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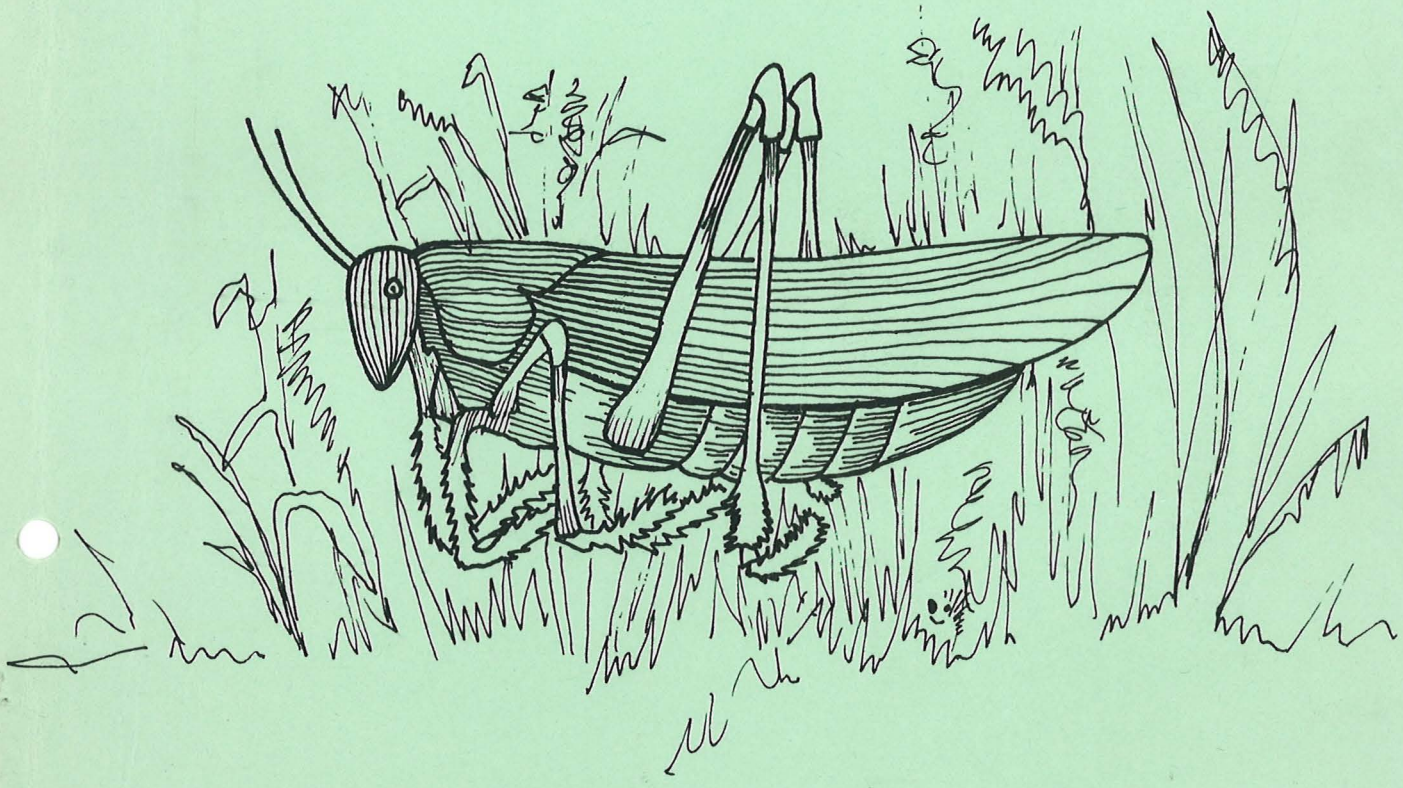

This issue of the Newsletter is largely devoted to collections and activities in the South West of England. My thanks are due to Kelvin Boot of Exeter Museum for his help in providing articles and liaison with members in that area.

