# The Biology Curator

*The Publication of the Biology Curator's Group*

**ISSUE 17** **MARCH 2000**

## Diary Dates

**BCG: Visit to Kew Gardens**

19 June 2000

A study trip is being arranged to visit the gardens and have a behind the scenes tour. See insert.

**BCG: Study trip to Eastern Europe. (Budapest or Prague)**

Sep, Oct, or Nov. 2000

**GCG: Proposed Study trip to Southern Germany.**

October 2000

**BCG AGM meeting**

Dec 2000. Hancock Museum, Newcastle

Contact: Steve McLean

**BCG: Documentation**

Jan. 2001 Training meeting

This meeting will consider the state of biological documentation in museums, looking at MGC Registration requirements, documentation software, data standards and current initiatives.

Contact Nick Gordon, New Walk Museum, Leicester. 0116 247 3030

## Editors Note :

We are sorry for the late arrival of this edition but not enough articles to fill sufficient pages to produce The Biology Curator were received until a month after the copy date ! If anyone has any notes on past meetings attended, requests for information, anecdotes or information on Best Value or other changes to the working life please, please let us have them. The next Copy Date is 8th May.

Thank-you.

## Contents



**Deadline:** All items for next publication to reach Editors by 8th May 2000.

# Why Museums Matter; Avian Archives in an Age of Extinction

## A conference addressing museum avian collections

-A review-

During the weekend of 12-15 November, 130 people of about 25 nationalities attended a Conference near Tring on the theme ìWhy Museums Matter: Avian Archives in an Age of Extinctionî. The event, hosted by the NHM Bird Group in conjunction with the British Ornithologistsí Union, British Ornithologistsí Club and BirdLife International, was aimed at highlighting the importance of museum bird collections to both research and conservation. A wide range of talks summarized many facets of the use of avian collections at the turn of the century, from analysis of bird song to tissue sampling for DNA supported phylogenetics.

By the evening of Friday 12th most of the delegates had arrived for reistration and dinner followed by a talk from Adolfo Navarro, Mexico. Titled ìMuseums Working Together: the Mexican Bird Atlasî Adolfo introduced the subject of the entire weekend: co-operation between museums for a better understanding of data which is normally stored isolated at different institutions. The talk, impressively illustrated using powerpoint software, showed some amazing results of linking data gathered from more than 10 different museums.

On the morning of Saturday 13th the conference was officially opened by Robert Prys-Jones, head of the NHM Bird Group and followed by an opening address given by the U.K. Government Chief Scientist, Professor Sir Robert May.

The first main speaker of the day, J¸rgen Haffer, a well-known German ornithologist, followed with his talk ìZoogeography of Speciation and Colour Patterns in Birdsî. His research is based on the traditional methods from previous centuries and enlarges Wallaceís biogeographical work in the Amazonian basin to a broader scale. Nigel Collar (UK), BirdLife International, underlined the importance of Avian collections for conservation issues. He emphasized that in many cases the status of species are purely based on museum material. Under the title ìHistory versus Mysteryî Pamela Rasmussen (U.S.A.) and Robert Prys-Jones presented examples of the reliability or non-reliability of museum specimen-data. Incorrect interpretation of information may arise from misleading data, be wrong through unintentional error, or simply from downright deliberate fraud. Most notorious among avian collectors was Richard Meinertzhagen, who heavily effected the Tring collections by changing labels and specimens during the first half of this century. Only after detailed and forensic studies of preparation methods together with register information have Meinertzhagenís machinations been proven. Per Alstr^m (Sweden) and Richard Ranft of the National Sound Archives (UK) highlighted the use of sound recordings to answer taxonomical questions. One of the most complex Asian warbler groups, for example, has subsequently been split into several taxa. Rhys Green (UK) and J^rn Scharlemann (UK) emphazised the importance of time series of specimens in collections, giving an example of their essential role in long-term ecological studies. An eggshell thinning of passerines due acidification is under investigation. Anthony Cheke (UK) demonstrated in no uncertain terms the unsatisfactory situation of the Mauritius Museum, where unique material including extinct giant turtles and endemic birds is suffering from the miss-management of governmental officials and museum executives. Carlo Violani and Fausto Barbagli (Italy) gave a brief introduction to Italian bird collections focusing mainly on the historic collections of Northern Italy. Some of the Italian museums originate from the mid 18th century which house important type material and some of the oldest stuffed animals which are known to have survived from this period. Brad Livezey (USA), an authority in bird anatomy, showed the results of his recent survey of the rank of wet anatomical collections compared with other more heavily used collections of several major museums. The very interesting results demonstrated the discrepancy between the known need of such a collection and the actual preparation practises in use, as shown by the holdings of museum collections. On a very similar theme, Storrs Olson (USA) discussed the uses and importance of avian skeleton collections, also giving interesting statistics from major museums.

