The post will be paid but priority will be given to a suitable volunteer prepared to work on an honorarium. Applicants, who do not need to be members of either Society, should write enclosing a C.V. to: Nigel Winser Esq., Expedition Officer, Royal Geographical Society, Kensington Gore, London SW7.

Editorial

The Bicentenary Scientific Programme got off to a good start on 2 April when the Phytochemical Society joined with us to study the Euphorbiales. In the next twelve months there will be a further six Bicentenary joint meetings. In addition to listing them under the Meetings section of *The Linnean*, each meeting will be separately announced by means of a coloured insert. These inserts also serve as booking forms and it is essential to complete and return them by the date indicated if you wish to attend particular meetings.

The picture quiz proved a great success with most of you getting 'Squire' (Charles Davies Sherborn), the author of *Index Animalium*.

Index Animalium (1922–1933) is an exhaustive index of all the scientific names that had been applied to animals since the time of Linnaeus. It starts with the tenth edition of *Systema Naturae* 1758 and covers the period up to 1850, giving, for each name, the exact date and place of publication. In this day of word processors and data-bases it is interesting to note that the *Index* contains some 440 000 references, and that in the first year of his task (1890) Squire indexed over 500 volumes and recorded in duplicate a total of 40 000 genera and species using only a pencil and slips of card measuring 127 × 63 mm. (Cost of cards at that time was one shilling and twopence per thousand.)

SOCIETY NEWS

Important Notices

The Bicentenary—Programme of special joint meetings

During the next three years we have planned a number of joint meetings with other societies whose interests are closely allied to those of the Linnean Society. Doris Kermack has been successful in arranging a very wide ranging and interesting programme to help us celebrate our bicentenary. All of these scientific meetings are forward-looking, and should prove to be very valuable.

Could I urge you to read the programme, identify those meetings that are of particular interest to you, and make a point of attending them? With so much hard work done—much of it often by the other participating society—it would be very disappointing for all concerned if attendance by our Fellows was conspicuously low. It would be encouraging to the organizers and, I am sure, very worthwhile for all participating, if we can turn up in force.

Ample notice will continue to be given of all the meetings, with coloured inserts in *The Linnean* to catch your eye and, when applicable, to be displayed for the benefit of your colleagues. Please come to as many meetings as you can.

W. G. Chaloner, President

Room Closure

The Rooms will be closed over Christmas and the New Year from **24 December 1986** to **4 January 1987.**

Annual Contributions

We apologise if you have not been able easily to establish the levels of your Contribution. These were published in *The Linnean, 1*(4), but for ease of reference (and to remind those of you whose contributions are still outstanding), they are:

Fellow (no journal)	£25	Associate (no journal)	£12.50
Fellow (one journal)	£30	Associate (one journal)	£15
Fellow (two journals)	£35	Associate (two journals)	£20

Notes

Kimberley, Australia 200

Apart from the already announced reasons for mounting the project, its aims are to:

(a) bring together geomorphologists and life scientists from a variety of institutions to provide base-line studies of a huge, largely unstudied area.
(b) bring together younger scientists from Australia and the United Kingdom.
(c) study some especially striking environments, including mega-tidal mangrove swamps, a large archipelago, a fossil dune field, an upraised and karstified Devonian coral reef, isolated plateaux and the vine thickets of valleys and rugged coastal hills.

The expedition organizers would like to hear from anyone wishing to submit a suitable zoological proposal. Please contact: Dr L. M. Cook F.L.S, Department of Zoology, University of Manchester, Manchester M13 9PL.

Bicentenary Lapland journey 1988 (25 July–7 August): In the footsteps of Linnaeus

The Society is arranging a journey to Lapland (lasting 14 days) as part of the celebration of its Bicentenary Year. This will cover very similar ground to that encountered by Linnaeus in 1732 when he made his famous survey of the plants, minerals, reindeer and human inhabitants of the region. Linnaeus travelled up the Lule river, reached the Norwegian coast at Sørfold, and made his way back through Finland. He travelled more than 3,000 miles, though his subsequent '*Narrative*' exaggerated even this vast distance in an apparent attempt to increase the sum granted as expenses by the Swedish Royal Society of Science (read the excellent account of the journey given by Wilfrid Blunt (1971) in *The Compleat Naturalist: a Life of Linnaeus,* Collins, London).

The 1988 journey will start at Uppsala and proceed via Kvikkjokk to Abisko. From Abisko the journey leads to Haparanda at the head of the Gulf of Bothnia, and thence to Vasa. Linnaeus travelled on to Turku to avoid a long voyage. In 1988 the ferry will take us and the coach to Umeå, and we will then travel through the High Coast region (visiting Ulvöarna on the way) and back to Uppsala.

Dr Roland Moberg F.L.S. (Director of the Herbarium, Uppsala University, and Secretary of the Swedish Linnean Society) is making arrangements in

Sweden and will travel with the party. Accommodation and food will be simple but adequate, and we shall see as much of the country as possible so stout boots and adequate clothing are essential.

The cost of the trip Uppsala to Uppsala (travel, food and accommodation) is approximately £625. It seems best to let everyone make their own way to Uppsala but if people wish to travel in a group by air from London to Stockholm International the return flight will cost about £150 to give a total of some £800 (all 1986 figures). The £625 is broken down to: staying in Uppsala for two nights—600 Kr (single), 500 Kr (double room); bus travel, other accommodation and all meals (not dinners in Uppsala)—5500 Kr (assuming 25 people); boat trips 150 Kr.

If anyone wanted to stay on we could show them the Linnaeus Garden, Hammarby and Fiby urskog on Day 15.

Those interested should write marked "Lapland 1988" or contact me directly at Woodland Research Group, School of Applied Sciences, The Polytechnic, Wolverhampton WV1 1LY.*

Dr John Packham

International Botanical Congress, Berlin, 1987

The 14th International Botanical Congress will be held in West Berlin in the International Congress Centre, 24 July–1 August 1987. These congresses are held every six years and have by tradition moved between continents for each successive meeting; previous ones were held in Sydney (1981), Leningrad (1975), Seattle (1969) and Edinburgh (1964). The general theme of the Berlin Congress is to be "Forests of the World", but this will not exclude coverage of the usual wide range of botanical topics—plant metabolism, molecular biology of plant development, photomorphogenesis, biotechnology and agriculture, chemosystematics of lichens, and the fossil plant record. These are just a random sample of some 220 symposia which will form the bulk of Congress activity.

While all the symposia are built around a core of invited papers the organizers are leaving part of the time for papers offered by all-comers ("contributed papers"). This means that any botanist, on seeing a symposium in the programme to which they believe they could usefully contribute, can "offer" a paper which might then be incorporated in that symposium. Poster presentations will also be a major feature of this congress, some being listed to symposia, and others simply as contributed items.

As usual, there will be a large number of botanical excursions (62), immediately preceding and following the Congress. These range through east and west Germany, reaching out to Greenland and Crete, to northern Norway and to southern Spain. The Congress also has a special role in constituting the forum formally charged with revising and up-dating the International Code of Botanical Nomenclature—the "rule book" by which the naming of plants is governed. Proposals and amendments seem to be generated endlessly, by users of the Code all over the world. At Sydney over one hundred proposals were debated and voted on. In Berlin the Nomenclature Session will meet for four days before the start of the main congress to consider the current proposals for revisions of the Code.

**Editor's Note:* We are planning two separate visits to Sweden in 1988. Details of the other trip, which will include Stockholm and Gotland and be less scientifically oriented, will be described in the next issue of *The Linnean*.

The 1987 Berlin Congress is undoubtedly a high spot in the botanical calendar. If you are interested in attending the Congress write now for the Second Circular which gives all details of the programme and registration procedure to: The Secretary, XIV International Botanical Congress, Königin-Luise-Str. 6–8, D-1000 Berlin 33.

Palaeontology: Biology or Geology?

During the **ICSEB III** meeting at the University of Sussex and following the symposium on **Random and Directed Events in Evolution** on 9 July 1985 convened by the Palaeontological Association and the Linnean Society, an informal discussion was held on the state and future of palaeontology in the U.K. The expressed purpose of this forum was to facilitate an interchange of ideas between geologists and biologists.

The meeting was chaired by The President, W. G. Chaloner, who introduced the discussion by briefly outlining the historical basis for the meeting and directing attention towards those areas he felt might be usefully commented upon. The number of participants far outnumbered the copies of the prepared discussion document, the text of which we reproduce below:—

Introduction

In June 1983, a meeting (which came to be called the "Heathrow Meeting") was held at the Skyway Hotel, London Airport. It was initiated by the Natural Environment Research Council and aimed to review the state of British Palaeontology with particular reference to the influence that NERC exercised by its funding of relevant studentships and research programmes.

Fourteen British Palaeontologists were invited, representing academic, museum, BGS and industrial interests. Three eminent overseas palaeontologists were also invited to present papers dissecting the state of British Palaeontology.

A lively discussion ensued, but no well-lit path to future progress emerged. However, NERC agreed to help fund speakers to attend a future meeting and the Palaeontological Association and the Linnean Society undertook to organise the present symposium under the aegis of ICSEB III.

In the spirit of the original meeting at Heathrow, this symposium gives us a chance to return to considering the state of health of British palaeontology.

The following are some of the topics which deserve discussion at our Open Forum, and all interested biologists are invited to participate.

We would particularly welcome palaeontologists from North America and the Continent to participate in the discussion. Their views from a perspective outside this country would be a contribution which we would greatly appreciate.

Items for Discussion

(1) What are the areas of palaeontology which are most likely to grow vigorously in the next decade, and beyond?

(2) Should NERC concentrate its funding on these areas—or should it leave them to "earn their own keep" by industrial funding, and offer protective support to less "popular" (but vital?) areas such as: (a) taxonomic revision and detailed systematic study; (b) far-out areas of fundamental interest (cf. topic of ICSEB symposium?), unlikely to draw outside funding.

(3) Is the centre of gravity of palaeontology (as both an undergraduate discipline and a research area) in the university Biology departments or in their Geology departments? Is it an interdisciplinary bridge—or does it fall between two stools? Are combined Biology/Geology degrees a good preparation for palaeontological research?

(4) Some have argued that while British Palaeontology has shown vigour and strength in traditional areas of biostratigraphy and palaeoenvironmental interpretation, it has dropped back in the newer areas such as the interaction of molecular biology and palaeontological evidence of the mechanism of evolutionary change. Is there a "cure" for this? Is a "cure" wanted?

(5) Do palaeontologists make sufficient effort to evangelise their science to either biologists or other geologists? (Or do they concentrate too much on talking to the converted—other palaeontologists?)

(6) It is over 20 years since palaeontology in Britain "broke away" from the Geological Society and its journal, to found the Palaeontological Association, with its own journal *Palaeontology*. Has this made palaeontology in Britain too forward-looking and self-satisfied?

(7) Have biologists turned their backs on palaeontology? Do university Biology departments give more time to *E. coli* and *Drosophila* to illustrate the process of evolution—at the expense of dinosaurs and *Gryphea*?

(8) It was said repeatedly at Heathrow in 1983 that British Palaeontology was "at a threshold". If this is true, is it on the way in, or on the way out?

Not all of these points were covered in the discussion: nevertheless, the debate was wide-ranging.

The following report has been sent to us by Stephen Donovan of the NERC:—

An opinion was given that it is an historical accident that U.K. palaeontologists are concentrated in geology, rather than biology, departments. It was then recognised that if palaeontology was to 'move into' biology departments, it would need to make itself 'attractive', as some vertebrate palaeontologists had made it appear in obtaining posts in U.S. departments of anatomy. Over the past few years, palaeontology has had a large impact on some areas of biological sciences, yet many ecologists and molecular evolutionists are still ignorant of this potential data source. However, it was pointed out that this forum represented a specialised group and that it would be a terrible mistake to sever connections between geology and palaeontology. The economic importance of palaeontology, the recognition and description of "figured stones", was seen to be in association with the petroleum industry, yet this was outside the scope of the present discussion (a view was voiced that computers would be used to identify fossils in the near future). More theoretical studies do not find the support of industry and are of necessity supported by SERC and NERC. At the undergraduate level, joint degrees in geology and biology could often be disastrous.

