), *Tuhke en Pohnpei/ Plants of Pohnpei*. 94 pp., illustr. some col., map, Honolulu, EPI, East-West Center, 1992.
National Trust	National Trust, *The conservation and management of red deer in the West Country, (Report to the Council by the Deer Hunting Working Party)*. 43 pp., + Appendices, maps, London, 1993.
Prof. R.E.G. Pichi-Sermolli	[CONFERENCES] Italy, *Studi sulla flora dell' Appennino settentrionale ed Alpi Apuane in celebrazione di Antonio Bertoloni (1775-1869)*. 2 vols, illustr., La Spezia, Accademic Lunigianese di Scienze "G.Capellini", 1992.
A.A. Pickett	Pickett, Adrian A., *Hybrid wheat, results and problems*. 259 pp., illustr., Berlin, Paul Parey, 1993.
Princeton University Press	Cain, A.J., *Animal species and their evolution*. 206 pp., illustr., maps, Princeton, Princeton University press, 1993
Reading Botany Students	Bourne, M.J. Lennox, G.W. & Seddon, S.A., *Fruits and vegetables of the Caribbean*. 58 pp., col. illustr., London, Macmillam 1991.
The Royal Society	The Royal Society, London, *Sir Joseph Banks and his legacy, an exhibition...* 9 pp., London, The Royal Society, 1993.
B. Rutterford	Rutterford, M.G., *Breck, fen and forest, recollections of a countryman*. 117 pp., illustr., privately, 1992.
Prof. R.E. Schultes	Jain, S.K., Sinha, B.K. & Gupta, R.C., *Notable plants in ethnomedicine of India*. 219 pp., illustr., New Delhi, Deep Publ., 1991.
	Roosevelt, Anna Curtenius, *Moundbuilders of the Amazon*. 495 pp., San Diego, Academic Press, 1991.
	Smith, Earl E., *The forests of Cuba. (Maria Moors Cabot Foundation Publ. No 2)* 98 pp., illustr., maps, 1954.
Systematics Association	Systematics Association, *The Ammonoidea: environment, ecology and evolutionary change (Special Volume No. 47)*.

	354 pp., illustr., maps, Oxford, Clarendon Press for Systematics Association, 1993.
P. Tuley	Buchsbaum, Ralph, *Animals without backbones. vol.2*, illustr., Harmondsworth, Penguin Books, 1960.
	Kalmus, H. & Crump, Lettice M., *Genetics.* 171 pp., illustr., Harmondsworth, Penguin Books, 1950.
	Romer, A.S., *Man and the vertebrates.* 2 vols., illustr., Harmondsworth, Penguin Books, 1960.
	Rose, Steven, *The chemistry of life.* 266 pp., illustr., Harmondsworth, Penguin Books, 1970.
	Smith, Kenneth M., *Beyond the microscope.* 143 pp., illustr., Harmondsworth, Penguin Books, 1945.
Prof. J. Vaughan	Le Rougetel, Hazel, *The Chelsea gardener, Philip Miller, 1691 - 1771.* 212 pp., illustr. some col., London, Natural History Museum, 1990.
Dr.C. Violani	Orsini, Lilia Cappocaccia, Doria, Giorgio & Doria, Guiliano, *Animali e Piante dale Americhe all' Europa 1492 - 1992.* 323 pp., illustr., some col., Genoa, SAGEP, 1991.
Mrs M. Walker	Lees, Hugh D.W., *The chronicles of a Suffolk parish church: Lowestoft St Margaret's.* 319 pp., illustr., n.p. 1949.
J. Watson & C.A. Sincock	Paleontographical Society, *Bennettitales of the English Wealden by Joan Watson and Caroline A. Sincock.* 228 pp. illustr., London, Paleontographical Society, 1992.
Eva Willen	Tikkanen, Toini & Willen, Torbjorn, *Vaxt plankton flora.* 280 pp. illustr., Eskilstroma, Naturvardsverket, 1992.
R. Wrensch	Wrensch, Ruth, *The essence of herbs, an environmental guide to herb gardening.* 299 pp. Jackson, Univ. Press of Mississippi, 1992.
Dr.P. Yeo	EDINBURGH, National Library of Scotland, *Botanical illustration, a loan exhibition.* 39 pp., illustr., Edinburgh, National Library of Scotland, 1964.
	Leroy, Jean-Francois, *La botanique au Jardin des Plantes (1626-1970): leon inaugurale.* 29 pp., Paris, Mus.Nat. Hist.Nat. 1971.

Other Accessions:

Alon, Azaria, *The natural history of the lands of the Bible.* illustr., some col., London, Hamlyn, 1969.