Sunday 14th November began with three smoothly-linked talks concerning the subject of bird illustrations, from the perspective of a publishing house (Andrew Richford of Academic Press, UK), to the views of an artist (Martin

## NEWS FROM SHEFFIELD

Derek Whiteley, Principal Keeper of Natural History, is to leave Sheffield Museum early in 2000, after 25 years at the museum. He will pursue a freelance career based from home, and look after daughter Phoebe born in September.

Derek will remain a member of BCG from his home address

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The Sheffield Galleries and Museums Trust's decision to outsource all conservation work means that Paul Richards moves across from Natural History Conservator to Assistant Curator Natural History. Paul now works part time Mondays, Tuesdays and Wednesday mornings.

Gaynor Boon remains as geologist and meteorologist with a new title pending.

Sheffield Biological Records Centre has been centralised at the City Ecology Unit

which left the museum in 1998 and is now under Sheffield City Council Leisure

Services Department at Meersbrook Park. Jean Glasscock is the Senior City Ecologist.

Woodcock, UK) and the contributions museums can offer (Jon FjeldsÂ, Denmark). The overwhelming tone was to maintain moderate bench fees, the need for new material and the importance of specimensí series. Jon FjeldsÂ, himself a bird illustrator, collector and curator, seems to be able to offer larger collections of newly collected material from both Europe and further afield. His collections at Copenhagen Museum are therefore some what unique for the general situation in Europe.

Townsend Peterson (USA) promoted the idea of a world-wide avian specimen data-base in his talk ìDistributed Data-bases over the Internetî. Already initiated in the United States he welcomed the inclusion of world-wide institution. With his knowledge and experience European museums will gain valuable assistance in building up a network of their Avian collection holdings. The final two talks touched two completely different aspects: Clemency Fisher and Effie Warr (UK) spoke about ìMuseums on Paperî giving several examples of the importance of the paper/art work associated with specimens and collections; and Les Christidis and Janette Normann (Australia) summarazied DNA studies using museum material. Subsequently a discussion concerning sampling policies developed.

In addition to the high quality lectures, delegates could learn from posters around the conference centre concerning aspects of collections and research in a variety of European museums. Posters covered a diversity of topics including extinct and endangered specimens in the Sofia Museum; specimens of the RÈunion Starling in Italian collections; an overview of the birds collected by Charles Darwin during the voyage of the H.M.S. Beagle; the amount of data attached to specimens at Sarisska Museum (Slovakia); research projects connected with the skeleton collection at Tring (Gibraltar caves/Mascarene Island subfossil bones); microscopic feather identification; and bird communities of the Indian Ocean Islands. Bookshops were also present, representing the British Trust Ornithology, British Ornithologistsí Club and other publishers, offering plenty of literature for the scientific community.

Following immediately from the conference a day-long Workshop was held entitled ìIncreased Co-operation between Museum Bird Collections, especially in Europeî. Approximately 55 professional bird curators, representing almost every major European bird collection as well as others world-wide, remained behind to participate in this more informal but structured discussion. The event proved both stimulating and productive, bringing together people who in some cases had been in contact for years without having ever met.

The main subjects divided into five separated sessions were: the current state of co-operation between collections; the potential for electronic catalogues of types and extinct & endangered bird specimens; the implications of DNA sampling and how it should be regulated; and collecting policies and the importance of adding to the collections. Of the many issues and points raised, the overriding conclusions were: i) to initiate a European network of collection information via the world-wide web; ii) to generate a ëglobalí electronic type catalogue for all bird taxa (to be maintained by the Smithsonian Institution, Washington D.C.); iii) to unify the regulations for DNA sampling policies; iv) to focus on active collecting to enhance species time series and improve ëbreeding birdí representation in collections; and v) to more openly engage in exchange programs between institutions. Already since the conference several institutions have agreed to specimen exchange programs

It was also agreed that an informal common media (e-mail chat group) should be established to share general curatorial issues. This could be based, and even linked to the existing American forum ëAvecolí.

Additional talks introduced other topics for discussion: Sylke Frahnert (Berlin) explained the CETAF network (Consortium of European Taxonomic Facilities); Fausto Barbagli (Pavia) presented the European governmental funded ìExtinct and Vanishing Animalî list, where museums in Europe listed their holdings of rare specimens; and John Cooper (Wildlife Health Service, Wellingborough) asked for more involvement of vet science in museum matters, especially welcoming more material from zoos, bird parks and veterinary surgeries being incorporated into scientific collections.