Palaeontology was seen as a science based on large reference collections. However, it was predicted that in the future, museum staff cuts would make this basic data source more difficult to maintain and to access (for example, the BM (NH) is expected to experience a 25% staff reduction over the next 10 years). This was contrary to the opinion of the meeting that major collections must be maintained and expanded.

Support for scientific excellence was seen to be a laudable ideal but it was seen to be more difficult to demonstrate merit in some fields than in others. Thus, it was regarded as essential for the future of the science that good curators should be supported, yet excellence of curation is hard to compare objectively with a theoretical evolutionary study, for example. It is safer to amass data than to speculate, although it was hoped that this outlook had at least partially been altered by the present meeting. This latter point was emphasised. Fresh ideas often occur as a hybrid of different disciplines, as at ICSEB III.

A common problem in both the U.K. and U.S.A. is the shrinking size of the academic job market for palaeontologists. Faculty positions were not being filled as senior scientists retired. This was seen as a problem for universities to address. Very few of the UGC "new blood" posts over the last three years have fallen within the field of palaeontology, yet in France evolutionary studies have recently been identified as an area in which national scientific effort will be directed. Britain cannot but fall behind in such a situation. In the U.S.A. some palaeontologists have managed to secure positions in biology departments as evolutionary biologists, and have thus become the centre of a new synthesis, but this is not happening in the U.K. In such a climate of contraction, course organisers are unable to encourage students to study, for example, vertebrate palaeontology.

In the U.S.A., palaeontology has been involved in a big movement to become 'more biological', with the obvious consequence that the division with other branches of geology has grown. Palaeontological grant application also suffered in competition to projects in fields that were seen as major growth areas, such as molecular biology. U.K. palaeontology has always had a strong home within geology, but it is necessary to let other geologists see that British palaeontologists are still active.

A 'grey area' in the overlap of NERC and SERC science was seen by some U.K. delegates with an interest in evolutionary palaeobiology and functional morphology, who felt that their proposals, particularly in the vertebrate palaeontology field, sometimes fell between two stools.

In summary, the general consensus was perhaps that the home of palaeontology in the U.K. was in geology but that links with biological sciences could be strengthened to the profit of both parties. Financial cutbacks were being worst felt in the museums, which are regarded as the primary libraries of palaeontological data, and in university departments, which are unable, or unwilling, to replace retiring palaeontologists. The funding situation in the U.S.A. is not as 'rosy' as it sometimes appears from the European viewpoint.

Personalities

We believe you would like to know more about the members of Council who run the Society on your behalf and have started, with their permission, to publish their C.V.s. In this issue each year we shall write about those who were elected at the immediately preceeding Anniversary Meeting.

J. Sara Churchfield, Ph.D., graduated in Biology from Westfield College, London, in 1974. Her interest in small mammals led to a Ph.D. on the ecology and behaviour of shrews and has taken her overseas to Nigeria and Zimbabwe on field work. She is a lecturer in Zoology at King's College, London, and has recently become Honorary Secretary to the Mammal Society. She is a keen birdwatcher, gardener and musician.

Brian William Fox, B.Sc, M.Sc, Ph.D., is Deputy Director of the Paterson laboratories, Christie Hospital, Manchester, and Professor of Experimental Chemotherapy at the University of Manchester, and has research interests in new anticancer drug development, tumour biochemistry and a specialist interest in drug resistance in tumours. He is chairman of the Screening and Pharmacology Group of the European Organization for the Research and Treatment of Cancer (EORTC) and is Operational Secretary of the Cancer Research Campaign Phase I/II Trials Group in the U.K. He is interested in botany as a hobby and has specialized in the study of lichens, contributing a number of new records to the British Lichen Flora while he is currently engaged on a Lichen Flora of Cheshire. He has been President of the Northwestern Naturalists Union and has been committee member and officer of several local natural history Societies in the North-West, as well as a committee member of the British Lichen Society.

James Green, B.Sc., Ph.D., D.Sc., is currently Professor of Zoology at Queen Mary College, University of London. He was previously at Bedford College and Westfield College. Research topics on which he has worked include haemoglobin synthesis in *Daphnia*, haematology and ecology of fishes, estuarine ecology, polymorphism in *Cladocera* and rotifers, and the ecology of tropical crater lakes.

Charles Edward Jarvis, M.Sc., Ph.D., graduated from Reading University and now works in the Department of Botany, British Museum (Natural History). Since 1981 he has been working on a definitive catalogue of Linnaean plant names and their typifications, initially as a Linnean Society Research Fellow, and since 1984 as a Museum staff member. At the Museum he is also responsible for many of the early herbarium collections. He is a Council Member of the Systematics Association and a member of our Collections and Curatorial Committee. His current research interests are mainly connected with Linnaean plant names but he has wide interests in higher plant systematics.

Ronald William John Keay, C.B.E., D.Phil., graduated from Oxford University in botany and forestry and served in the Colonial Forestry Service, Nigeria, from 1942 to 1962, finally as Director of Forest Research. During this period he was seconded to the Royal Botanic Gardens, Kew, for six years for the revision of the *Flora of West Tropical Africa.* In 1962 he was appointed Deputy Executive Secretary of the Royal Society and from 1977 until his retirement in 1985 was Executive Secretary. He is an Honorary Fellow of the Institute of Biology and an Honorary Fellow of the Royal Horticultural Society. He has previously served three terms on the Council of our Society, being appointed as a Vice-President on each occasion, and successfully led the renovation appeal in 1969–1971. He is currently on the Court of Brunel University and is the Society's representative on the Lawes Agricultural Trust Committee, Rothamsted.

Contact between the membership

We have recently been asked by one of our Associates how to go about meeting members of the Society who live up in the North, specifically in Chesterfield. Sadly, the Data Protection Act precludes us broadcasting the names and addresses of people without their permission. We can of course write to members who we know live in a certain area and ask them to get in touch but this is very time consuming. The best method, is, we suggest, initially to correspond through these columns, especially quoting your particular field of study or interest.

Regional Meetings

The same Associate also asks how the Society can cater for those of you who are too far away regularly to attend meetings in London.

The arranging of regional meetings is now a regular item on the agenda of the Programmes Committee and we will be delighted to provide administrative back-up for anyone who would consider organizing such a meeting. You will of course recall that we have recently arranged meetings at Malham Tarn and Preston Montford through the Field Studies Council and we have another being planned with the Estuaries and Brackish-Water Sciences Association in April 1989 on the Severn. Barry Thomas intends to hold a Palaeobotany Specialist Group Symposium in Cardiff next Spring (see page 17). To cater for the Sixth Formers and their teachers David Smith organized a most successful one-day Symposium at the University of Buckingham last March. We are therefore slowly widening our area of activity, but you must appreciate that we do have to rely on you to make the running. The Programmes Committee will always welcome any proposals you may have. It meets next on 16 October 1986.

Feedback

We have had a most encouraging response to our request for local area contacts for the vetting and reviewing of applicants to the Society (*The Linnean*, *2*(2):2)—encouraging in two ways. First, we are now covered by Fellows as far apart as California, Portugal and Auchincruive, and secondly, it shows us that *The Linnean* is being read and reacted to. Could we now put in another plea that you might also use the Newsletter to your personal advantage to correspond within the Fellowship. Although we are not yet able accurately to say at a glance how many nationalities you represent we know you live in all continents and some ninety countries and cover almost every shade of biological thinking. Please send us contributions in the form of articles, letters or comments.

Journal Editors

The Council is very conscious of the enormous time and effort our Editors put in to their work on the Journals for the benefit of the Society. As a small measure of recompense it has decided that on relinquishing their post the Editors should be able to continue receiving a free copy of the Journal for which they had formerly been responsible, a necessary privilege they enjoyed, of course, whilst actively editing it. On behalf of the Society we have therefore implemented this and at the same time expressed on your behalf the Society's thanks to those who have stepped down, for their work over the years.

Nominations for the Session 1987–1988 and for the 1987 Awards

Council will meet on 15 January 1987 to consider nominations for Officers, members of Council and Foreign Members who will be balloted for on 21 May 1987. It will also select the award winners for 1987. The closing date for nominations for the ballots and recommendations for awards is 9 January 1987.

Symposium Volumes

(1) *Insects and the Plant Surface.* Edited by B. E. Juniper & T. R. E. Southwood. This is the report of proceedings of the meeting held at Oxford in July 1984 (*Linnean* 2(1): 18–19). ISBN 0-7131-2909-3. Published by Edward Arnold (Publishers) Ltd, 41 Bedford Square, London WC1B 3DQ, in July 1986.

Insects have played a major role in the evolution of the flowering plant kingdom. The plant surface is the interactive zone between plant and animal. Thus the structure, chemistry, evolution and 'behaviour' of the plant surface will determine the interaction with inserts, whether the insects be predators, or seeking protection and a site for completion of their life cycle.

This book gathers together contributions from twenty authorities on the plant surface and phytophagous insects. The topics covered range from the evolution of the plant surface as the growth form of plants became more complex, its role in defence and attack as in carnivorous plants, through to the symbiotic relationships achieved as in 'ant-plants' and *Sarracenia.*

The book explores the possibilities of selecting crops capable of defending themselves; or interplanting crops for mutual defence; and of mustering insects to defend plants of value to man. As such, it will be of interest to the academic botanist, the agronomist, the entomologist and to the general biologist.

£30.00 net approx., £22.50 for Fellows of this Society. 350 pages approx., 29 half-tones and 63 line illustrations.

(2) *Pollen and Spores: Form and Function.* Edited by S. Blackmore & I. K. Ferguson. This is the report of proceedings of the meeting held in London in March 1985 (*Linnean* 2(1):19–20). ISBN 0-12-103460-7. Published by Academic Press in July 1986.

This was the second international symposium involving the Palynology Group of the Linnean Society and highlights the important role of this Society and the Systematics Association in providing a focal point for palynological research.

Pollen grains and spores are important indicators of taxonomic relationships in plants, as well as vital stages in the plant life cycle with unique biological features of great interest. Until recently, however, the question of form and function relationships in pollen biology has received little attention. The symposium reported in this book represents the first attempt to explore and summarize what is known of this fascinating subject.

Greatly aided by the power of the electron microscope the papers presented adopt a variety of viewpoints. Some focus on the detailed ontogeny and germination of pollen and spores, examining particular structures in pollen grains and their functional contribution to pollen growth and development. Others review the variety of pollen structure in various species, so as to interpret form and function in relation to phylogenetic, biological and environmental considerations.

£60, £45 for Fellows. 384 pages.

This Volume will be available to members of the Systematic Association at the same discount as to members of the Linnean Society. Members of the Linnean Society should apply to the Executive Secretary, and members of the Systematics Association should apply to the Association's Membership Secretary, Dr Z. Lawrence.

(3) *Island Biogeography of Mammals.* Edited by L. R. Heaney & B. D. Patterson. This contains some of the papers given at the 4th International Theriological Congress, University of Alberta, Canada, August 1985, and is a run-on from the summer issues of the *Biological Journal, 28* (1 & 2). ISBN 0–12–335735–7. Published by Academic Press in August 1986.

Studies of island systems have traditionally played a major role in ecological and evolutionary biology, and this remains the case today. However, among the several recent treatises on island biogeography, all have focused either on a given group of islands or on a small taxonomic group in a restricted region. No attempt has been made previously to develop a comprehensive picture of the island biogeography of such a large phylogenetic group as mammals, or deliberately to deal with pheonomena that operate over the range from brief ecological time-scales to very long, geological time-scales. This book was developed from a symposium in August 1985 that attempted to do both of these things, and so serves to summarize current areas of focus and current methodology for a wide range of biogeographic problems.

£12.50, £9.40 for Fellows.

The Oleg Polunin Memorial Fund

Oleg Polunin (1914–1985), F.L.S. 49–85, who was a master at Charterhouse for over thirty years, is remembered as a widely cultivated man, whose particular gift as a teacher was to inspire and lead young Carthusians in botanical field work. He himself took part in important expeditions to Nepal and the Himalayas, and, as a result of his travels there and in the remoter parts of Europe, published his great series of botanical field guides. These won him world-wide repute among botanists and biologists and those who love to study flowers in their natural habitat. He won the Society's H. H. Bloomer Award in 1983, see *The Linnean 1*(3):17–18. Field work was the key to his achievement and it was his earnest desire that pupils of Charterhouse should be encouraged to continue their botanical studies in the field after completing their schooling.