Peter Davis
Editor

Contents

Edited by Peter Davis. Published by Tyne and Wear County Council.

LETTER TO THE EDITOR

May I be permitted comment on Mr. Locke's response to my Open Letter on Natural History Exhibition?

I have no objection to reasoned criticism and indeed my letter was written with the intention of stimulating discussion. However, Mr. Locke's contribution leaves me profoundly disappointed by the standard of debate so far. Furthermore, I admit some resentment at being bracketed with Mr. Doughty whose remarks were so outspoken in condemning the Hall of Human Biology. Mr. Locke offers no constructive argument for the changes in display which he supports but instead merely denigrates my expressed opinion: this lack of a positive view is worrying if his thoughts are shared more widely. Dr. Miles has presented his credo in Museums Journal (Vol. 78, No. 4, March 1979) and his challenging ideas deserve our attention.

As a matter of fact I find much to applaud in the BMNH Ecology gallery. The problem is that the content and the presentation of this exhibition widens the gap between the curator's role as a manager of collections and his function as an exhibitor, which now takes on a new independence. Indeed, it is fair to say that natural history museums serve not one public but two and this clientele is divided into those who visit our galleries and those who visit our collections. The Natural History Museum in London has the staff and resources to serve both but I have knowledge of situations where curating and gallery work compete uneasily for staff time and effort.

The more structured and elaborate the display then the more time is needed for its production.

This difficulty is particularly acute in natural history because we make the task more exacting (and perhaps rightly so) by aiming to present a "subject" and not simply a set of "objects". In this respect, natural history exhibition is becoming progressively more distinct from display as seen in museums concerned with objects of material culture. This in itself is no bad thing, for the trend is always towards innovation and relevance.

However, there remains the underlying question that if a trend-setting gallery will pull in the visitors what need have we for all those store-rooms crowded with specimens, especially when they occupy expensive city-centre space? This question has been asked before - in summing up proceedings of a Biological Society of Washington Symposium at the Smithsonian Institution (1968) - but when it is asked by local councillors we need to have answers that are demonstrably practical and realistic. Councillors' suggestions that collections or saleable items "that are never on display" be disposed of are not unknown and natural history stands to lose as much or more than does the world of art. That is why I suggest that a conscious effort may be needed to produce exhibits that do relate to and illustrate the strengths of our collections where this is feasible. After all, no other

policy would be considered by our museum colleagues in historical, industrial and art subjects!

Nowhere in museums are the dual functions of acquisition and exhibition more distinct than in natural history, where the one does not often provide justification for the other. In provincial museums we may need to champion the values of our natural history collections to ensure their continued use and survival - for these values are not self-evident as they are in a gallery of artefacts. It could be that if suitable reference to the collections were made in our gallery displays, it would increase public awareness of their scientific interest and of the purposes they serve.

I hope that the point of these remarks will not be missed or misinterpreted on this occasion as they were in my previous letter. I do not advocate a return to the 19th century or first-half 20th century exhibition, but I do believe that the time is ripe for a reappraisal of gallery objectives. The options have been so widely expanded and, as I say, the current trend has already brought about a divorce between exhibitions and collections in natural history which is not apparent in other subjects. This is a situation to be reckoned with because its consequences, especially for the future of collections may not all be foreseen. The British Museum (Natural History) clearly has a unique mandate for the recent developments in its galleries but I question whether we should all make haste to follow the trail that they have blazed.

B. Abell Seddon
Keeper of Natural History
Birmingham City Museums

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PUBLICATION

The Moths of Sheffield by Steven P. Garland. Sorby Record Special Series No. 1 1979. Published by Sorby Natural History Society, Sheffield and Sheffield City Museums.

This attractively produced 48 page booklet summarises existing knowledge on the occurrence and distribution of 'macro' moths within the Metropolitan District of Sheffield. The author has brought together records from collections, diaries, published works and recorders lists covering a period of time from the early 19th century to the present day. Available from Sheffield City Museum, price 60p per copy (+ 15p postage).