The conference and workshop were seen to have been very successful and it was agreed that European curators should hold subsequent meetings on a two-year basis. Curators from Bonn, Germany, volunteered to host a 2001 event and Leiden , Netherlands, was suggested for 2003.

A published Proceedings of both Conference and Workshop will appear in 2000. For further information about the conference proceedings please contact Robert Prys-Jones, The Natural History Museum, Akeman Street, Tring, Herts HP23 6AP, e-mail: <rpp@nhm.ac.uk>. Tel: 0207-942-6158.

Frank D. Steinheimer
Mark P. Adams
The Natural History Museum

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## Scottish Marine Collections at the National Museums of Scotland

In recent years the National Museums of Scotland (NMS) has acquired several large and scientifically important collections of marine invertebrates. This article outlines the way NMS has collaborated with government, academic and commercial institutions in order to obtain these specimens.

### Collaboration with government institutions

The Scottish Environment Protection Agency (SEPA) became fully operational in 1996. Amongst SEPA's many duties is the control of discharges to tidal waters out to a three mile limit. SEPA monitors the environmental effects of these discharges by taking biological samples for laboratory analysis, and therefore collects, preserves, sorts and identifies large numbers of marine invertebrates each year.

SEPA East Region approached NMS directly when a move to new premises made them seriously consider their lack of long term storage space, and within a week they had deposited much of their material with the museum. The size of the SEPA collections obtained means that incorporation into the NMS main collections is a gradual ongoing process. Nevertheless over 1,200 lots have already been incorporated. The success of this collaboration has led to close co-operation between NMS and SEPA on ongoing projects in the Firth of Forth.

A more extensive survey of Scottish waters was made during the Marine Nature Conservation Review (MNCR) - a project set up in 1988 by the Joint Nature Conservancy Council (JNCC) to survey the marine environment of the UK. Amongst the first areas to be surveyed were the Scottish sea lochs, encompassing all lochs from the Solway Firth in the south west of Scotland, to the Shetland Islands in the north and the Outer Hebrides in the west. During the three year programme thousands of animal specimens were acquired and processed at the Millport Marine Laboratory on the Isle of Cumbrae. The data associated with the material were recorded in the MNCR database and the information on habitat and community structure was published in an extensive series of JNCC reports. In 1993, after negotiations between the Museum and the JNCC, it was agreed that the Scottish sea loch samples should be deposited at NMS. When the 10 year project came to an end in 1998 NMS received not only the sea loch samples but also additional samples from the north and east of Scotland as well as all the samples from England. The zoological collection deposited at NMS by the JNCC has now been processed and totalled nearly 2,000 lots.

**Collaboration with academic institutions**

In 1994 deep sea samples of marine invertebrates from the Rockall Trough, west of Scotland, were acquired. This collection was made by the Scottish Marine Biological Association, based at Dunstaffnage, near Oban. During a 20 year surveying programme the project sampled the benthic community at two deep-sea permanent stations but additional samples were obtained opportunistically. The additional material ranges from as far north as Faroe and the Wyville-Thomson Ridge and south to the Porcupine Bank, allowing the investigators to describe benthic distributions over a very wide area. The extent of the project is illustrated by the resulting published literature which comprises over 100 scientific papers. Representative samples of all phyla are currently being processed and incorporated into the NMS collections. The Mollusca have been completed (by Dr S M Smith who will soon publish a catalogue detailing information on every molluscan specimen obtained) and the statistics derived from this process also give an idea of the scale of the project. Over 7,500 lots of Mollusca were obtained and approximately 560 molluscan species were identified, some of which were new to science.

Another Scottish Marine Biological Association long term research programme looked at the population dynamics of Lochs Creran and Etive on the west coast of Scotland. Work began in 1967 when the benthic fauna of the lochs was sampled using an anchor dredge at 30 stations. This was followed up with a large series of grab samples at the same stations; additional material was also obtained from the intertidal area. Sampling continued at intervals through the 1970s and into the early 1980s. The collection, originally held at the Dunstaffnage Marine Laboratory, was donated to NMS in 1994 by Professor John Gage. In the summer of 1999 the collection was processed, yielding 2,600 lots.