The Fund has been established by his wife, his family and friends in his memory and in gratitude for the generous support given to him by the Governing Body of Charterhouse during his lifetime. Its object is to assist botanical/biological fieldwork at home or abroad and can be awarded to an individual or a member of an organized expedition. Applicants should normally have connections with Charterhouse but this is not exclusive.

Applications will be considered annually in February and individual awards will normally be for amounts up to £500. Further details may be obtained from Burlington House or from the School by writing to the Headmaster. Donations to the Fund should be sent to The Clerk to the Governing Body, Charterhouse, Godalming, Surrey GU7 2DF. Cheques should be made payable to "The Bursar, Charterhouse", and endorsed "For the Oleg Polunin Memorial Fund." All donations will be acknowledged and forms of covenant can be provided on request.

The Botanical Research Fund

This is a small trust fund which makes grants to individual research workers, both amateur and professional, in support of some aspect of their work for which funding would not normally be available from other sources.

Among the research projects which have recently been supported are the following:

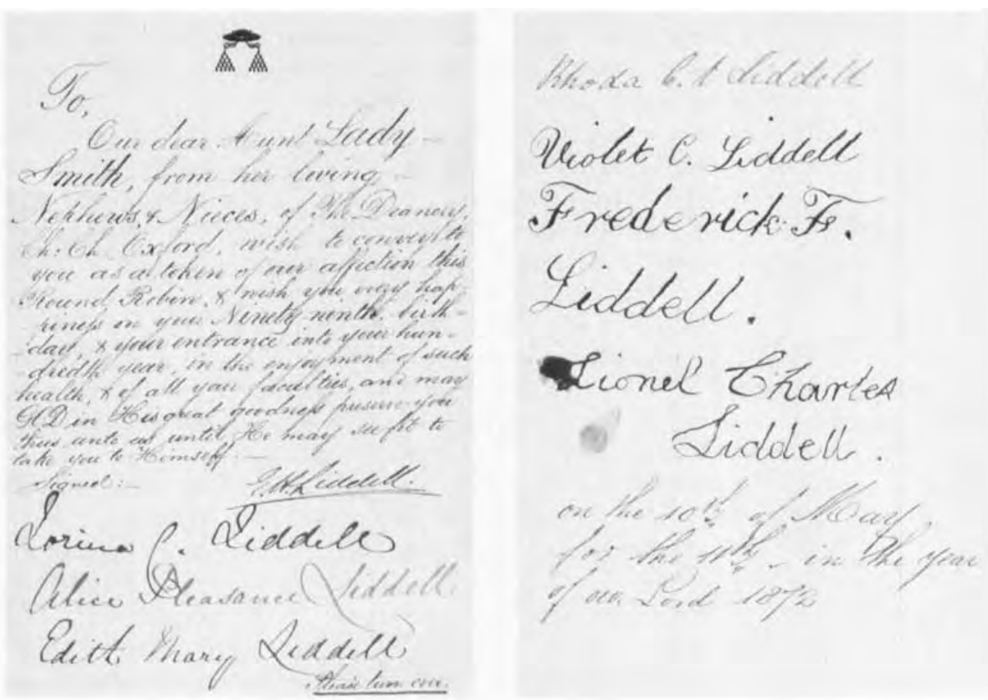
The taxonomy of British dactylorchilds (Travel grants),
Conservation of cryptogamic vegetation (Grants towards the mounting of exhibits),
Research on early botanical microscopists (Contribution to travel and photographic costs),
Research on sublittoral algal communities (Grants towards participation in survey expeditions).

Applications are considered annually and should be received before the end of March. Further information may be obtained from the Secretary, Mr Peter Dixon, Department of Botany, Royal Holloway and Bedford New College, Huntersdale, Callow Hill, Virginia Water, Surrey.

Fellows in India

We have received a letter from Dr G. M. Oza F.L.S. calling your attention to the existance of the Indian Society of Naturalists, INSONA, of which he is the General Secretary, If you would like to know more about his Society please write to him at Oza Building, Salatwada, Baroda–390001, India.

From the Archives



To,
Our dear Aunt Lady Smith, from her loving Nephews & Nieces, of the Deanery, Ch: Ch. Oxford, wish to convey to you as a token of our affection this Round Robin, & wish you every happiness on your Ninety ninth birthday, & your entrance into your hundredth year, in the enjoyment of such health, & of all your faculties, and may GOD in His great goodness preserve you thus unto us until He may see fit to take you to Himself —
Signed:— E. H. Liddell.
Lorina C. Liddell
Alice Pleasance Liddell
Edith Mary Liddell
Please turn over.

Rhoda C. A. Liddell
Violet C. Liddell
Frederick F. Liddell.
Lionel Charles Liddell.
on the 10th of May, for the 11th, in the year of our Lord 1872

The above letter was written to Lady Pleasance Smith, wife of our founder, by her great nieces and nephews in May 1872. Their mother Lorina was the daughter of Lady Smith's brother, James Reeve, and their father was Henry George Liddell, Dean of Christ Church and Vice-Chancellor of Oxford University.

The second great niece—Alice Pleasance Liddell—was the Alice of *Alice in Wonderland* and *Alice through the Looking Glass.*

One hundred years ago, in November 1886, "the first temerarious lady to seek entrance to the Society's rooms for scientific purposes, Miss H. Beale of Stroud, asked for permission to subscribe to the Society's publications and to use the library". Sad to relate, the history goes on, "The Council deferred consideration of this request and nothing more is heard of it". However, in the following month, permission was given "contrary to custom" to two ladies to attend to hear the reading of a paper of which they were joint authors although it took a further twelve years before, "Miss Ethel Barton was actually allowed to demonstrate her own paper and to bring a lady friend with her"!

Picture quiz

Who, where and approximately when? Solution by November to the Editor. A small prize will again be awarded.

The winner of the quiz on page 4 of the last issue was Mr H. A. Toombs (see correspondence for solution). His prize is a 1930s style briar pipe or hat (of his choice).

Tailpiece

We felt we could not let this answer to the photo quiz from Patrick Roche of Andorra go unpublished:

Who? Right:Sherlock Holmes, disguised by an obviously false white beard. Left: Dr Watson, wearing someone else's hat which he absentmindedly picked up when leaving a meeting of the Linnean Society.

Where? Dartmoor (*vide* Wistman's Wood in the background).

When? At the time when the Hound of the Baskervilles was being tiresome.

Membership

We are delighted to announce that His Royal Highness The Prince of Wales has become an Honorary Member. This was formally announced to the Fellowship at the Anniversary Meeting on 22 May. We are also delighted that at the same meeting His Imperial Highness Prince Akihito was voted to Honorary Membership in accordance with the Byelaws, Chapter 4.

We welcome the following who were elected on:

17 April 1986

Fellows

William Boyde Bond, B.Sc., B.A.
Barrie Burnet, B.Sc., Ph.D.
Anthony Peter Cripps, B.Sc.
Matthew Hill Dick, M.Sc.
Alwyn Howard Gentry, B.A., B.S., M.S., Ph.D.
Prof. Peter R. Grant, B.A., Ph.D.
Duncan Jackson, B.Sc., M.Phil.
Michael John James, M.B., B.S., M.Sc.
Promila Kapoor, M.Sc., Ph.D.
Devashish Kar, M.Sc., Ph.D.
Norman Glenn Lambert, M.BCh.b, M.R.C.S., L.R.C.P.
Asst. Prof. Shri Niwas Mishra, M.Sc., D. Phil.
Jitendra Kumar Misra, M.Sc., Ph.D.
Colin Croft Narbeth
Maria Obiageli Nwosu, B.Sc., Ph.D.
Prof. Dr Josef Poelt
Stuart Paul Masson Roberts, M.A.
Prof. Walter Wolfgang Schwabe, B.Sc., A.R.C.S., Ph.D., D.Sc.
Prof. Em. Bertil Johan Patrick Sourander, M.D., Ph.D.
Raymond Eygene Stotler, B.S., M.A., Ph.D.
Leigh Winsor, Dip.MLS.
David Scott Woodruff, Ph.D.

Associates

Jonathan M. Horn, B.A.
Christopher Sanford, B.Sc.
Jeremy Wiltshire, B.Sc.

22 May 1986

Honorary Member

His Imperial Highness Prince Akihito (from Foreign Member)

Foreign Members

Dr Stephen J. Hughes (from Fellow)	Canada
Dr Donn Eric Rosen (from Fellow)	U.S.A.
Prof. David Allardice Webb (from Fellow)	Eire

Fellows

Meredith Blackwell, B.S., M.S., Ph.D.
Gunnar J. Broberg, Ph.D.
Sarah Elizabeth Bunney, B.Sc.
Robert Brinsley Burbidge, B.Sc., Ph.D.
John Lyon Chapple
Richard Thomas Corlett, Ph.D., M.A.
Stanley Peter Dance
Prof. Robert L. Gilbertson, B.A., M.Sc., Ph.D.
Mazuru Gundidza, B.Sc., Ph.D.
George Hendry, B.Sc., Ph.D.
Godfrey Matthew Hewitt, B.Sc., Ph.D., D.Sc.
Mohammad Wajid Khan, M.Sc., Ph.D.
Adj. Prof. Maria Estrella Legaz
Simon Joseph Mayo, B.Sc., Ph.D.
Paul Norman James Munro, B.Sc.
Julia Denise Nunn, M.A., Ph.D.
Christopher John Quinn, B.Sc., Ph.D.
Sterling Jing Sam, M.A.
Prof. Dr Wilhelm Hubert Sauer
Adrian Spalding, M.A.
George Bryan Austin Veitch, B.Sc., Ph.D.
Prof. Dr Carlos Vicente
Assoc. Prof. Peter George Williamson, B.Sc., Ph.D.

Associates

Richard David John Elmore, B.Sc.
Stephen Robert Gage, B.Sc.

Meetings

3 October 1986 at 13.30 until 17.00. ***Water Quality and Health.*** This Specialist Group Meeting of the Freshwater Group will include the Annual General Meeting of the London Freshwater Group but visitors are welcome. The programme will include coverage of the quality of waters receiving effluent, e.g. ecotoxicology and biodegradation, but emphasis will be given to microbiological problems associated with human disease that are relevant to the treatment of sewage and the provision of potable water. Details from Dr K. T. O'Grady F.L.S. (Water Research Centre, Medmenham).

16 October 1986 at 17.00. Tea will be served at 16.15 and refreshments on conclusion.

1. Admission of Fellows.
2. Minutes of the Anniversary Meeting held on 22 May 1986.
3. Ballot for the election of Fellows, Associates and Student Associates.
4. Communication: ***Nomadic DNA,*** by Professor P. B. Gahan F.L.S. (King's College, London). This will be a discussion meeting.

Abstract

Until now, mobile genetic elements have been observed to move in an intracellular environment only. More recent observations may be interpreted to show protected message DNA moving between cells, tissues and individual organisms. Data supporting the idea of a messenger DNA, first mooted in the early 1960s, will be assessed and considered for its possible evolutionary implications.

6 November 1986 at 18.15. Wine and sandwiches on conclusion. ***Visual Communication in Biology.*** This general interest lecture will be preceded during the afternoon by meetings of the Palynology and Computer Applications Specialist Groups.

Professor W. G. Chaloner P.L.S., Dr David Walton (British Antarctic Survey) and Dr Elizabeth Sheffield F.L.S. (Manchester University) will cover different aspects of how the means of presenting visual information affects the ways in which our ideas are communicated. They will illustrate their talks with various stationary and moving images.

20 November 1986 at 10.30. ***Man Directed Evolution of Crop Plants.*** Bicentenary joint meeting with the Association of Applied Biologists. This is the first of the joint one-day meetings to be held in the Rooms. To ensure that the Society's business can continue as usual it will be scheduled as a regular feature to occur prior to the afternoon session, as in the programme below.