New EEC Legislation on Conservation of Wild Birds

The Secretary has received a copy of a letter from Patrick Boylan to the Director of the Museums Association drawing attention to this legislation. The Council Resolution and Directive set out in the Official Journal of the European Communities nos C103 and L103 (dated 25 April 1979) will result in the rewriting of much of the existing UK wild bird protection legislation. On a preliminary reading of the Directive, the part with the greatest potential impact on museums would appear to be Article 6. This will outlaw 'the sale, transport for sale, keeping for sale and the offering for sale of live or dead birds and any readily recognisable parts or derivatives of such birds' with reference to every species of bird occurring in the wild anywhere in the EEC (except for game birds as specified elsewhere in the Directive). The present Biritish position, in which existing collections or specimens of mounted birds or skins killed before the operative date of the 1954 Protection of Birds Act can be legally bought or sold, will presumably come to an end. It is important that the new UK legislation, when drafted include some degree of discretion for Museums in relation to the purchase of important historic material.

BOOK REVIEW

A Recorder's Log Book or Label List of British Butterflies and Moths

by J.D. Bradley and D.S. Fletcher, 136p, Curwen Press, London, 1979
(Price £2.00)

As a label list, the type is distinct with judicious use of various faces to distinguish the categories of family, genus, species and English name. On receipt of this "book" measuring 190 x 110mm, one may feel disinclined to cut it up for cabinet labels.

The layout is essentially designed to be used to record the presence of a particular species in the locality to which the log book is assigned. It appears to me that it is unusable for recording information from a collection in a museum context but is for the comprehensive survey of a relatively small area. In these circumstances, the recorder fills in the details required of the Lepidoptera recording scheme and forwards his completed book to BRC, Monkswood, who will extract relevant data for their mapping schemes and return the book.

For a biological curator what function will this book fulfil, apart from being a label list? Firstly, at a worthwhile site (nature trail, SSSI, etc.) in which field work is uncovering a considerable faunal diversity within the Lepidoptera this log book will be many times more useful than the standard BRC field card. It has all species represented including the micros. Secondly, I can envisage it being used to record old literature records for the area which the museum's local collecting policy covers, as a starting point to filling gaps in the knowledge of the local fauna.

At £2.00 it clearly could not be used (at the necessary ratio of one book to one site or 10km square) for all the sites in most museum's areas and in this respect is obviously designed to encourage the amateur entomologist to send in his records to Monkswood for his "home square". However, whereas the log book function has limited application in museums, the label list aspect is undoubtedly useful and up to date. Also, the inclusion of doubtful, adventitious and extinct species occurring in the British Isles increases its value in this latter respect; museums are quite likely to be the repositories of examples of these species.

E. G. Hancock.

MUSEUMS ASSOCIATION CONFERENCE
SOUTH HAMPSHIRE 9 - 13TH JULY, 1979

'HOT NEWS SESSION'

BIOLOGICAL CURATORS GROUP

About 12 BCG members attended this specialist session which commenced with a tour of the galleries and reserve collections at Cumberland House Museum Portsmouth and a discussion concerning a £70,000 proposed development. Delegates were then transported to Farlington Marshes which is a nature reserve managed jointly by Portsmouth District Council and the Hampshire Naturalists Trust.

The afternoon session comprised three talks followed by a discussion entitled 'Displays and Collections in the Leisure Age' held in Portsmouth Polytechnic. The first speaker was Chris Hill from the Public Services Division of the B.M. (NH). He initially gave a break down of expenditure between the Public Services Division and the remainder of the Museum's expenditure.

80% of all resources are allocated to Taxonomic Research. The recent display techniques employed in the Museum were to be viewed as an experiment albeit a rather expensive one. An undertaking was given that future display plans included more extensive use of genuine museum specimens. Long term plans would be formulated as a result of returns from visitor surveys. Primarily the BM (NH) will remain a taxonomic unit.