Although the acquisition policy at NMS for the Mollusca and Marine Invertebrate sections focuses on Scottish waters, we recognise the importance of holding comparative material from adjacent areas. In 1999 NMS obtained an important collection of benthic marine invertebrates from the Irish Sea. We made a direct approach to Port Erin Marine Laboratory in the Isle of Man to enquire whether they had any scientific samples that could be given a permanent home at NMS. The collection we were offered results from a study conducted on the effects of scallop dredges which are used extensively in Manx coastal waters. The collection is still in the early stages of processing but it is also expected to yield several thousand lots. We have since been offered further samples currently in storage at Port Erin.

**Collaboration with commercial institutions**

It is not only government monitoring groups and academics that are interested in the marine environment. The sea around Scotland is big business to the offshore operators and these companies have financed numerous environmental surveys around their oil and gas rigs. The umbrella organisation to these companies, UKOOA (the UK Offshore Operators Association), has recently invested money to collate the data from all past environmental surveys and have pursued a policy of openness with respect to these data, and to the specimens from which the data were derived. UKOOA's openness allowed Environmental and Resource Technologies Ltd, an Edinburgh based consultancy, to donate thousands of samples collected over 20 years from oil and gas fields and other environmental impact sites e.g., the Braer oil spill. Most of the samples are from the North Sea continental shelf and represent a whole host of phyla from sites that have rarely been sampled by the academic community.

In 1996 the offshore operators took their spirit of openness and co-operation a step further when the Atlantic Frontier Environmental Network (AFEN) was formed. This working group included 21 oil operators, the Department of Trade and Industry, the Scottish Office Agriculture Fisheries and Environment Department (SOAFED) and the JNCC, and was created to address the environmental issues facing the expansion of the oil industry into deeper waters. Over 20,000 square kilometres of seabed to the west of the Shetland Isles were mapped and sea floor samples were collected by grab and corer from over 200 stations, in depths varying between 100 and 1,500 metres. The numerous samples were sorted and identified by environmental consultancies before being deposited at the National Museums of Scotland. AFEN then funded a bursary award scheme and many of the samples have now been loaned to leading taxonomists under this scheme.

**Our policy**

In addition to the large collections detailed above, many smaller donations have been accessioned in the last five years. We welcome, and actively seek, material accompanied by scientific data and/or published research, regardless of the size of the collections, and we endeavour to make all this material accessible through the NMS loans scheme. In many cases access has been the donor's primary concern and reassurance that their samples will always be available both to themselves and others has been sufficient to secure the donation.

Louise Allcock
Curator of Mollusca
louise@nms.ac.uk
Susan Chambers
Curator of Marine Invertebrates

## Birds of Essex – A Request for Information

Research is in progress for a new book of the birds of Essex. We are investigating all historic collections of birds, especially where these have been donated to museums. A recent visit to the Saffron Walden Museum was very successful (special thanks to Sarah Kenyon) with an American Bittern specimen shot in 1826 at Wendens Ambo — a new species for Essex!

If your museum should have any bird specimens collected in Essex, we would be grateful for any information and we will visit the museum to confirm identification and all associated details. Full acknowledgements will of course be given in the book.

Contact: Simon Wood (Chief Editor), 18, Memory Close, Maldon, Essex CM9 Tel: 01621 841061

e-mail: simmel@maxwood.freeserve.co.uk

Nick Green, 40, Gloucester Crescent, Chelmsford, Essex CM1 4NG

Tel: 01245 283507 e-mail nick7green@aol.com

## BCG Web Site

BCG now has a web site **www.bcg.man.ac.uk**

As the URL indicates, the site is hosted at Manchester University on behalf of the Group. Bill Pettitt has set up the basic site, and will continue to advise and help, but the ëWebmasterí is Lindsey Loughtman at Manchester.

However, we will need a deputy Webmaster to back up Lindsey. Anyone who has easy web access can help maintain the site and they can be based anywhere in the country. If you are interested, please contact Bill or Lindsey for more information.

Do have a look at the new site, and give the Webmaster your views. We especially would welcome suggestions for improving or extending the web site.

Bill Pettitt (c.pettitt@man.ac.uk ) and Lindsey Loughtman

## Making Plants Displayable

**Rotherham Museum, Clifton Lane, Rotherham, S65 2AA**

**Trial Plant Drying & Preservation**

In 1995, the existing natural history displays at Clifton Park Museum had been in existence for 21 years having been set up in 1974, so were well over 20 years old, well beyond any reasonable life expectancy of such a display. Not surprisingly, the plant material in the displays were dead, brown and helped to make the displays rather drab. It had been noted that in other museums this was also generally the case. The 'better' displays tended to have freeze-dried specimens that had been painted to preserve their colour, which though achieving what was expected, the results were usually very obviously artificial. In the Museum of today, finance and skilled manpower are in short supply, so solutions to display problems must be cheap, easy and efficient to implement. At the same time, museum customers have a high expectancy of excellence.