Agenda for Society Business

1. Admission of Fellows.
2. Minutes of the Scientific Meeting held on 16 October 1986.

Programme

09.30–10.10	Reception and Coffee.
10.10	Welcome by Prof. W. G. Chaloner, P.L.S.
10.15–10.30	Chairman's Introduction. Mr G. A. Wheatley, President of the Association of Applied Biologists.
10.30–11.10	*Undoing Natural Selection in the Service of Man.* Prof. J. L. Harper, University College of North Wales.
11.10–11.50	*Pests and Diseases in Crop Evolution.* Dr J. Barrett, University of Cambridge.
11.50–12.30	*Viruses and Evolution of Crop Plants.* Dr J. M. Thresh, East Malling Research Station.
12.30–14.00	Lunch
13.45	Linnean Society business (see above).
14.00–14.40	*Genotype Enhancement by Chromosomal Adjustment.* Sir Ralph Riley.
14.40–15.20	*Breeding and Selection for Post Harvest Characters.* Prof. A. H. Bunting, University of Reading.
15.20–16.00	*Theoretical and Practical Limits to Productivity.* Dr W. Day, Rothamsted Experimental Station.
16.00	Tea.
16.30–17.10	*Genetic Engineering and Future Crop Evolution.* Dr R. B. Flavell, Plant Breeding Institute.
17.10–17.50	*Impacts and Interactions of Genetic Improvement in Crops Plants.* Prof. W. Williams.
17.50	Chairman's Closing Remarks.
19.00	Dinner.

Abstracts will be available to those who have indicated they will be attending on the day. They will be published subsequently in the *Biological Journal.*

Booking: As we need to gauge numbers accurately it is necessary to book in advance if you wish to attend for all or only part of the day, even if you do not intend to take refreshments. Please complete the green booking form and return it before 31 October. No guarantee can be given that there will be space if you just turn up on the day.

18 December 1986 at 10.20. ***Dynamic Responses to the Environment.*** Bicentenary joint meeting with the Society for Experimental Biology.

Agenda for Society business

1. Admission of Fellows.
2. Minutes of the Scientific Meeting held on 20 November 1986.

Programme

09.30–10.15	Coffee and registration.
10.20	Welcome and introduction by Prof. W. G. Chaloner, P.L.S.
10.25–11.05	*Phytochrome and photomorphogenesis.* Dr B. Frankland, Queen Mary College, London.
11.05–11.45	*Responses of the photosynthetic apparatus to a changing light environment.* Dr N. R. Baker, University of Essex.
11.45–12.25	*Stomatal sensing of the environment.* Dr D. C. Wilmer, Stirling University.
12.25–12.45	General discussion.
12.45–13.50	Lunch.
13.30	Linnean Society business (see above).
13.50–14.35	*Phototropism.* Dr R. Firn, York University.
14.35–15.20	*Graviperception in plants.* Prof. A. Sievers, University of Bonn.
15.20–15.30	General discussion.
15.30–16.00	Tea.
16.00–16.40	*An analysis of the shift from gill to lung breathing in land crabs.* Drs E. W. Taylor and A. J. Innes, Birmingham University.
16.40–17.20	*Molecular diversity and conformity of neurohormonal peptides: clues to an adaptive role in evolution.* Dr M. C. Thorndyke, Royal Holloway & Bedford New College, London.
17.20–18.00	*The evolution of vertebrate flight.* Dr J. M. V. Rayner, Bristol University.
18.00–18.25	General discussion.
18.25 18.30	Concluding remarks. Prof. P. Unsherwood, P.S.E.B.
18.45	Buffet supper.

Booking: This is essential even if refreshments are not required. Please complete the yellow booking form and return its before 28 November.

22 January 1987 at 10.55. ***Nature, Natural History and Ecology.*** Bicentenary joint meeting with the Field Studies Council. The Field Studies Council is an educational charity founded in 1943, and best known for its nine residential Field Centres at which many thousands of people attend field courses each year. The Council also runs the Oil Pollution Research Unit, Expeditions Overseas, the Epping Forest Conservation Centre, the AIDGAP project and publishes the journal *Field Studies*. It manages two nature reserves and maintains an entomological research unit at Cambridge University. The slogan is 'Environmental Understanding for all'.

Agenda for Society business

1 Admission of Fellows.
2. Minutes of the Scientific Meeting held on 18 December 1986.
3. Ballot for the election of Fellows, Associates and Student Associates.

Programme

10.00	Coffee and registration.
10.55	Welcome by Prof. R. J. Berry, P.P.L.S., University College, London.
11.00–11.20	*Environmental understanding for all.* David Stanbury, Chairman, F.S.C. Executive Committee.
11.20–11.50	*How it all began.* John Barrett, M.B.E., the first Warden of Dale Fort Field Centre.
11.50–12.20	*Formative fieldwork.* Mr J. A. Bayley, Director, Preston Montford Field Centre.
12.20–13.00	*Beyond the classroom.* Miss Ros Evans, F.S.C. Expeditions Overseas.
13.00–14.15	Lunch.
14.00	Linnean Society business (see above).
14.15–14.45	*Degrees of field experience.* Dr Philip Rainbow, Queen Mary College, London.
14.45–15.15	*The identity crisis: biology's perennial problem.* Dr S. M. Tilling, AIDGAP co-ordinator.
15.15–16.00	*The F.S.C.'s land: managing a fieldwork resource.* Ian Mercer, President F.S.C.
16.00–16.30	Tea.
16.30–16.45	*An introduction to research work in the F.S.C.* Dr Jenifer Baker, Research Director, F.S.C.
16.45–17.10	*Environmental research and monitoring.* Dr Brian Dicks, Director, Oil Pollution Research Unit.
17.10–17.30	*The acid drops project.* Mr Charles Thomson, F.S.C.
17.30–17.50	*Which way the future?* Mr A. D. Thomas, Director, F.S.C.
19.00	Dinner.

Booking: Advance booking is necessary, even if refreshments are not required. Please complete the orange form and return it before 2 January. In the event of over-subscription places will be allocated in order of receipt of forms.

19 February 1987 at 10.25. ***Horizons in Lichenology.*** Bicentenary meeting with the British Lichen Society.

Agenda for Society business

1. Admission of Fellows.
2. Minutes of the Scientific Meeting held on 22 January 1987.
3. Announcement of Council's nominations for Medals and Awards 1987.

Programme

10.25	Welcome by Prof. W. G. Chaloner, P.L.S.
10.30–11.00	*The variety of mutualistic fungus–alga associations and their evolutionary significance,* Dr D. L. Hawksworth, Kew.
11.00–11.30	*The establishment, individuality and growth of lichen thalli.* Prof. Dr H. M. Jahns, University of Frankfurt.
11.30–12.00	*Horizons in the understanding of pollution sensitivity in lichens.* Prof. D. H. S. Richardson, University of Dublin.
12.00–12.30	*Developments in understanding chemical variation in lichens with reference to recent cultural studies.* Prof. W. L. Culberson, Duke University, U.S.A.
12.30–14.00	Lunch.
13.45	Linnean Society business (see above).
14.00–14.30	*Plate tectonics and the distribution of cool-temperate Southern Hemisphere macrolichens.* Dr D. J. Galloway F.L.S., British Museum (Natural History).
14.30–15.00	*Developments in lichenometric dating technique and its application to historic structures.* Mrs. V. Winchester, Oxford University.
15.00–15.30	*Foliicolous lichens: ecological and distributional preferences.* Dr E. Serusiaux, University of Liège.
15.30–15.45	Discussion.
15.45	Tea.
16.30–17.00	*Phytogeographical and ecological aspects of Lobarion communities in Europe.* Dr F. Rose, Liss, Hampshire.

17.00–17.30 *Progress in the study of the lichen flora of the British Isles.* Dr M. R. D. Seaward, Bradford University.
17.30 General discussion and concluding remarks.

18.45 Dinner.

Booking: Advance booking is necessary even if refreshments are not required. Please complete and return the blue form before 29 January.

6–8 April 1986. *Pteridophyte Diversity and Evolution.* This meeting is being held at Cardiff to mark the 50th Anniversary of *Cooksonia.* The outline programme will include a Carboniferous field meeting in the Gloucester area, a day of invited and contributed papers and a field meeting in south Wales and the Welsh Borders. Further details can be obtained from Dr Barry Thomas, Department of Botany, National Museum of Wales, Cathays Park, Cardiff CF1 3NP.

Other Meetings

1986

September

16–18 *34th Annual Symposium of Vertebrate Palaeontology and Comparative Anatomy.* The Queen's University of Belfast. Dr M. J. Benton F.L.S., Dept of Geology, Belfast BT7 1NN, Northern Ireland.

15–19 *Seventh International Symposium on Aquatic Weeds.* Loughborough University of Technology, Loughborough, Leicester LE11 3TU. (European Weed Research Society and Association of Applied Biologists.)

22–24 *Frontiers of Comparative Plant Ecology.* Symposium to mark the 25th Anniversary of the NERC Unit of Comparative Plant Ecology at Sheffield University. Details from the Unit.

22–25 *Hormone Action in Plant Development—a critical Appraisal.* 10th Long Ashton Symposium.

26 *Acid Rain and Britain's Natural Ecosystems.* Organized by Imperial College Centre for Environmental Technology. Mrs D. S. Patterson-Fox, ICCET, 48 Prince's Gardens, London SW7 2PE.

October

17–19 *International Meeting for Behavioural Ecology.* Albany, New York, U.S.A. Behavioural Ecology Group, Dept of Biological Sciences, State University of New York at Albany, 1400 Washington Avenue, Albany New York 12222, U.S.A.

22–23 *A Century of Nitrogen Fixation Research: Present Status and Future Prospects.* Royal Society, Discussion Meeting. 6 Carlton House Terrace, London SW1Y 5AG.

November

10 *Rice.* A seminar of the Tropical Agriculture Association being held in our Rooms. Start 14.30. Main Speaker, Dr D. J. Greenland on *Rice Research at IRRI—Upstream, Downstream and In-between.*

13–14 *International Symposium on Biofouled Aquifer: Prevention and Restoration.* Atlanta, Georgia, U.S.A. American Water Resources Association. Research Center, University of Arkansas, 223 Ozark Hall, Fayetteville, Arkansas 72701, U.S.A.

December

15–16 *Identification and Transfer of Genes Important in Crop Production.* Rothamsted Experimental Station, Symposium.

1987

February

9–14 International Peat Society Symposium. *Tropical Peat and Peatlands for Development.* Yogyakata, Indonesia. Details from Mr R. A. Robertson, Dept of Peat and Forest Soils, Macaulay Institute for Soil Research, Aberdeen.

18–19 *Biological Control of Pests, Pathogens and Weeds: Developments and Prospects.* Royal Society, Discussion Meeting. 6 Carlton House Terrace, London SW1Y 5AG.

July

14–18 *International Symposium on Vegetational Structure.* Utrecht, Netherlands. Details from: Symposium Secretariat, Dept of Plant Ecology, Lange Nieuwstraat 106, 3512 PN Utrecht, Netherlands.

24 July–
1 August *XIVth International Botanical Congress.* See p. 3 for details.

International Peat Society Symposium. *Fenlands and Fen Peat Soils, their Genesis, Transformation and Utilization.* Poland. Mr R. A. Robertson, Dept of Peat and Forest Soils, Macaulay Institute for Soil Research, Aberdeen.

Correspondence

5.4.1986

Hurst Dene,
New Place,
Pulborough,
West Sussex RH20 1 AT

Dear Brian,

The "Picture quiz" on page 4 of the Linnean (vol. 2, no. 2) intrigues me greatly. The chap on the right is, of course, Charles Davies Sherborn. He looks a bit older in the photo I took of him in 1935: this was the photo used by J. R.

Norman as frontispiece in his biographical booklet "Squire". In the 1932 staff photo of the Geology Department he looks much the same, but then he changed hardly a whisker all the years I knew him, from 1928 till his death in 1942.

I would guess that your photo was taken in 1931, on his 70th birthday (30th June). The place looks like the southern slope of a Chalk scarp, perhaps Box Hill.