Anderson, Anthony B., *Alternatives to deforestation, steps towards sustainable use of the Amazon rain forest.* 281 pp., illustr., maps, New York, Columbia University press, 1990.

Barlow, M., Fleming, Pat & Button, J. eds., *Directory of environmental databases in the UK, 1992.* 290 pp., Bristol, Ecol. Env. Education Trust, 1992.

Barnett, H.L. & Hunter, Barry B., *Illustrated genera of imperfect fungi*. 241 pp., illustr., Minneapolis, Burgess Publ. Co., 1972.

Berenger-Leveque, Philippe, *Les insectes dans l'enquete policiere*. 56 pp., col. illustr., Paris, Boubee, 1990.

Berenger-Leveque, Philippe & Ovtcharenko, Claude, *Le grillon du Metro*. 22 pp., col. illustr., Paris, Boubee, 1988.

Bertram, Brian C.R., *The ostrich communal nesting system*. 196 pp., illustr., Princeton, Princeton University Press, 1992.

Chambers, Robert, *Vestiges of the natural history of creation (facsimile edition with introduction by Gavin de Beer)*. 390 pp., Leicester, Leicester Univ. Press, 1969.

Clutton Brock, Juliet, *The British Museum book of cats, ancient and modern*. 96 pp., illustr., some col., London, British Museum, 1988.

Cornes, M.D. & Cornes, C.D., *Flowering plants of Bahrain, an illustrated guide*. 272 pp., col. illustr., maps, London, Immel, 1989.

Cramp, Stanley, *Handbook to the birds of Europe, Middle East and North Africa, Vol.VII: Flycatchers to shrikes*. 577 pp., illustr., some col., maps, Oxford, OUP, 1993.

Dethier, Vincent G., *Crickets and Katydids, concerts and solos*. 140 pp., illustr., Cambridge, Mass., Harvard University press, 1992.

Epstein, H., *The origin of domestic animals of Africa*. 2 vols., illustr., New York, Africana P.C., 1971.

Festing, Sally, *Gertrude Jekyll*. 323 pp., illustr., London, Viking, 1991.

Findlay, James S., *Bats, a community in perspective*. 167 pp., illustr., Cambridge, CUP, 1993.

Giles, Nick, *Wildlife after gravel, 20 years of practical research by the Game Conservancy and the ARC*. 135 pp., illustr. some col., maps, Fordingbridge, Game Conservancy, 1992.

Glenn-Lewin, David C., Peet, R.K. & Veblen, T.T. eds., *Plant succession, theory and prediction*. 352 pp., illustr., London, Chapman and Hall, 1992.

Golley, F.B. ed., *Ecosystems of the world, vol.14A: Tropical rain forest ecosystems, structure and function*. 381 pp., illustr., maps, Amsterdam, Elsevier, 1991.

Grierson, A.J.C. & Long, D.G., *Flora of Bhutan*. Vol.1 (part 1 & part 3), illustr., maps, Edinburgh, Royal Botanic Garden, 1983 & 1987.

Hagen, Joel B., *An entangled bank, the origins of ecosystem ecology*. 245 pp., illustr., New Brunswick, Rutgers University press, 1992.

Hall, Marie Boas, *The Library and archives of the Royal Society 1660 - 1990*. 81 pp., illustr., London, Royal Society, 1992.

Handley, C.O., Wilson, Don E. & Gardner, A.L. eds., *Demography and natural history of the common fruit bat*. 173 pp., map, Washington, Smithsonian Institution, 1991.

Hepper, F. Nigel, *Kew Gardens for science and pleasure*. 195 pp., illustr., some col., Owning Mills, Stemmer House, 1982.

Hynes, H.B., *The ecology of running waters*. 555 pp., illustr., Liverpool, Liverpool University Press, 1970.

Iablokoff-Khnzorian, S.M., *Les coccinelles, Coleopteres - Coccinellidae*. 568 pp., 104 illustr., Paris, Boubee, 1982.

Ito, Yosiaki, *Behaviour and evolution of wasps*. 159 pp., illustr., Oxford, OUP, 1993.

Jablonski, Nina G. ed., *Theropithecus, the rise and fall of a primate genus*. 536pp., illustr., Cambridge, CUP, 1993.

Kim, Ke Chung, *Co-evolution of parasitic arthropods and man*. 800 pp., illustr., maps, New York, Wiley, 1985.

Knight, David M., *Natural science books in English, 1600 - 1900*. 262 pp., illustr., some col., London, Portman Books, 1989.

Lawless, Julia, *The encyclopaedia of essential oils*. 226 pp., illustr., Shaftesbury, Element Books, 1992.