The immediate and obvious question was, could fresh-looking plant material be displayed. This was investigated, and the well known answers found. Wax models can be good, but are very expensive and extremely delicate. Plant material can be freeze dried but the colour is lost and again the specimens are delicate and very expensive. An impression of colourful plant can be made by use of photographs but they are two dimensional only, limiting the viewpoint of the visitor and degrading the exhibit.

To fulfil the criteria of cheap and simple, sand drying was considered to be the best practical method of plant preservation. What was less clear was what subsequent treatment could be applied to deter pests and moulds and what would be the rate of colour loss.

The finer the sand, the better. The finest found, and used, was chinchilla dust, which is an extremely fine sand that was purchased from a pet shop in Bakewell and costing £2 per kg bag (two bagfuls were used). This sand is so fine that when poured on and around the most delicate plant parts, there is no deflection of those parts. Another problem found with builders 'sharp' sand is that the edges of the crystals of silica frequently become embedded in the plant surface, marring that surface and need to be removed after drying; this is not a problem with chinchilla dust.

The following specimens were selected and taken from Richards garden and immediately placed in 'Chinchilla dust'. To contain the sand and plants, small cardboard boxes were used as permeability was considered a useful property. There were 2 specimens of Geranium robertianum (Herb Robert) and one each of Epilobium montanum (Broad-leaved Willowherb), Lysimachia nummularia (Creeping Jenny), a

Bramble after drying

terminal fragment of Dryopteris dilatata (Broad Buckler Fern) and a tuft of the grass Holcus lanata (Yorkshire Fog).

Four days later, the following specimens were taken; Geranium robertianum (Herb Robert) and one each of Epilobium montanum (Broad-leaved Willowherb), Lysimachia nummularia (Creeping Jenny), terminal fragment of Dryopteris dilatata (Broad Buckler Fern) and Rubus fruticosus (Bramble).

These specimens were picked in the morning, put in a plastic bag and taken immediately to the museum where they were placed in cardboard boxes with a mixture of Chinchilla dust and 5-10% silica gel granules.

It was decided to leave both sets of specimens in a cubby hole by what was the bird store (now the Museum library) for 4 weeks, so they would be dry by 20th August for the sand only specimens and 24th August for the sand with silica gel. It was not determined at that time what final treatment would be appropriate. The actual drying time was unknown as there were far too many indeterminate variables, not least of which was our lack of experience in this activity. It was deemed best to leave the specimens undisturbed rather than have a periodic inspection; in any event this time will vary with temperature and relative humidity. At some future date, it might be useful to experiment on drying times using these materials in various places.

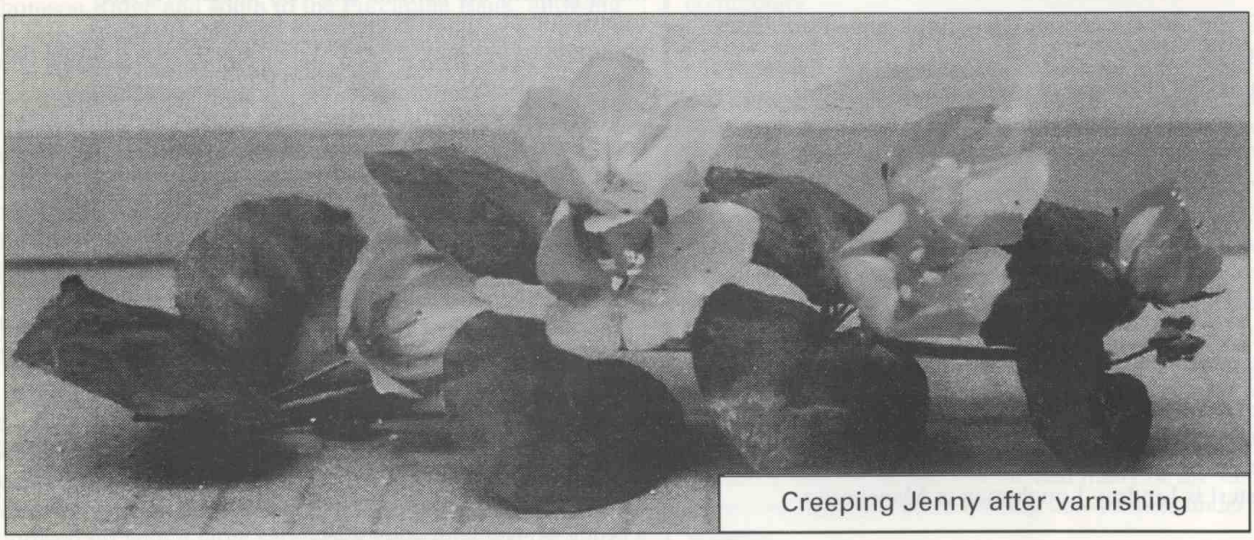
In the event, due to pressure of work, it was 25th September before the specimens could be removed from the sand. It was found most successful to remove the sand from the boxes by allowing it to 'drain' out of a hole in the bottom of the box; this does not disturb the specimen. This part of the process is easier with sand only rather than sand plus silica gel, as the gel crystals, being largish pieces, tend to knock the delicate parts of the specimen and occasionally block the 'drain' hole. Note that this is an added advantage of using cardboard boxes rather than something more substantial.