The chap on the left looks like C. P. Chatwin, though I never saw him dressed so formally. Clearly they were not doing field work: not a stain on their polished shoes. They must have stepped off the lane for the benefit of the photographer (could that photographer have been Errol White?).

I look forward to reading the real answer!

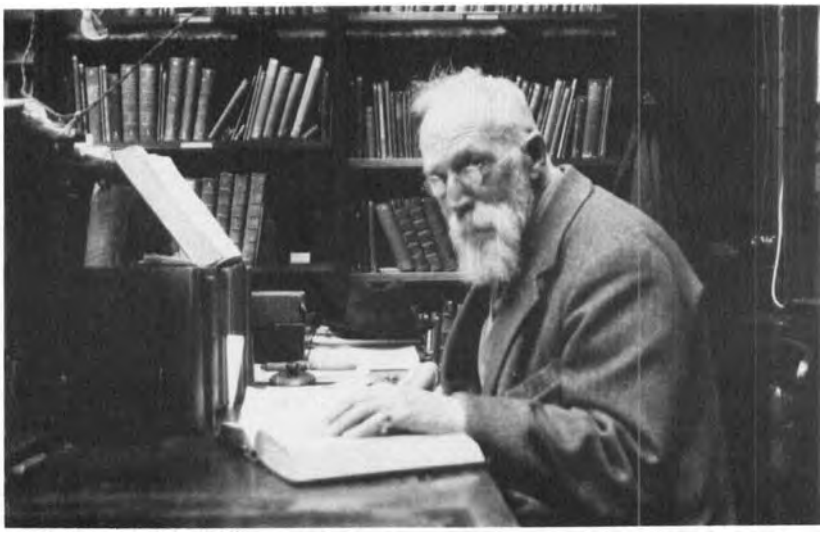
with very best wishes,

Sincerely,

[*Harry*]

Harry A. Toombs

P.S. Here is a Sherborn anecdote you will like. When I first came to the Museum in 1928, I was installed in the Geology Library as the one and only Library assistant and I sat only a table away from the great man. He called to me with stentorian voice for help of all kinds and when eventually a miserly Museum grant brought him into the grasp of the Income Tax, he called in great wonderment, 'Toombs !!! "What do they mean by If nōné write nōné??" ' (his mind being immersed in the Classics). I had to explain that there was a simple English negative word that had no significant classical allusion.



Charles Davies Sherborn in his corner at the British Museum (Natural History) in 1935 (aged 74).

*Eds note—Harry Toomb's deductions were correct.

The Origin of the Principle of Competitive Exclusion: was Darwin influenced by Sismondi?

Darwin, in his autobiography[1] describes the influence of Malthus[2] on his ideas.

> In October 1838, that is, fifteen months after I had begun my systematic enquiry, I happened to read for amusement 'Malthus on Population' and *being well prepared to appreciate the struggle for existence* (my italics) . . . . it at once struck me that under these circumstances favourable variations would tend to be preserved and unfavourable ones to be destroyed.

That passage, except for an error in the date, corresponds fairly accurately to the entry for 28 September 1838 in the "Notebook on Transmutation of Species" (B7) which, after a reference to Malthus, reads:

> On an average every species must have the same number killed year with year by hawks, by cold etc, even one species of hawk decreasing in number must affect instantaneously all the rest. The final cause of all this wedging must be to sort out the proper structure . . . One may say there is a force like a hundred thousand wedges trying to force every kind of adapted structure into the gaps in the *oeconomy of nature* (my italics), or rather forming gaps by thrusting out the weaker ones.

There are two puzzles connected with this insight apparently from Malthus. First, there is a distinction between the limitation of population size consequent on the finite supply of nutrients, that is to say, the general view propounded by Malthus[2], and the principle which Darwin proposed, which is essentially that of competitive exclusion[3]. Secondly, as Gruber[4] points out: "Since Darwin had been exposed to the idea (of superfecundity) many times before this moment of insight we much ask in what way had his thinking changed so that he could now make use of the principle."

There existed at the time a tradition of economic argument about competition in the work of Cournot, Bertrand and Ricardo which Keynes later identified with the principle of Natural Selection[5]. A case can be made that the socio-economic views of a number of European writers of the epoch may have influenced Darwin and that prime among these influences could have been the Swiss economist and historian Sismondi[3].

Jean-Charles-Léonard Sismonde de Sismondi was born in Geneva on 9 May 1773. He became a banker's clerk in Lyons and took refuge with his parents in England during the French Revolution, after which he farmed some land which the family owned in Pescia in Italy but turned to writing and later joined the circle of Madame de Staël at Coppet on the Lake of Geneva. He became the Secretary to the Chamber of Commerce of the Department of Leman and visited Paris in 1813 during which he had an interview with Napoleon I. He contended that the scope of economics should include human well-being and believed the Government should intervene to prevent dire poverty and concentration of wealth. In 1819 Sismondi married Jessie Allen who was the favourite aunt of Emma Darwin. In the same year the Sismondis moved to a house in Chêne, then a village outside Geneva. Sismondi was clearly in contact with many of the British economists of the time and there is a record of a conversation that took place with Ricardo in Geneva. Also, he was well acquainted with Malthusian principles as shown by the preface to his book, *Nouveaux Principes d'économie Politique*[6]. At the end of the introduction to this work, he outlines some of his major views:

> Whilst this small work contains only the germ of my ideas on the structure of revenue and the manner in which its consumption and production should be limited; the development which leads to territorial riches; *the effects of unlimited competition* and those due to progress in mechanisation, and *finally on the natural limits of population which Mr Malthus seems to me to have misconstrued*, it is but here that I have dared to give these ideas the development that they seem to me to be capable of, and where I have demonstrated their importance to the science that is responsible for overseeing the happiness of the human species. (my translation and italics)

Chapter VIII (Volume 2) deals with the protection of populations against competition:

> It remains for us, both for urban and rural workers, to find the principle of right, the principle of justice, by which society should protect the worker against the force of competition which tends remorselessly to reduce him to poverty.

A similar view is expressed in the following translations of excerpts from his work "On the Condition of Work People in Manufacturies" from *Revue Mensuelle d'Economie Politique* (July and August, 1834): "The manufacture which has been undersold makes every effort to recover the market. It defends its very existence, and the combat is to the death." And in another passage: ". . . universal competition is preached . . . without regard for its consequences." Sismondi's attacks on competition and, in particular, the irregularities resulting from unrestrained competition, "that state naturally produced by contending interests" which is "more often destructive than the ravage of war", are chronicled in a selection of Sismondi's essays translated by Minot[7]. In his introduction to *Inquiries into Political Economy* he states "the fundamental change which has taken place in society amidst the universal struggle created by competition, is the introduction of the proletary among human conditions." Sismondi is critical of English political economists who, he says, are "in favour of the most animated competition" "Thus listen to no consideration, let no pity stop you, for perhaps you will be called on to say to your rivals; 'your death is our life'." Many of Sismondi's writings are in the same vein; he condemns unlimited competition because it is deleterious to the less successful of the competitors. This is the clearest possible statement of the principle of competitive exclusion.

There is no evidence that Sismondi ever conversed with Darwin. A letter from Sismondi to Emma dated 23 November 1838[8] shows that he had not then met Darwin, and I have found no evidence that Darwin and Sismondi ever met. In 1827, Emma, who was then nineteen years old, spent eight months with her sister Fanny with the Sismondis in Geneva. Josiah Wedgwood, Emma's father, went with Caroline and Charles Darwin, who was then 18, to fetch them, but Charles went only as far as Paris and met the rest of the party when they came back, having spent about a week in Paris. The Sismondis came to England on at least two occasions. On one occasion, in 1840, they stayed in the Darwins' house at 12 Upper Gower Street, but Darwin was away in the country at the time. The Sismondis were again in Britain in 1841 (the year before Sismondi died), when Emma joined the Sismondis on holiday in Tenby, but again there is no indication that Darwin went with Emma to Tenby. There is some suggestion that they may have been conversant with each other's writings. Certainly this applies to Sismondi. For instance, in a letter from Mme Sismondi to Emma Darwin, dated 26 June 1840, she says that Sismondi was in ecstasy over Darwin's book, *The Naturalists's Voyage Round the World.*

We seem to be able to exclude the possibility that Darwin read Sismondi's

works in the original, since we have the evidence of his letter to J. S. Henslow dated 14 October 1837, turning down the Secretaryship of the Geological Society, which shows that he could not read French. He may, however, have read Sismondi in translation. Although he was not a regular subscriber to the *Edinburgh Review*, in a letter to Lyell on 13 September 1838, he commends an article on "Cours de la Philosophie" by M. Comte. It seems highly improbable that Darwin was totally unacquainted with Sisondi's work. For example, in a letter from Emma to her aunt, Mme Sismondi, dated 24 July 1838, there is mention of Sismondi whose work was referred to in Wilberforce's *Life*, which Emma had been reading. It is likely that Emma was reading the Wilberforce biography aloud to Charles during his rest. They always kept two books going, one serious and the other a novel[9].

On the other hand, as far as I am aware, there is nothing in Darwin's papers to suggest that he was conversant with Sismondi's writings or conscious of their significance in relation to his biological thinking. We are left with the tantalising possibility that Darwin may have been unconsciously influenced by Sismondi's socio-political ideas in the course of conversation at home. Bertrand Russell[10] wrote:

> From the historical point of view, what is interesting is Darwin's extension to the whole of life of the economics that characterised the philosophical radicals. The motive force of evolution, according to him, is a kind of biological economics in a world of free competition.

Acknowledgements

I am grateful to Mr P. J. Gautrey, of the Cambridge University Library, for his assistance in examining the Darwin Archives for evidence to indicate that Darwin might have been influenced by Sismondi. I thank Dr W. Bynum, Mr A. T. Picton and Dr R. I. C. Spearman for help and discussion. I am particularly grateful to Mr R. B. Freeman for much useful information and advice about the Darwin family, and to Professor Sir Andrew Huxley, O.M., P.P.R.S., for pointing out that in 1794 Erasmus Darwin had proposed something very like the economists notion of natural selection as a mechanism which might maintain the fitness of a species.

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[10] RUSSELL, B., 1961. *History of Western Philosophy.* London: George Allen and Unwin Ltd.

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Nathaniel John Winch (1768–1838), His Collections and Correspondence

Winch's Plant Collections

In 1838 the Linnean Society received a letter from the executors of the will of N. J. Winch, the Newcastle botanist, concerning the bequest of his herbarium and library. This letter (from P. G. Ellison) survives in the Society's archive, and includes a section of the will indicating Winch's desire that the collection should remain discreet. A further note records the announcement made by the Secretary to the Society about the arrival of the Winch collections in London:

> I have the satisfaction to announce to this meeting that the late N. J. Winch of Newcastle upon Tyne has bequeathed to the Society his entire herbarium consisting of 12,000 species of plants, together with his Library of Natural History. The herbarium, besides an extensive series of specimens from different localities of nearly all the British species, collected either by himself or others and forming an almost complete geographical coverage of the British Isles, contains a collection of Cuming's South American, and of Drummond's North American plants as well as those of Matthews from Peru, and of Gardner from Brazil. There is likewise an extensive series of specimens from the Unio Itinerariae and of European plants from Schwartz, Schleicher, Thomas and others. The specimens are in excellent preservation. Among the books are a number of additions to the library, especially of European Floras.

On May 24, 1858 the Council of the Linnean Society appointed a Committee, consisting of Dr W. T. Alexander, C. C. Babington, George Bentham and Daniel Oliver, to prepare a British Herbarium for the use of Fellows, from the various plant collections in the Society's rooms, Daniel Oliver commented that "of these collections by far the most important, and affording the great proportion of selected specimens, was that bequeathed to the Society by the late N. J. Winch of Newcastle upon Tyne, an excellent local botanist . . . these specimens . . . at present form the major part of our collection . . . As might be expected, Winch's herbarium was rich in North of England plants; of these, his fasciculi of Roses and Willows were particularly extensive; it contained also many rare species from other quarters, received from his correspondents or collected by himself on his longer excursions". Winch's specimens were augmented from other collections, notably that of William Withering, but also from T. J. Woodward, Richard Relhan, W. G. Maton, James Dickson and George Don, to form a British plant collection of some 3000–3500 specimens. This collection remained with the Society until 1963, when it was sold to the British Museum (Natural History) for £300.