Laycock, George, *The alien animals*. 240pp., illustr., New York, American Museum of Nat. Hist., 1966.

Lenhoff, Sylvia G. & Lenhoff, Howard M., *Hydra and the birth of experimental biology: 1744, Abraham Trembley's memoirs*. 60 pp. + 188 pp., illustr., Pacific Grove, Boxwood Press, 1986.

Long, John A., *Paleozoic vertebrate biostratigraphy and biogeography*. 369pp., illustr., maps, London, Belhaven Press, 1993.

Lyte, Charles, *Frank Kingdon-Ward, the last of the great plant hunters*. 218 pp., illustr., London, J. Murray, 1989.

Maavel, Eddy van der, ed., *Ecosystems of the world, Vol. 2A: dry coastal ecosystems, polar and Europe*. 600 pp., illustr., maps, Amsterdam, Elsevier, 1993.

Mamaev, B.M. & Krivosheina, N.P., *The larvae of the gall-midges (Diptera, Cecidomyiidae) [translated from the Russian]*. 293 pp., illustr., Rotterdam. Balkema, 1993.

[Martinez Compagnon] *Trujillo de Peru*. Vols.4 and 5, illustr., Madrid, 1989.

Mayden, Richard L. ed., *Systematics, historical ecology and North American freshwater fishes*. 969 pp., illustr., map, Stanford, Stanford University Press, 1992.

McCracken, Eileen, *The palm house and botanic garden, Belfast*. 66 pp. illustr., Belfast, Ulster Architectural Heritage Soc., 1971.

McCrinmmon, Barbara, *Power, politics and printing: the publication of the British Museum catalogue 1881 - 1900*. 186 pp., London, C.Bingley, 1981

Moore, Raymond E. ed., *Treatise on invertebrate palaeontology: Part W: Miscellanea*. 259 pp., illustr., New York, Geol.Soc. America, 1962.

Morowitz, Harold J., *Beginnings of cellular life: metabolism recapitulates biogenesis*. 195 pp., New Haven, Yale University Press, 1992.

Mutis, Jose Celestino, *Flora de la Real Expedicion ... T, XXIII: Dicapetalaceas y Euforbiacas, T. XLI: Bignoniaceas, Lentibulariaceas, Acanthacea*. Vol.23 & 41, Madrid, 1992.

Pearce, Fred, *Green warriors, the people and politics behind the environmental revolution*. 331 pp., London, Bodley Head, 1991.

Pearcy, William, *Ocean ecology of North Pacific salmonids*. 179 pp., Seattle, Univ. Washington Press, 1992.

Phillips, Patricia, *The scientific lady, a social history of women's scientific interests, 1520 - 1918.* 279 pp., illustr., London, Weidenfeld & Nicholson, 1990.

Purcell, Rosamund Wolff & Gould, Stephen Jay, *Finders keepers, eight collectors.* 155pp., col. illustr, London, Hutchinson Radius, 1992.

Rapp, George & Mulholland, Susan C., *Phytolith systematics, emerging issues.* 350 pp., illustr., New York, Plenum 1992.

Redford, Kent H. & Padoch, Christine eds., *Conservation of Neotropical forests, working from traditional resource use.* 475 pp., New York, Columbia Univ. Press, 1992.

Renfrew, Jane M., *Paleoethnobotany, the prehistoric food plants of the near east and Europe.* 248 pp., illustr, maps, London, Methuen, 1973.

Rodgers, Andrew Denny, *Bernhard Eduard Fernow, a story of North American forestry.* 623 pp., Durham, NC., Forest History Society, 1991.

Ros, Joandomenec & Prat, Narcis, *Homage to Ramon Margalef, or why there is so much pleasure in studying nature.* 439 pp., maps. Barcelona, Univ. of Barcelona, 1992.

Samson, J.A., *Tropical fruits (2nd ed.).* 336pp., illustr., map, Harlow, Longmans, 1986.

Schmidly, David J., *The mammals of Trans-Pecos Texas.* 225 pp., illustr., maps, College Station, Texas A & M, 1977.

Shafer, Craig L., *Nature reserves, island theory and conservation practise.* 189pp., illustr., maps, Washington, Smithsonian Institution, 1990.

Sheppard, Charles, Price, Andrew, & Roberts, Callum, *Marine ecology of the Arabian region.* 359 pp., maps, London, Academic, 1992.

Sill, Ben L, Sill, Cathryn P. & Sill, John C., *Another field guide to little-known and seldom seen birds of N. America.* 71 pp., col. illustr., Atlanta, Peachtree Publ., 1990.