After drying, there was no discernable difference in the quality of specimens with or without the silica gel. It may be that a much larger proportion of silica gel would speed drying and help preserve yet more colour. However, there was little or no noticeable loss of colour during the drying process. Since the drying time was not determined experimentally, the use of silica gel was questionable.

Heating the sand prior to use would speed drying. The optimum temperature is not known, but should be as hot as possible avoiding scorching the specimen, perhaps 50 to 80 degrees centigrade. This would be a useful exercise for future study. The effect of such heat on delicate petals may well make this idea suitable for only the more robust specimens.

The specimens were separated into two groups, one set to be stored on a cupboard by a south-east facing window and the other in a cupboard in almost complete darkness.

Photographs were taken of the specimens after mounting them on Blu-tac.



Creeping Jenny after varnishing

Each specimen was liberally dosed with 3% Paraloid B72 in acetone, using a paintbrush. The purpose of this treatment was to penetrate the dried fibres of the plant with this volatile mixture, yet have sufficient B72 in it to coat all surfaces reached. This should kill organisms and render the plant unpalatable to them in the future.

The somewhat curious result of the B72 treatment was that the whole surface so treated, upon drying, changed to an uneven 'frosty' white finish.

To provide a tough, totally encapsulating coat, all surfaces were treated with two coats of 'Citadel' matt varnish. This varnish is produced by 'Games Workshop' of Chewton Street, Eastwood, Nottingham (tel: 01773 769731).

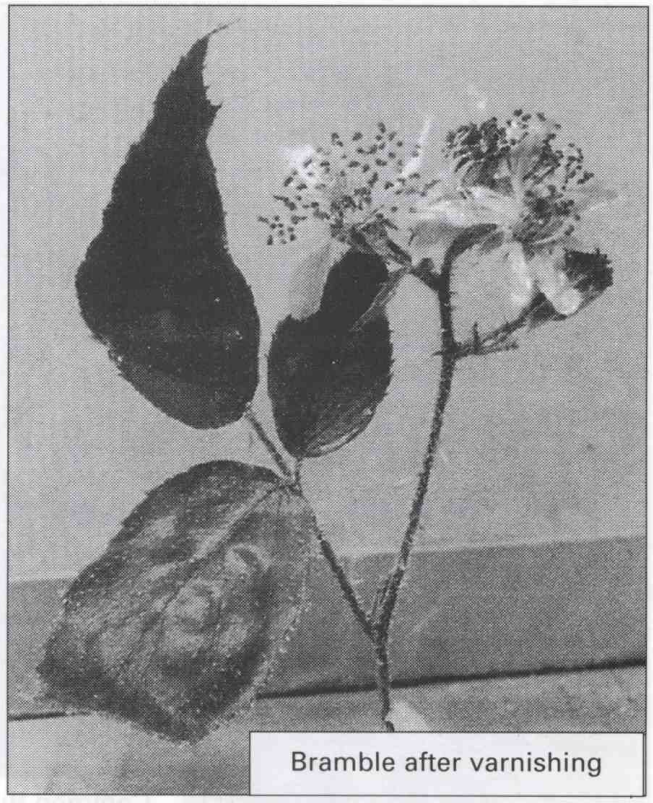
The result of the above treatments was quite satisfactory. When the matt varnish was applied, the white 'frosting' disappeared and the real finish was between eggshell and semi-matt, which is a reasonable approximation of a good deal of plantlife. It must be admitted that this gave unnatural uniformity of finish to all the plant specimens but this is a better finish than most alternatives already mentioned. The idea of so encapsulating the material in a varnish was not only to protect the plants from pest attack, but also to give additional mechanical strength to delicate structural parts such as thin stems. In this, the trials were very successful; the plants could be treated quite roughly without damaging them.