A hundred years earlier, in 1863, the Society had decided to part with the majority of its collections, other than those of Linnaeus, and it was at this time that the great proportion of Winch's herbarium returned to Newcastle-upon-Tyne. On 16 April 1863 a Special General Meeting of the Linnean Society was called to consider a series of resolutions about the disposal of unwanted collections. Sanction 4 asked "That the General Herbarium of the late Mr Winch be presented to the Natural History Society of Northumberland, Durham and Newcastle upon Tyne." This was agreed, and the receipt of the collection was acknowledged by George Stewardson Brady, then Secretary of the Natural History Society, in November 1863.

Winch's "General Herbarium" was to join an extensive plant collection in the possession of the Natural History Society which already included specimens donated by him: "70 species of British Plants" are recorded in the Society's Accession Register in September 1831, for example. His major donation had

been made around 1806 however, when with his co-authors of *The Botanist's Guide through the counties of Northumberland and Durham* (1805, 1807), John Thornhill and Richard Waugh, he had presented a herbarium of 700 species,

N. J. Winch (1768–1838) from a minature in oils in the collections of the Royal Botanic Garden, Kew (artist unknown).

arranged after Sir J. E Smith's *Flora Britannica*, to the Literary and Philosophical Society of Newcastle, parent body to the Natural History Society. The latter was to break away in 1829, taking the collections with it, first to its rooms adjacent to the Literary and Philosophical Society and then in 1884 to its new museum at Barras Bridge, renamed the Hancock Museum following the death of John Hancock in 1890.

The number of Winch plants in the possession of the Society following the receipt of the Linnean specimens, was estimated as 20000 (Baker, 1903), a figure now known to be an overestimate. Recent recataloguing of the plant collections in the Hancock Museum show the following totals:

Specimens in the General Herbarium	12898
Specimens in the British Herbarium	2418
Lichens	254
Bryophytes and Hepatics	800
Total	16370

It is now impossible to determine the number of Winch specimens which were acquired by the British Museum (Natural History) in 1963, but in the light of Daniel Oliver's comments it must be reasonable to make a conservative estimate of some 2000 plants. This would make a grant total of 18 370 specimens.

The "General Herbarium" has remained in its original folders, and the contents can be matched precisely to an annotated copy of Robert Sweet's *Hortus Suburbanus Londinensis* of 1818. This volume (the title on the spine reads simply "Catalogue to Herbarium"), the significance of which had never been realized, was rediscovered during recent work on the collections, and is housed in the Library of the Natural History Society. The Catalogue has been marked by Winch, a tick being placed next to species of which he had examples, and additional species not found in the printed list are written in Winch's characteristic hand on plain interleaved pages. One particularly significant part of the volume is an introduction by Winch, in which he comments on his herbarium . . .

> The herbarium for which this serves as a catalogue was begun at Benwell in the year 1797, and now Dec 31st 1821 contains 6420 species or strongly marked varieties of plants. Among the British plants are specimens of all those mentioned in the Botanist's Guide through Northumberland and Durham, besides contributions from the following botanists, Sir J. E. Smith, D. Turner, Dr. Hooker, Dr. Boué, the Rev. J. Dalton, the Rev. J. Harriman, Rev. W. Baker, Mr. W. Backhouse, J. Backhouse, E. Robson, G. Woods, Jas Dickson, Groult (?), Dr. Turner, Dr. Stokes. W. Withering, Rev. H. Davies, Sowerby, Rev. W. Wood of Leeds, Salt, Bicheno, E. Forster, Goodenough, Bishop of Carlisle, Rev. W. Buckland, Mr. Lambert of Cambridge, W. Weighell, L. Wigg, Rev. J. Messenger, Brunton, McKay of Edinburgh, McKay of Dublin, G. Donn, Brunton, Lyall, Bale (?) & Miss Hutchins, Mr. Borrer & Miss Biddulph. The exotic division comprises 4,000 plants, partly collected in botanic gardens, partly obtained from Schleicher and Thomas of ? and partly presented by the following botanists, Dr. Townson, Dr. Swartz, Sir J. E. Smith, Dr. Wahlenberg, Dr. Lessom, Dr. Clarke, Telesius, Dr. Hooker & Dr. Boué. Fraser of Paramatta, Donn of Cambridge, Cockerill, Prescott of Petersburg & Roope of Ipswich.

Winch carefully notes the growth of his collections from this date (1821), listing additions to his various groupings and totalling the numbers of specimens, detailing the sources of specimens, a list of names which reads like a Who's Who of early nineteenth century botanists. It is perhaps sufficient to list here the first and last (1832) entries:

1821

British Herb. Phaenogamous sps	1419		
Vars & sp. Nov	50		
Filices	59		
Cryptogamia	892	2420	
Exotic Herb. Phaenogamous sps	3509		
Filices	51		
Cryptogamia	400	4000	
		6420	

Herbarium Dec 31 1832

British Phaenog Sps	1563		
Cryp Filices	58		
Musci	300		
Hepat	87		
Lichens	350		
Algae	206		
Fungi	193	1194	2757
Exotic Phaenog		6511	
Crypt		802	7313
	Species		10070

There is obviously a considerable discrepancy between the various figures quoted by different authorities for the size of the Winch collections. His own figure of 10 070 is at variance with that of 12 000 quoted on its reception by the Linnean Society, although it is probable that Winch continued to add to his collections until 1838. The present assessment of the number of specimens held

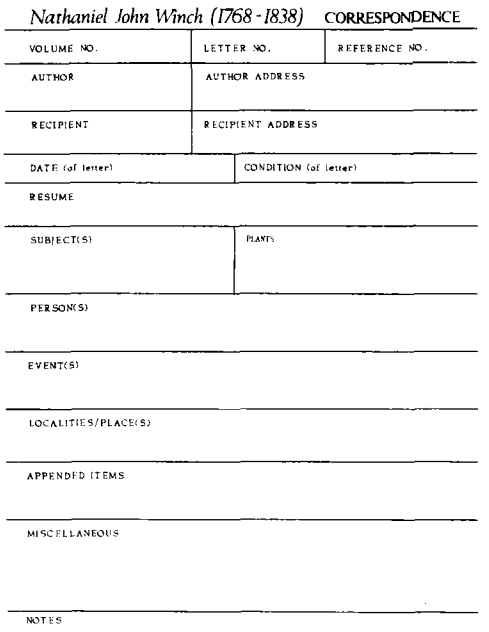

Figure 1. Data input sheet for the Winch Correspondence.

in the Hancock Museum indicates many more specimens than would be expected, which can only be attributed to donations made to the Natural History Society of Northumberland, Durham and Newcastle-upon-Tyne and the Literary and Philosophical Society of Newcastle-upon-Tyne. It should also be stressed that all the British plants (if indeed any remained after the work by Oliver in London) have at some time been removed from the "General Herbarium", which exists today as a collection of non-British species.

The one real mystery surrounding the movements of the Winch collections concerns the original donation to the Linnean Society. Winch was very much an adopted Novocastrian and had been instrumental in setting up the Natural History Society, and acted as its first Secretary from 1829. Why then did he bequeath his collection to the Linnean Society? There was obviously a dispute of some kind between Winch and the Tyneside naturalists, hinted at by Rev. W. Johnson ". . . the last notice of his prescence at (the Society's) meetings being in November 1832. The cause of his separation we cannot here discuss; but suffice it to say that it resulted in the whole of his large and valuable collection being sent to the Linnean Society . . ." It was this incident which in part suggested

the need for a close examination of the Winch correspondence. The latter (now in eight bound volumes), had been received by the Linnean Society, along with his library and plant specimens in 1838; it was felt that to reach a real understanding of Winch, a detailed examination of his correspondence was essential; the information held in his letters, combined with that associated with his plant specimens, would provide a real record of the man and his work. Before describing the procedures adopted for this 'Winch letters project', it may be useful to briefly outline Winch's life and career.

N. J. Winch: A brief biography

He was born in Hampton, Middlesex on the 26 December 1768, the son of Nathaniel Winch of Hampton Court. In January 1786 he moved to Newcastle-upon-Tyne, at the age of 17, and was apprenticed to Robert Lisle, hostman, in Newcastle on 24 December 1780. He travelled in Germany, Southern Europe and France in 1790–1791. On 4 May 1795 he was married in Chester-le-Street Church, Co. Durham. Dates on his herbarium collected sheets indicate that it was around this time that Winch became interested in natural history, making botanical excursions in and around Newcastle-upon-Tyne. As his interest in local botany grew, he made excursions further afield, collecting in Teesdale in 1799 and in the Cheviots in 1804. Winch was not only interested in botany, but also showed a keen interest in geology. In 1803, he was elected a Fellow of the Linnean Society in recognition of his contribution to the study of natural history.

The same year, Winch and two other local naturalists, Richard Waugh and John Thornhill (Sr) presented the herbarium of 600 specimens of dried plants to the Literary and Philosophical Society of Newcastle-upon-Tyne, for use by its members. In 1805 and 1807, Winch, Thornhill and Waugh published *The Botantist's Guide through the Counties of Northumberland and Durham*, the first really complete Flora of these counties. Whilst Winch keenly continued with his scientific studies, he was also rising to public acclaim and in the same year as his first book was published, he was elected Sheriff of Newcastle and a Council member. His standing increased in 1807, when he was made an Alderman.

Up to 1803 it appears that Winch worked for the firm of Emmerson & Co., who were involved in shipping. However, the collapse of Surtees Bank in 1803 resulted in the firm becoming bankrupt. Dawson Turner, the famous botanist and a correspondent of Winch, was also a banker in Great Yarmouth, and lent him £200 in 1803, which he may have used to set up his own business in Newcastle as an iron-merchant and anchor-smith. In the winter of 1808, Winch's luck once more ran out as this business went bankrupt. On 12 December 1808, the contents of his warehouse in Broad Chare, Newcastle-upon-Tyne, and of his anchor shop at North Shore, Newcastle, were auctioned to satisfy his creditors. The following day, his personal possessions, including his library, were also auctioned at his home in Pilgrim Street.

By this time Winch had built up an impressive list of correspondents, to whom he wrote frequently and for whom he seemed constantly to be doing favours. One is left with the feeling that his lack of success in business may be attributed, at least in part, to the time he spent in the pursuit of his natural history interests. However, at this time banks and the banking system were extremely vulnerable, often collapsing, taking their clients with them.

In March of 1814, Winch had published his first major geological paper, "Observations on the Geology of Northumberland and Durham" (Winch, 1814). He was to continue to publish geological works, mainly relating to Northern England, in this journal, the *Philosophical Magazine* and *Annals of Philosophy*, throughout his life. In either 1816 or 1817 he secured the appointment as Secretary to the Newcastle Infirmary; the duties of this post were not exacting and left him time to continue the pursuit of botany and geology. This led, in May 1819, to the preparation of his paper "On the Geographical Distribution of Plants Through the Counties of Northumberland, Cumberland and Durham", which paved the way for future work which linked plant distribution with underlying geology. The paper was read before the Literary and Philosophical Society of Newcastle, and later that year was published (Winch, 1819). A second edition appeared in 1825.

In 1821 Winch was elected as Associate of the Linnean Society. This suggests that when Winch was bankrupted in 1808 he could no longer afford the subscription to remain a Fellow and was not renominated as an Associate for some time. Winch was also elected to Honorary membership of the Geological Society of London and the Mineralogical Society of Dresden.

In 1825, W. A. Mitchell of Newcastle, published *Remarks on the Flora of Cumberland* (Winch, 1825), which was republished with additions in 1833 (Winch, 1833). Winch was not a prolific writer compared to many of his Newcastle contemporaries, yet has 28 publications to his name, a full list of which is reproduced here as an appendix.