Soderquist, Thomas, *The ecologists, from merry naturalists to saviours of the nation.* 330 pp., Stockholm, Almquist & Wiksell, 1986.

Spector, David L., *Dinoflagellates.* 545 pp., illustr., Orlando, Academic Press, 1984.

Thomson, J.Arthur, *The new natural history.* 1152 pp.(3 vols), illustr., some col., n.d.

Tindall, H.D., *Vegetables of the tropics.* 533 pp., illustr., London, Macmillan, 1983.

Turton, Lilian, *Some flowering plants of South eastern Botswana.* 151 pp., col. illustr., Gaborone, Botswana Soc., 1988.

Weberling, F., *Morphology of flowers and inflorescences (translated...by R.J.Pankhurst).* 405 pp., illustr., Cambridge, CUP, 1992.

Webster, E.M., *The moon man, a biography of Nikolai Miklouho-Maclay.* 421 pp., illustr., maps, Carlton, Vict., Melbourne University Press, 1984.

Wein, Ross W. & Maclean, David A. eds., *The role of fire in northern circumpolar ecosystems.* 322 pp., illustr, maps, Chichester, Wiley, 1983.

Wellnhofer, Peter, *The illustrated encyclopaedia of Pterosaurs.* 191 pp., col. illustr., maps, New York, Crescent Books, 1991.

Wesson, Robert, *Beyond natural selection.* 353 pp., illustr., Cambridge, Mass., MIT Press, 1991.

Williams, D.Dudley & Feltmate, Blair W., *Aquatic insects.* 358 pp., illustr., maps, Wallingford, CAB International, 1992.

Book Reviews

Ericas of South Africa. D. Schuman & G. Kirsten in collaboration with E.G.H. Oliver, 1992. Fernwood Press, Vlaeberg, S. Africa. 272pp. £40.

Here is a work to arouse interest and admiration for the unique assemblage of heaths in S. Africa. It will appeal to the layman as well as to the botanist. The photos are superb and the text's reliability ensured through the help of our Fellow, Ted Oliver. Some may remember the lectures he has given in our rooms with his fine slides. But the photos here match his and show detail, general habit and habitat. And there is advice on cultivation and on how the photos were taken.

The whole is enhanced by a complete list of the S. African Ericas, arranged in their long used, but fallible, sections, showing clearly the 450 or so depicted in this book. Seventeen of them named in Europe early in the last century have never been traced in the wild, and were no doubt named from cultivated plants, probably hybrids.

It is exalting just to look through this magnificent production, but much more is it a most useful exposition of this special richness of this highly remarkable region.

DAVID M^{c}CLINTOCK

The European Discovery of the Indian Flora. Ray Desmond, 1992. Oxford University Press, ISBN 0-19-854684-X, 255pp. £60.

This is a wonderfully full, detailed and revealing work. It leaves the reader with that heady sense of overview which a life-time of study alone can convey. But the book poses some topical issues with a broad relevance to the status of contemporary publishing, and it has to be said that it does contain some features which may irritate a critical eye.

There are important and revealing reminders of the fact that, despite the widespread opinion to the contrary, the rôle of the East India Company was not whole-heartedly restricted to what we now call market forces, for they also supported much scientific work and were sponsors of the early botanists. There were nineteenth century warnings against the excesses of deforestation, long before the topic is believed to have become the fashion, and reminders that a conservation movement had early expression in India. From the earliest accounts of contact between the ancient philosophers and with the sub-continent, India emerged as a land of mystery and romance, and Desmond shows how the insurgence of Europeans of the Victorian era produced a deluge of discoveries.

Illustrations from the early seventeenth century were little more than caricatures, but as the century progressed the standards increased, until artists like Anton Jacob Goedkint were providing representational engravings for the volume of H.A. Van Reed's *Hortus Malabaricus* published in 1678. Many of these pioneering studies were plagiarised by others (notably J. Fryer in his *A New Account of East India*, etc., of 1698). Indian botany was mentioned by Linnaeus as an area with much potential, and indeed it was his student Johann Gerhard Koenig who gave birth to India botany. The

personal affairs of such men as William Jones, William Roxburgh and Francis Buchanan are cleverly interwoven with their professional lives in Desmond's narrative, and the reader learns much social and political history as the tale unwinds. I wish I had read Desmond on the Calcutta Botanical Garden before I first visited that extraordinary centre of Indian horticulture, and the descriptions of the journeys of exploration in this book made me itch to get back to India and find out more.