Peter Morgan of the National Museum of Wales continued on this theme. He outlined museum development since the 2nd World War and pleaded that curatorial work should overtake display work when establishing priorities. Ancillary to curatorial work is the establishment of supporting systems such as field data banks and environmental advice and interpretation. He contended that one of the difficulties museums now faced was the lack of taxonomically trained staff due to the change in emphasis in university teaching. Natural history curators were expected to be jack of all trades and the pressures exerted by the public and governing bodies was to the detriment of our primary function namely curation of the collections. Much natural history material was lost by the inadequate provision for university and polytechnic research material in the parent institutions.

If these collections were to be transferred to the appropriate museum, storage and curation facilities would pose problems.

The use of the environment in the leisure age must have protection as the first priority. The final speaker of the afternoon was Peter Sewell of Portsmouth who concentrated on the role of natural history collections in Leisure Services departments. He intimated that Natural History displays had to be seen to be cost effective in terms of visitor numbers etc. Rate-payers only see the public face of the museum and any resources for curation were inexorably linked with display funding.

Good display techniques were essential to compete with the impact of film and television. Was there any purpose in collecting further local natural history material when most of the essential information could be stored in an information file? Rare and extinct natural history material poses a problem for curators in that if subjected to the rigors of display it will have a finite life. He summarised the situation by expressing the view that the public face of museums must have good display techniques, lots of specimens and animation where appropriate.

The general discussion which followed was wide ranging and therefore almost impossible to summarise. However the following recommendations to the Association were agreed.

1. That provision should be made at a future conference for the presentation of papers dealing with the value and use of natural history collections to be received by the whole conference.

2. That the Museums Association become members of the International Union for the Conservation of Nature, thereby acknowledging the role of environmental conservation as part of the museum profession.

John R. A. Gray
Principal Officer, Museums
Bolton Museum

WORKING PARTY ON TRAINING OF NATURAL HISTORY TECHNICIANS

At the BCG Committee Meeting of September 13th it was decided to set up a Working Party to consider the training of Natural History Technicians working in Museums. As a first stage the group has been asked to produce a discussion document outlining general areas of expertise in which Natural History Curators can expect trained technicians to be proficient. Particular reference will be made to points of possible overlap with taxidermy training and the responsibilities of the Taxidermist as opposed to the Natural History Technician. The syllabus of formal courses available for training Natural History Technicians will be examined and their shortcomings in respect of Museum requirements will be defined.

Will anyone with strong views on this subject or who can offer information on training courses in their region please contact me within the next two or three weeks.

John Mathias,
Keeper of Biology
Leicester Museum

(Leicester (0533) 554100, ext. 262)

MINUTES OF B. C. G. COMMITTEE MEETING
THURSDAY SEPTEMBER 13th, 1979

MEMBERS PRESENT: Eric Greenwood (Chairman), Steve Flood, Martin Brendell, Geoff Hancock, Peter Davis, Mike Hounsome, Geoff Stansfield, John Mathias, Janet Chamberlain, Jim Bateman.

1. APOLOGIES were received from Peter Morgan, Mike Taylor, Peter Lambley, Dave Erwin, Kelvin Boot.

2. The MINUTES of the MEETING OF 26th APRIL were confirmed.

3. MATTERS ARISING

   1. No correspondence had been received on the Manual of Curatorship. J. Bateman reported that it was intended that professional groups should take responsibility for collecting together discipline information. G. Stansfield outlined current proposals to appoint an editor and research assistant (with grant-aid). It was agreed that S. F. should make contact with the working group.

   2. The editor agreed to commission an article explaining the inclusion of natural history material within UNESCO definition of Cultural Property.

   3. The profits (£124) of the SBNH Conference were being used to aid the spring publication of the conference proceedings.

   4. J. Bateman, who chaired the joint meeting with the Guild of Taxidermists outlined the main points raised and suggested that the main differences with BCG centred on the desire of taxidermists to concentrate on taxidermy whereas curators demanded a wide range of technical skills. Both groups had been charged to prepare details of training facilities and requirements before convening another meeting.