Winch was very generous in his donations of specimens to various public institutions on Tyneside. Between 1804 and 1822 he gave to the Museum of the Literary and Philosophical Society of Newcastle, botany and geology specimens from the North of England, and botany specimens from Lapland, Norway, Switzerland and Italy, plus a collection of British and Exotic shells. To the Museum of the Natural History Society, formed in 1829, he gave local geology specimens and plants from Britain and abroad. He was generally considered to be a very helpful and enthusiastic person, an opinion that if reflected in the content of his letters. He had an apparently inexhaustible desire to collect and pursue scientific investigations, even of the most mundane kind. For example he often helped the Rev. William Turner with his scientific demonstrations in lectures to the Newcastle Literary and Philosophical Society.

The study of botany involved Winch in a good deal of correspondence; his tactic, on hearing of a hitherto unknown botanist from one of his correspondents, would be to write, introducing himself, and sending a small packet of dried plant specimens. This frequently led to a rapid response, the new acquaintance thanking Winch for his gift and offering to try and meet the requirements of Winch's list of "desiderata". In this way, he was able to build up a large circle of correspondents and a collection of plant specimens from various parts of Britain. Characteristically, Winch also had the foresight to keep the letters that he received from his botanical colleagues and frequently even made a note, on the back of the letters of when he replied to them and the gist of his reply.

On 28 November 1826, Winch's wife died, which may have caused him to involve himself even more in his studies. In 1829, when the Natural History Society of Northumberland, Durham and Newcastle-upon-Tyne was formed,

Winch was elected as one of the first two Honorary Secretaries and also as Honorary Curator of Botany, Mineralogy and Geology, reflecting the diversity of his abilities. However, as has been stated, his relationship with the Society was not a fortuitous one, and it can only be imagined that both Winch and the Society were disadvantaged by their broken relationship.

Winch was an avid collector throughout his life, collecting higher and lower plants as well as shells and geological specimens. He added two species to the British Flora and had the genus *Winchia* named after him by De Candolle. He was described by Johnson (1889) as being "what every scientist should be, a student of Nature from love of Nature; he neither changed nor flagged in his delightful pursuit so long as his powers remained." Indeed, he was still collecting plants in Switzerland just three years before his death at the age of 69, and also remained Secretary to the Newcastle Infirmary to the year of his death.

Perhaps his greatest single contribution to botany was his *Flora of Northumberland and Durham* (Winch 1831), the result of 30 years' work. His enthusiasm and dedication to the subject was acknowledged by H. C. Watson (quoted in Baker, 1903) who said of him "Mr Winch's exertions and different works have made us better acquainted with the botany of the extreme North of England than we are with any other equally extensive portion of the country, and he may fairly claim the credit of having done most to advance the knowledge of local botany."

At the age of 69, Winch died at his home, 2 Ridley Place, Newcastle, on the 5 May 1838. His obituary in the *Annals of Natural History* (Anon, 1838) records that he bequeathed all of his "very extensive herbarium and his library of natural history to the Linnean Society, of which he was a member, and has left a legacy of 200 pounds to the Newcastle Infirmary." It concludes that Winch had been "well known in the scientific world and an excellent British botanist."

The Winch letters project

Davis & Hebron (1982) have described in detail the progress made in computer cataloguing the collections held in the Hancock Museum, Newcastle-upon-Tyne. The British Herbarium was one of the first collections to be so catalogued, providing an opportunity to search the data held on the herbarium sheets and discover the extent of activities of the collectors. Winch was immediately seen to be a collector of significance. In 1984 the "General Herbarium" of Winch was rediscovered, and computer catalogued, the database providing additional evidence of Winch's botanical activities, his colleagues and correspondents. The plant collections could only tell part of Winch's story however; his involvement with geology, his career, his social and personal life would be found in his correspondence.

The computing facilities available to the Hancock Museum as a Department in the University of Newcastle are considerable; a new mainframe machine (an Amdahl 5860) has recently been installed which is capable of running a database management system known as SPIRES, (Stanford Public Information Retrieval System), which has been used for all previous computer cataloguing work in the Hancock Museum. SPIRES is orientated to interactive use at a terminal and is based on a hierarchical system of data structuring, with extensive facilities for constructing indexes, developing formats of data presentation, and manipulating and transforming data. It has been used for

cataloguing a wide variety of information, proving flexible enough to not only deal with specialist collections (e.g. Davis, 1985; Davis & Horne, 1985), but also to erect bibliographic databases (Foster-Smith, 1984) and databases with a considerable biographic content (Davis & Brewer, in prep.). An exercise involving computer cataloguing of the Winch correspondence was therefore demonstrably feasible, and desirable.

AUTHOR	DATE-OF-LETTER	PRECIS	RECORD-NUMBER
Turner, D.	26 Aug. 1806	Unpleasantness of civic duties. News of Browne's trip to Australia. Botanical discoveries. Bought Harriman's lichens, arrangements for delivery. Non-arrival of parcel from Swartz.	W2.021
Turner, D.	24 Sept. 1806	Sent parcel. Request for specimens. Non-arrival of boxes from Swartz and Harriman. Plans for publishing. Death of Hedwig.	W2.024
Turner, D.	9 Nov. 1806	Apology for delayed reply. Acknowledgement of receipt of lichens and plants (not worth having). Classification of lichens. Identification of Artemisia. Promise of specimens. Request for moss material for description.	W2.031
Turner, D.	23 Jan. 1807	Apology for delayed reply. Acknowledgement of receipt of box. Lichens sent to Borrer. Identification of plants and discussion of classification. News of other botanists.	W2.048
Turner, D.	17 Feb. 1807	Borrer's identification of lichens that were sent to him. Disagreement with Thornhill's description and name of new Lecidea. Don's latest fasciculi. Progress of Historia Fucorum.	W2.053
Turner, D.	22 May 1807	Acknowledgement of receipt of 2nd Vol Bot. Guide and praise of same. Going to Linnean Anniversary. Plans for botanical excursion. Progress of books. Injury of Thornhill's legl	W2.056
Turner, D.	3 July 1807	Continued ill-health - lack of botanical activity. Projected trip to Edinburgh via Carlisle & then to the W. Isles. News of fellow botanists.	W2.059
Turner, D.	5 Dec. 1807	Thanks for hospitality. Hooker sends regards and hopes his box will arrive in Newcastle safely. Bad year for sea conditions. Shipwreck of one of Turner's vessels. Kind words about Harriman. Progress of Flora Britannica Vol. 4 and Historia Fucorum.	W2.065
Turner, D.	29 Dec. 1808	Commiserations on misfortune (bankruptcy). Not much hope of a suitable post in Norfolk, but will make enquiries. Poor state of business in Norfolk. Turner's debts.	W2.082

Figure 2. An alphabetical listing of letters from Dawson Turner to Winch in Vol. 2 of the Winch Correspondence.

An approach was made to the Linnean Society regarding the possibility of borrowing, volume by volume, the Winch correspondence; this was agreed by the Library Committee on 18 October 1984. A computer program (the file definition) tailored to the needs of the project was written and a data input sheet (Fig. 1) devised; work on the letters began in November 1984. To date, November 1985, the first two volumes have been catalogued; comprising 375 letters, from 40 major correspondents including Olof Swartz, James Sowerby, Sir James Smith and Sir William Jackson Hooker.

An example of output generated from the database is reproduced here (Fig. 2), a tabulated alphabetical listing of a sample of the letters in date order. It represents only a small part of the data available on file pertaining to each letter. It is possible to interrogate all the data from a terminal and to ask complex questions of it; the research potential of the database when complete will be considerable. It is also possible to produce output in a variety of formats other than the tabular listing provided here. Any enquiries about the project or the database would be welcomed by the Hancock Museum; meanwhile an alphabetical listing of the contents of Volumes One and Two of the Winch Correspondence, with biographical notes on the correspondents, has been lodged in the Linnean Society Library.

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PETER DAVIES & JULIAN LEATHART,
The Hancock Museum,
Newcastle-upon-Tyne

Appendix: A list of N. J. Winch's Publications

1814. Observations on the geology of Northumberland and Durham. *Trans Geol. Soc. Lond., 4:* 1–101.
1814. Botanic memoranda and localities. *Thomson, Ann. Phil., 3:* 65–68.
1815. On the coal and stone strata of Durham. *Tilloch, Phil. Mag., 45:* 363 364.
1816. Brief remarks on some indigenous Roses. *Tilloch, Phil. Mag., 47:* 243 246.
1817. Observations on the geology of Northumberland and Durham. *Trans. Geol. Soc., 4:* 1–101.
1817. (On some phenomena in the geology of the northern counties of England.) *Tilloch, Phil. Mag., 49:* 207–208.
1817. On the geology of Northumberland. *Tilloch, Phil. Mag., 50:* 122–124.
1818. On the geography of plants. *Thomson, Ann. Phil., 11:* 334–342; *12:* 45–48.
1819. On the indigenous plants in the North of England. *Thomson, Ann. Phil., 14:* 129–132.
1819. *An essay on the geographical distribution of plants though the Counties of Northumberland, Cumberland & Durham.* Newcastle (2nd edition, 1825, with Appendix on roses and climate).
1821. Observations on the eastern part of Yorkshire. *Trans. Geol. Soc., 5:* 545–557.
1822. On blocks of granite, syenite, & c., imbedded in diluvium. *Thomson, Ann. Phil., 3:* 373–374.
1822. On the geology of the eastern part of Yorkshire. *Thomson, Ann. Phil., 3:* 374–375.
1822. Remarks on the geology of Lindisfarn or Holy Island. *Thomson, Ann. Phil. 4:* 426–434.
1823. On grey whin. *Thomson, Ann. Phil. 5:* 49–50.
1823. Account of some specimens of rocks, & c. from Van Diemen's Land and from New South Wales. *Ann. Phil., 5:* 341 342.
1823. On the phosphates of lead. *Thomson, Ann. Phil., 6:* 71–72.
1825. *Remarks on the Flora of Cumberland.* Newcastle: W. A. Mitchell.
1830. Table of the numerical distribution of the indigenous plants of Northumberland and Durham. *Edinb. J. Nat. Geogr. Sci., 2:* 455–456.

1830. Remarks on M. Adolphe Brongniart's opinion as to the vegetation which covered the surface of the earth at the different epochs of the formation of its crust. *Mag. Nat. Hist., 3:* 373.
1831. Remarks on the distribution of the indigenous plants of Northumberland and Durham, as connected with the geological structure of those counties. *Trans. Nat. Hist. Soc. Northumb., 1:* 50–57.
1831. Remarks on the geology of the banks of the Tweed from Carham, in Northumberland, to the sea coast at Berwick. *Trans Nat. Hist. Soc. Northumb. 1:* 117–131; *Phil. Mag., 9:* 11–19.
1832. Flora of Northumberland and Durham. *Trans. Nat. Hist. Soc. Northumb., 2:* 1–149.
1833. Contributions to the geology of Northumberland and Durham. *Phil. Mag., 3:* 28–35, 92–99, 200–204, 273–277.
1833. *Contributions to the Flora of Cumberland, to which are added remarks on the lists of plants published in Hutchinson's History of that County and in Turner and Dillwyn's Botantist's Guide though England and Wales.* 17 pp. Newcastle: T. & J. Hodgson.
1836. Notes on a collection of plants made in the province of Asturias in the year 1835, by M. Durieu. *Hooker, Comp. Bot. Mag., 2:* 315–326.
1836. *Addenda to the Flora of Northumberland and Durham.* Pages numbered 151–159. London.
1837. Versuch über die geographische Verbreitung der Pflanzen in den Englischen Grafschaften Northumberland, Cumberland, und Durham. *Flora, Jena, 20:* 289–304, 305–317.
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WINCH, N. J., THORNHILL, J. & WAUGH, R., 1807. *The Botanist's Guide through the Counties of Northumberland & Durham,* Vol. 2. Gateshead upon Tyne: Marshall.

A Reference Collection of Endangered Mascarene Specimens

The establishment of reference collections of biological material is not a new concept. According to Barlow & Flood (1983), the first natural history museum open to the public was in Oxford in 1683. The British Museum was founded in 1753 and the first in the United States, Philadelphia, in the 1780s.