The finished specimens were photographed again for the record. These photographs were in paired groups, with the silica gel dried specimens on the right.

Four months later, in January 1996, the specimens in constant strong light had lost a great deal of colour, particularly the Epilobium specimen. In contrast, the specimens kept in darkness had no discernible colour loss. A further year of storage saw the specimens stored in light really 'washed-out' and not displayable but the ones in darkness were fine. After a further year, the specimens in darkness were just starting to fade a little. The effect of light on colour loss was, of course, no surprise, but the time taken to become unacceptable for display was useful.

It is clear that for temporary displays of a few months in bright lighting conditions, this approach is quite practical. For longer term displays of a year or two, it would be practical if the gallery had subdued lighting, as it would be in a woodland diorama perhaps. Two important aspects were the cheapness and relative ease so replacing faded specimens after a year would not be onerous. Any such replacements in a long term display would, of course, have to be planned so the plants concerned were in season. Selecting species with a long flowering period might be useful.

The process costs are minimal, particularly if B72 and acetone are already in store. Later work was done. Anemone nemorosa (Wood Anemone ), Taxus baccata (Yew), Tilia europaea (Lime) and Ranunculus ficaria (Lesser Celandine) were successfully dried using builders' silver sand purchased in the kiln dried state. The robust specimen of Yew are quite unaffected by the coarser sand but the berries were shrivelled and had lost their waxy bloom. This effect on fleshy plant parts is unavoidable in this type of drying process. The Wood Anemone was somewhat distorted; chinchilla dust would have been gentler and provided more fine support for this species.