Overall, it is a remarkable work and exciting too. There are some turgid sections, to be fair, and the bibliographical references in the text are hopelessly muddled in format. In many cases a single surname is utilized to denote a publication. And then, adjacent to that convention, we suddenly find a surname preceded by an initial – and, to complete the stylistic mélange, next would be an author with full forename, surname, and even title spelled out. In some cases the year of publication appears after the author (as in the modern convention), in others it appears at the end of the citation; and in some extraordinary journal references the year appears sandwiched incongruously between the volume and the page number. Only in the bibliography which appears at the end of this book is there any coherent use of a recognisable format. The index, though reasonably comprehensive, is not as full as it might be. For example, I had to check all the entries for 'North, M.' to locate the page on which the haunting photographic portrait of the young Marianne appears.

Publishers rarely speak of 'a book' these days, preferring to speak instead of 'the product'. The book here reviewed is an interesting example of the gap that lies between the two concepts. When this valuable volume was in preparation it was known that Desmond was busy on a book entitled 'The Flowering of India', with a fair allocation of colour pictures and a feast of original material. Many science historians, naturalists, professional botanists and horticulturists were looking forward to adding the book to their libraries.

But what happened along the way as 'the book' was transmuted into 'the product'? The slightly translucent pages have been type set in two columns, which does little to aid ease of reading. The typesetting is cheap, with too many blemishes for a professional product. Many striking engravings have been pointlessly reproduced as half-tones rather than line blocks, with the loss of much revealing detail. Desmond's fine collection of colour plates are printed on art paper in a section of their own, which – though rather cheaper to produce – reduces easy setting of their significance in the context of the text description. Proper production control would prevent problems like the film fault on page 231, which obliterates small portions of text and has seeds preserved by being dipped in 'melted w –'. And the editors have admitted poor grammar in the headings, as when we are told where the plate 'sections appears', which has one -s more than it should. To my great surprise, gone is the original title, replaced with the more terse and academic alternative; and lost was the hope of the price remaining affordable. At £60, it is out of range for many who would have liked to be purchasers. The mark-up must have been considerable, and the result makes one wonder whether publishers are becoming too greedy.

Ray Desmond's research will endure in this volume, and will enlighten scholars for centuries to come. They will learn much of the impact of European scientific culture

on the spiritual people of the Indian sub-continent, and gain useful insights into the burgeoning exploitation of cultivated plants by Victorian horticulturists. There is an added bonus, too: the student of the future will also have a tailor-made example of how some publishers reacted to their duties in an era of management excesses and a hunger for money.

I might paraphrase a hit single of a decade ago. 'Nice book, shame about the product'.*

BRIAN J. FORD

* Editor's Note: An allusion to a popular record entitled:
'Nice Legs, Shame about the Face'.

A century of Kew plantsmen, a celebration of the Kew Guild. Desmond, Ray & Hepper, F. Nigel, 1993. The Kew Guild, ISBN 0 9504149 1 3, 188 pp., 95 illustr., 6 col. pl., £15.

The founders of the "Kew Guild" in 1893 saw the publication of an annual *Journal* as essential in providing a link between all those trained as Kew gardeners home and abroad. Thanks to Ray Desmond and Nigel Hepper, this account gives wider circulation to extracts from that *Journal* as well as providing a thumbnail sketch of the history of the Royal Botanic Gardens at Kew, an account of the training of gardeners from its earliest days and of the founding of the "Guild". By using extracts from the *Journal* to give a first hand account, we gain an insight into the personalities and problems encountered by staff from humble trainee gardeners to Directors. The first four chapters outline the history of Kew, its Gardeners and the "Guild" and include information on everything from the working conditions of the gardeners to the employment of women. Chapters 5 and 6 give fuller extracts to illustrate happenings at Kew, often with appropriate illustrations, and the accounts of "Kewites Abroad". The final chapter is a collection of biographies of deceased distinguished "Kewites", illustrated by a series of fascinating if unconventional portraits featuring botanists in the field, dressed in wartime gas-proof clothing or in groups.

The end result is a fascinating account, both of Kew as a whole and its gardeners and staff. The biographies alone with their first hand accounts of their subjects and their wide historical range make it compulsive and essential reading. Most of the many black and white photographs are closely linked to the text but some of the colour plates lack this. It would have been helpful to have had some kind of plan or map of at least part of the Gardens so as to be able to locate some of the buildings mentioned and the illustrations are not listed separately, although the Index serves well to locate them. Apart from these minor points the book is well produced, pleasantly bound and easy to read. Unlike most "institutional histories" this will not just sit on the shelf for reference but will be read from cover to cover providing amusement and information and inspiring admiration of Kew gardeners and collectors past and present.

GINA DOUGLAS