The majority of museums housing zoological material are orientated towards taxonomy and morphology and relatively few concern themselves with pathology other than those associated with medical and veterinary departments, a number of which include historical collections such as the 18th century Hunterian Museum in the Royal College of Surgeons of England. In recent years, however, the importance of assembling and collating pathological material has been increasingly realized. Many such collections are concerned primarily with man or domesticated animals but a few, such as the Registry of Tumors in Lower Animals (Harshbarger, 1977), have concerned themselves with non-mammalian species, including invertebrates. Avian anatomical specimens are widespread in many collections in the world and inventories of skeletal and spirit specimens have been prepared by the Committee on Collections of the American Ornithologists' Union (Zusi, Wood & Jenkinson, 1982) but these are far from complete, and in particular do not include a number of institutions which house pathological material. A list of Mascarene avian specimens (skins, spirits, skeletons and eggs) housed in the world's museums is provided by Cheke & Jones (in press).

History of the Mascarene Collection

The Mascarene region (Mauritius, Reunion, Seychelles and associated islands) is renowned for its endemic fauna and flora, much of which is threatened with extinction, largely on account of habitat destruction and competition from exotics (Diamond, in press). Concern over these species, possibly accentuated because Mauritius was the home of the dodo (*Raphus cucullatus*), prompted the establishment in 1973 of a conservation project termed the International Council for Bird Preservation's (ICBP) Forest Birds Conservation Project but subsequently, following a formal agreement with the government, renamed the Mauritius Wildlife Research and Conservation Programme (Collar & Stuart, 1985). This project involved not only research in the wild but also attempts at captive propagation of a number of endangered

Table 1. Specimens in endangered Mascarene species collection at the Royal College of Surgeons of England

Species	Number of complete specimens in fluid	Containers of tissues*
Mauritius kestrel (*Falco punctatus*)	9	1
Pink pigeon (*Nesoenas mayeri*)	151	12
Echo parakeet (*Psittacula echo*)	None	1
Rodrigues fody (*Foudia flavicans*)	20	1
Round Island skink (*Leiolopisma telfairii*)	103	10
Round Island gecko (*Phelsuma guentheri*)	28	1
Round Island boa (*Casarea dussumieri*)	2	Several

*Tissues of all species are also present in the form of paraffin blocks, microscope slides, blood smears etc.

vertebrate species—initially the Mauritius kestrel (*Falco punctatus*) but subsequently also the pink pigeon (*Nesoenas mayeri*) and Rodrigues fruit bat (*Pteropus rodricensis*). In 1976 the Jersey Wildlife Preservation Trust (JWPT) became participants in the project and a number of species of endangered Mascarene vertebrates were taken to the Trust for captive breeding and study.

The senior author became veterinary advisor to the project at its inception in 1973. Part of this work involved post-mortem examination of carcases and tissues of specimens which died in captivity or were found dead in the wild. This arrangement was later extended to JWPT and all Mascarene material from the Trust's captive breeding programme was submitted for investigation. As a result of this monitoring a number of interesting diagnoses have been made (Cooper, 1979; Cooper, Jones & Owadally, 1981) and useful data obtained on some of the factors influencing morbidity and mortality in these species.

The accumulation of so much material from rare Mascarene animals prompted the authors to develop it as a reference collection. First notice of this was given in the "Directory of Resources of Biomedical and Zoological Specimens" (Registry of Comparative Pathology, 1981), in which the Collection was listed as "Pathologic material from endangered Mauritian vertebrates" (entry number 97).

Location and content

The Collection is housed within the Royal College of Surgeons of England in London. The College has a long history of interest in comparative medicine and has four larger museums, including the Hunterian referred to earlier. The Mascarene Reference Collection consists of carcases and tissues fixed in buffered formol-saline, eggshells and contents, paraffin blocks and slides, photographs, photomicrographs and radiographs. The present complement of specimens is given in Table 1. In the early days the procedure followed, when a specimen

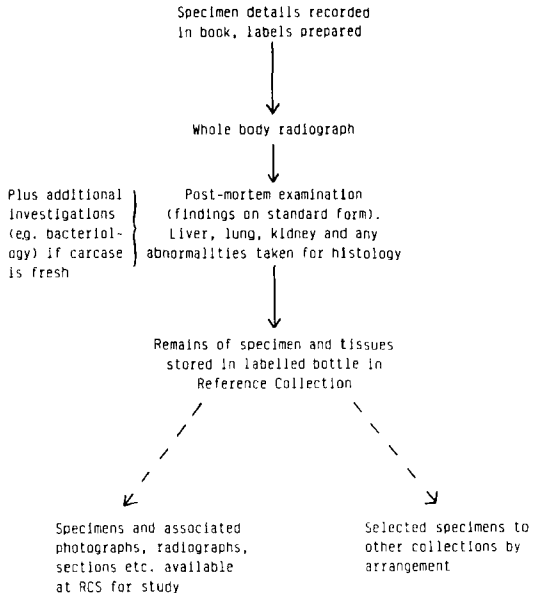

Figure 1. Protocol for dealing with Mascarene species received at Royal College of Surgeons. Carcases.

was received, depended entirely upon the circumstances and the resources available. Now, however, a standard routine is followed and this is outlined in Fig. 1 (carcases) and Fig. 2 (eggs). It should be noted that all specimens received from Mauritius are exported and imported under the authority of a licence under the Endangered Species (Import and Export) Act 1976 and all fresh material in accordance with the Importation of Animal Pathogens Order 1980.

The aim of the examination shown in Figs 1 & 2 is twofold: (a) (where appropriate) to diagnose the cause of death or disease; and (b) to provide basic

data on each species for future reference. While (a) is of considerable importance when clinical disease or deaths have occurred, (b) often provides more data of long-term value. Little is known of the normal anatomy and histology of the species in question and standard procedures, such as wholebody radiography and sectioning of lung, liver and kidney, provide valuable information on these aspects. At the same time, underlying pathological lesions, which may or may not have contributed to death, can be monitored. All carcases and tissues are retained and subsequent investigation (for example, of specified organs) can be performed as and when necessary. The specimens are also available for such traditional museum studies as morphometrics, osteology and myology.

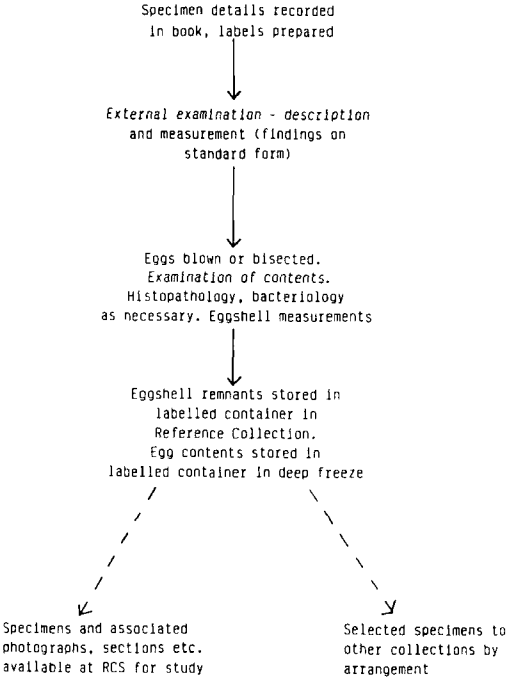

Figure 2. Protocol for dealing with Mascarene species received at Royal College of Surgeons. Eggs.

Material from the Collection is available for study by any *bona fide* research worker. As a general rule material may not be removed from the College but from time to time tissues or blocks are sent elsewhere. Selected specimens are also deposited in other collections on a permanent basis but this is only done after cataloguing and pathological examination at the Royal College of Surgeons. An important point is that all the Mauritian material in the Collection remains the property of the Mauritius Government. This is an arrangement which was agreed at the outset and ensures that unique specimens which leave the island remain accessible to Mauritians and others who may wish to refer to them.

Figure 3. A research student examines tissues from the Mascarene Collection.

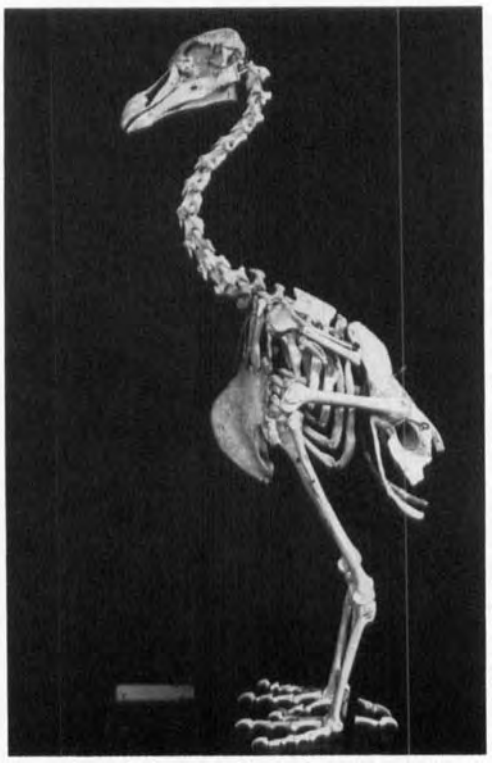

Figure 4. The Royal College of Surgeons houses other Mascarene specimens in its Hunterian Museum. This is the skeleton of the extinct solitaire.

Discussion

The Reference Collection of Endangered Mascarene Specimens represents a new concept in conservation. The establishment of the Collection has permitted the collation on one site of material from a number of threatened animals and its utilization as both a specimen depository and a research centre for work on these species. There is a clear need for more information on the anatomy and pathology of rare animals: such data are not only of academic interest but may throw some light on the factors which contribute to the decline or extinction of a species.

Acknowledgements

We are indebted to the Government of Mauritius and the Royal College of Surgeons of England for permitting the Collection to be housed within the latter's precincts and to colleagues, both past and present, on Mauritius and at the Jersey Wildlife Preservation Trust for submitting material and encouraging the establishment of a Reference Collection. This manuscript was read before submission by Elizabeth Allen, Paul Goriup and Margaret Cooper.

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C. G. JONES, *Black River, Mauritius*

LIBRARY

The seemingly never-ending task of filing the Catalogue cards for the pre-1750 and Linnaean collection continues and should be completed by the end of the summer. This will make checking our holdings on these early books much quicker as we will only have to check in one place instead of three as at present. The post-1979 catalogue is still only under simplified headings for main author

and main subject but ways of overcoming this are under consideration. Meanwhile, the volunteers from the North Kent branch of the National Association of Decorative and Fine Arts (NADFAS) continue to work their way through the bound up volumes of collected "reprints" unearthing many treasures we knew we had somewhere but could not locate. These too will be incorporated in the catalogue in due course.

The Library volunteers now form a substantial team and contribute a major effect in undertaking tasks that would otherwise not be done. Apart from the 6 NADFAS ladies who both clean and catalogue the older bound reprints, and also assist, together with Dr Ethel Barrow, in the cleaning of manuscripts, we also have Mr Desmond Cull working on the papers of the late R. H. Jeffers, Mrs Jennifer Norman cataloguing the watercolour drawings in the Buchanan Hamilton manuscripts and Mrs Iris Hughes compiling a calender of the Pulteney correspondence. Since September 1985 we have also been lucky to have the help of Ray Desmond as an honorary archivist. He has begun the Herculean task of sorting the Society's own archives. Mrs Margot Walker, who has now completed the portrait catalogue, is currently working on a life of our Founder, James Edward Smith.

Donations

The accessions table on the Annexe has remained piled high with books for cataloguing, many of which now arrive as gifts from Fellows and others. Special thanks are due to Frank Brightman for arranging for the Library to get copies of *Natural History Book Reviews*, an international bibliography published quarterly. We are also particularly grateful to John Burton, both for his own donations and for those received from the Flora and Fauna Preservation Society who have for a long time passed onto us their outdated natural history journals. They have now arranged for the Library to obtain copies of natural history books published by William Collins, to be held jointly with FFPS. We also thank the following for books received recently:

The author	Baldwin, S. A., *John Ray (1627–1705) Essex Naturalist*, 80 pp. Witham, Baldwin, 1986.
The author	Blackmore, M., *The Selborne Society, its origins and history*, 7 pp. Selborne Society, 1985.
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Mrs J. Miller	Morris, F. O., *A history of British birds*, 8 vols. London (no date).
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