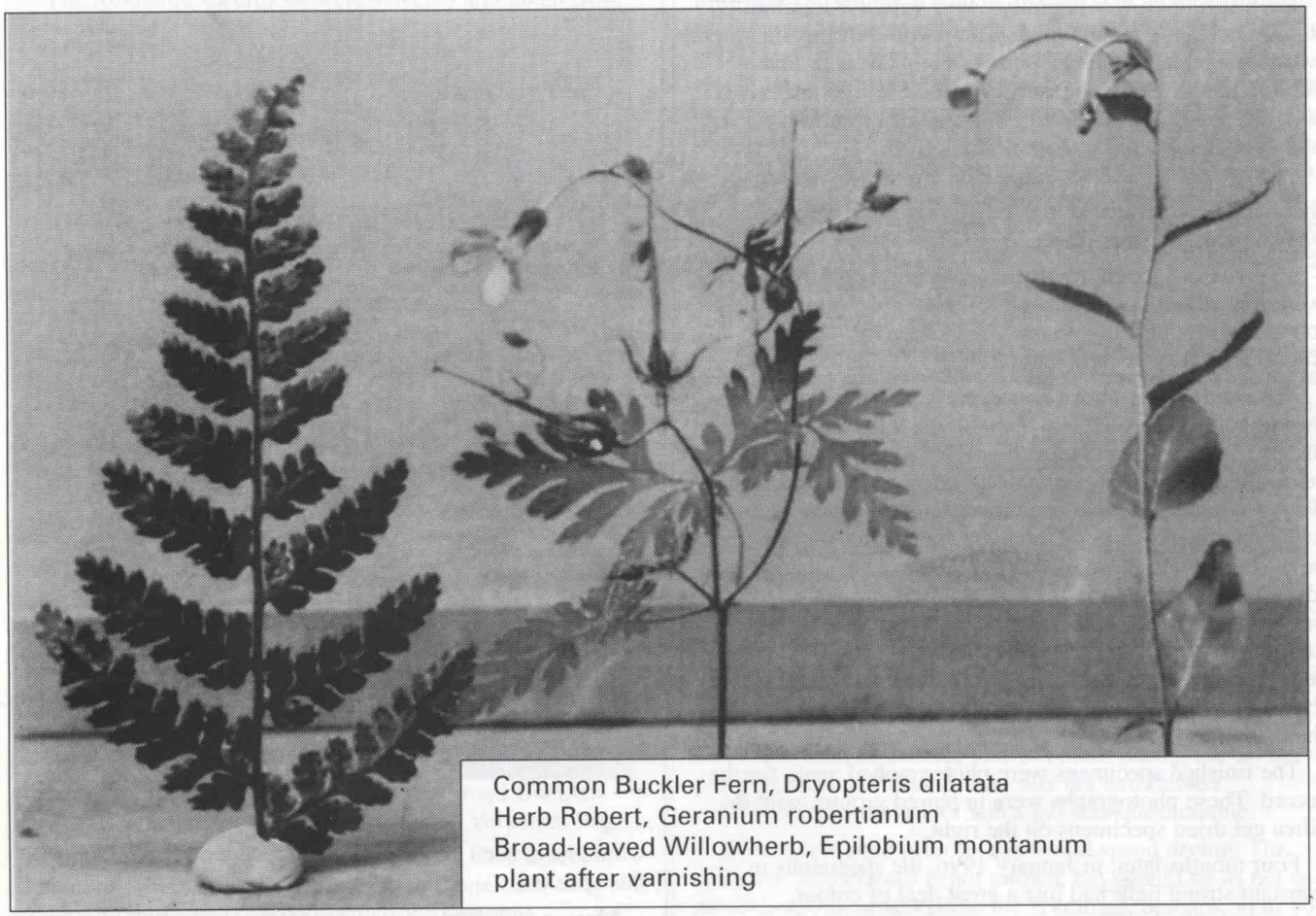
Bramble after varnishing

Mosses and dead leaves were treated by putting them in a micro-wave oven at full power for two 30 second periods. This rendered them quite dry, after which they were treated in the same way as the previous plants with B72 in acetone and finished (encapsulated) with matt varnish.

Ronseal (and perhaps others) manufacture an outdoor satin finish varnish, which is an alkylid resin in white spirit with an ultra-violet filter component. This might be an ideal material, so long as it isn't too viscous for the rather delicate plant parts (petals and plant hairs). In the event of the varnish being too viscous, it may be possible to thin it with white spirit so it can be spray applied.

Plants for successful drying must be carefully selected. Thick, fleshy leaves or stems are not suitable, so bluebells, stonecrops and the like are not possible. They result in withered brown specimens with very little residual strength. The plants that were best preserved were Bramble, Celandine and Herb Robert, though the grasses and mosses also worked very well indeed.

There are several aspects to the above experimental work that could (should?) have been more rigorously controlled, such as accurate drying time, light measurements and pigment change monitoring. These were, however, practical experiments done quickly and cheaply in a working environment to obtain quick and usable results. Within these constraints, the results were promising. The plant material was rendered mechanically stable fairly quickly and cheaply. There was never any hint of attack by animal or fungus. The



Common Buckler Fern, Dryopteris dilatata
Herb Robert, Geranium robertianum
Broad-leaved Willowherb, Epilobium montanum
plant after varnishing

limitation of plant types suitable for drying in this manner still leaves a good selection.

The plants used were either from Clifton Park or 'weeds' from Richards garden. It is important to note this last point and observe the BSBI code of conduct for taking plant material from the wild. It might be worth while cultivating good relations with people who hate gardening as their wild flower (weed) collections can be useful.

Richard Comley- Assistant Museums Officer (Natural Sciences)

Karl Noble- Conservator

## Correction to e-mail address:

Sarah Kenyon at Saffron Walden Museum: e-mail — **museum@uttlesford.gov.uk**

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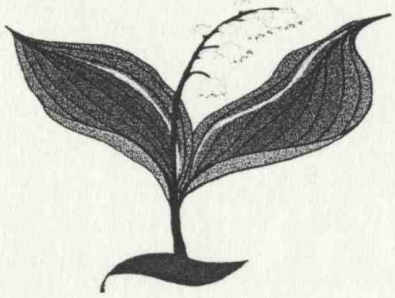
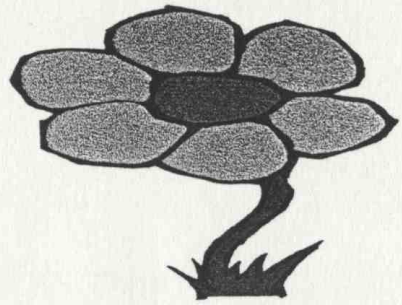


# Biology Curators Group Study Trip



# Royal Botanic Gardens, Kew

## Monday 19th June 2000

### Provisional Programme

The exact programme is still to be determined but will be based around tours of the following:

Main herbarium and spirit store
Mycology Building,
Centre for Economic Botany
The Jodral Laboratory
Museum No 1

There may also be tours of the conservation facilities and a chance to meet the education staff. There will be an opportunity for people to explore the gardens at their leisure in the afternoon. Lunch is not included in the cost.

**Further details will be sent to those who book.**

**Places are limited to 15 and is on a first come first served basis. There is a £5 booking fee**

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## Kew Visit Booking Form

**Name** : .....

**Address**: .....

.....

.....

**Phone**..... **Email**: .....

I enclose payment of £5..... Please invoice me: □

Make Cheques payable to: **The Biology Curators Group**
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