      From discussion it was clear, that even where the museum posts existed or could be created, training facilities were extremely limited and in some large institutions (including the B. M. N. H.) curators were responsible for training junior and part-time technical help. J. Mathias agreed to contact P. Morgan, P. Lambley and R. Harris with a view to setting up a working party to produce syllabus suggestions and comments on technical training provision. An appeal for members' views would be included in the Newsletter.

   5. Copies of the Chairman's letter to the Standing Commission of the Drew Report were circulated.

6. High printing costs had prevented final printing of the Collection Survey although further sources of grant-aid were being sought. It was agreed that the officers of BCG seek an early meeting with the Editors to clarify production details and costs.

7. The Report of the Review Group on Taxonomy (1979) made no detailed reference to the role of provincial museums and collections in taxonomy, in spite of evidence submitted by J. Bateman and N. Tebble (on behalf of the M. A.) and E. Greenwood for Liverpool. Committee felt that a response was necessary and E. G. agreed to prepare, and circulate for comment, a submission to the Advisory Board to the Research Councils, using previous evidence. M. Hounsome undertook to review the publication for the Museums Journal.

4. FINANCE AND MEMBERSHIP

The Treasurer had left a message that the balance after producing the September and December Newsletter would be £300.

5. NEWSLETTERS

The September Newsletter was to have a South-West theme. G. Stansfield agreed to seek advertisers and would be grateful for suggestions for potential customers. Following discussion on the production of back numbers for resale P. Davis agreed to obtain costings for producing complete versions of Volume 1.

6. MEETINGS

1. BCG A. G. M. 1980.

It was generally agreed that a study weekend to incorporate the A. G. M. should be planned, on the theme of techniques, with an emphasis on the demonstration of new procedures. J. Mathias and G. Stansfield undertook to make arrangements to hold the meeting in Leicester during the Easter vacation, 1980.

2. M. A. Conference 1980

Following a letter from S. Flood to the Museums Association it was hoped that the group would be allowed a greater say in planning the main Conference sessions, as there was to be no specialist day next year. S. Flood undertook to arrange a day visit for BCG members before or after Conference.

3. BCG Conference 1981

P. Morgan and S. Flood had had initial discussions about a conference on collecting, and it was agreed that when the officers meet P. Morgan they should prepare notes on the ramifications of this topic with a view to setting up a Conference planning group.

7. REGIONAL SURVEYS

M. Taylor had submitted details of a meeting planned to discuss collections in Scotland.

A report was requested on the progress of the North West Collection Research Unit.

8. ANY OTHER BUSINESS

The M. D. A. were undertaking a survey of progress on Environmental Recording and S. Flood agreed to liaise with B. R. C. over providing the necessary details.

9. NEXT MEETING

The next meeting will be on Thursday 14th February 1980 at the British Museum (Natural History).

DORSET COUNTY MUSEUM NATURAL HISTORY RESERVE COLLECTIONS

Introduction

The natural history collections of the DCM date back to the opening of the Dorchester Museum in 1846. What if anything is still extant from these earliest days is difficult to assess. However, current work on the collections should give a much clearer indication before too long. Large collections have been donated and in some cases purchased. The range of material is considerable and several important collections are held e.g. Nelson Richardson's Collection of British Lepidoptera (types included), Mansel-Pleydell herbarium. It has been pointed out that type specimens may be present in this large collection.

Late in 1978 the opportunity for a dramatic reorganisation of the storage of the collections presented itself. After a month of intensive removals the bulk of the natural history reserve collections were housed in one room.

Three main projects are currently in hand and the following notes have been provided by those involved.

Dorset County Museum Ornithological Collection

The Dorset County Museum ornithological collection was begun in the mid nineteenth century. Most of the birds in the collection belong to the latter half of that century, and include specimens collected by Alfred Russel Wallace in the Malay Archipelago.

The complete collection consists of mounted specimens, study skin collection, wing preparations, an osteology collection, birds eggs and a small pellet collection. The expansion of the Museum's stores enabled the bulk of the various collections to be brought together in one room, where the mounted specimens had been hitherto stored on pexion racking.

Prior to 1978 the collection of mounted birds had been partially catalogued. Unfortunately there was no clear record of how far this had gone. A card index was generated for the skin collection in the late summer of 1978. At the beginning of 1979 it was decided to completely recatalogue the mounted collection and to store the birds, in polythene bags, in dust proof boxes. At the same time a complete typescript of all the bird specimens which have been accessioned has been produced, so that it should be possible to assess more readily the value of particular specimens.

The mounted bird and skin collections consists of approximately 400-500 specimens. These are now being classified into species using as a guide the recently published "List of Recent Holartic Bird Species" by K. H. Voos, published 1977.

Individual cards for each bird are being prepared to take all known information. Donor, year of donation, locality, whether adult or immature, sex, plumage and general condition. In addition to this the current status of the bird in Dorset will be noted, using the "Check List of Birds in Dorset" by J.V. Boys.

When this project is complete, those wishing to study the ornithology of Dorset and historical association of Victorian and other collectors with the collections of the Dorset County Museum will be able to do so more readily than before. In addition to this, the Museum will be better placed to formulate a coherent collecting policy, and encourage research into areas where our knowledge is poor.

E.F.C. Coetzee

The Dorset Underwater Survey Collection at the Dorset County Museum - Dorchester

Three underwater surveys were carried out between November 1976 and December 1978, covering the Dorset coast between Studland Bay and Lyme Regis.

These projects were financed by the Manpower Services Commission, The Nature Conservancy Council and Dorset County Council and supervised by a Committee representing Dorset County Council (Heritage Coast Project), Nature Conservancy Council and Dorset Naturalists' Trust.

The intention was to survey the highly varied sublittoral ecology at predetermined sites, to produce a description of topography and substrate and to build up a species list.

SURVEY I took place between November 1976 and May 1977.

Three divers were employed to do a detailed survey of the sea area at Kimmeridge. The Survey area chosen, between Worbarrow Tout and Clavell's Tower, includes Brandy Bay and Hobarrow Bay (protected from human pressure by the Army) and the widely used Kimmeridge Bay. This was the most detailed survey as it concentrated on a relatively small area. The area has since become part of the Purbeck Marine Wildlife Reserve, a voluntary reserve sponsored by the Dorset Naturalists' Trust.

SURVEY II took place between July 1977 and March 1978.

Four divers were employed to survey the sea area from Studland Bay to Ringstead Bay. Sites were chosen at regular intervals and transect lines were 'drawn' out from the coast to approximately 20m depth. Dives were carried out along these lines.

SURVEY III took place between July 1978 and December 1978.

Four divers were employed to survey the sea area between Portland Bill and Lyme Regis. They dived at predetermined sites within three areas:- Chesil Cove, Chesil Bank - Burton Bradstock,and Burton Bradstock - Lyme Regis.

In all three surveys some organisms were identified in the field and not collected i.e. highly mobile animals such as fish. Most, however, were collected and identified in the laboratory using published keys. Dive logs and dive site records were kept giving details of dive conditions, site topography and species identifications. Record cards were completed providing a condensed version of this information in a readily accessible form. These cards were on a format suitable for inclusion in the Dorset Environmental Records Centre. In most cases identifications were made by experts.

Where possible, a specimen of each species identified was preserved and labelled. Preservation techniques varied in detail between Taxa but generally 70% alcohol was used for animals and 5% Neutral Formalin for Algae. Some sea weeds were also dried and pressed. In addition to preservation, narcotisation and fixation techniques were also employed in certain soft bodied animals to prevent distortion prior to preservation.

The Dorset County Museum, Dorchester, were given the collection of preserved specimens, records, transparencies and reports in December 1978.

Those from Survey III arrived at a later date as many identifications were still being verified by experts. The preserved specimens are stored in press top glass vials and screw top jars. They are labelled giving details of species name, date, site number, grid reference, habitat, depth corrected to chart datum, preservative, collector and determiner's initials.

Since the arrival of the collection, the specimens have been sorted into Phyla and the appropriate records underlined on the card index when specimens are present. A list of specimens has also been compiled. As many as 286 different species of animals, 178 species of preserved algae and 98 pressed algae have been listed from Surveys I & II. There is, as yet, no card index for Survey III but this will be compiled from the data given in the dive records. Once this is done the specimens can be sorted.

Full information on the specimens collected from all three surveys will also be transferred to MDA record cards as part of a policy of more thorough cataloguing of Museum collections. It is important that information from such a survey is made accessible for inclusion into national recording schemes. The presence of the records and collection in the Dorset County Museum ensures that anyone with a specific interest in Dorset will readily find the data.

The collection and records will give valuable information to anyone carrying out similar or comparative studies. It will also give valuable information in the future when assessing the effect on the ecology of the Dorset coast of

threats such as sewage, fishing, collecting and the alien Japanese sea weed (Sargassum muticum). The latter was only recorded as a few drift plants during the survey but has since become established at Chapman's Pool and Kimmeridge.

It is hoped that this fine collection and its associated data will be seen and used by as many people as possible in the future.

Sarah A. H. Welton

References

Report of the First Dorset Underwater Survey June 1977 (revised April 1978) (not available)

Report of the Second Dorset Underwater Survey (March 1978)

Report of the Third Dorset Underwater Survey - preliminary report only (not available)

Copies of Report No. 2 can be obtained from : County Planning Department, County Hall, Dorchester, at a cost of £1.50 plus 25p postage and packing.

Mansel-Pleydell Herbarium

J. C. Mansel-Pleydell was President of the Dorset Natural History and Antiquarian Field Club from 1875 - 1902. He published the 1st edition of his "Flora of Dorsetshire" in 1874, and the 2nd edition in 1895.

The Herbarium formed by him was bequeathed to the Dorset County Museum in 1902.

The collection was arranged according to Nyman's Conspectus Flora Europeae. It was stored in open wooden boxes which were in turn housed in cupboards, and the specimens at some stage became infested by microlepidoptera.

In 1975, curation of the collection was initiated by Bill Grange who was then Assistant Curator. The sheets of Dorset material have been extracted, the debris removed, then replaced in new paper covers and stored in cardboard boxes. The present arrangement and numbering of families and genera is based on Clapham, Tutin & Warburg, Flora of the British Isles, first edition reprinted 1958, so that the material is readily located. Although the state of preservation of the specimens varies considerably, the information on the labels is especially valuable for date of collection and locality. The conservation of the Dorset material is now very near completion.

The remainder of the Herbarium is still in the original folders and boxes, 88 in all; this consists of specimens from certain areas mainly in Western Europe, and some of these specimens were provided by local collectors. This material has now to be conserved.

M. A. Smith

PASTORAL CARE AND CO-OPERATION BETWEEN DEVON MUSEUMS

There are at least 30 museums in the county of Devon. Although the majority have some biological material, only three have collections of any size. Those at Exeter are the largest followed by Torquay and then Plymouth. As with most museums, staffing levels bear no relationship to the size of the collections. Exeter has two members of staff wholly concerned with the natural sciences, Plymouth one and Torquay none. It should be noted that Torquay is administered by the Torquay Natural History Society, and is financed by subscription and grant aid. Exeter and Plymouth are administered by their respective District Councils and receive finance from public funds.

There are advantages in having only two museums and three curators active in the biological field. In particular the division of the county for the purposes of data collection and specimen collection is facilitated. The disadvantages however, far outweigh the advantages. The large size of the county (2591 sq. miles) contributes to the problems and coverage is far from complete, North Devon is especially isolated. The lack of a county service and the locations (all in the south) of the larger museums have produced an imbalance in the facilities available to resident and visitor alike. This situation has been further aggravated by the parochial attitudes of the major museums in the past, coupled with a lack of staff and money. Ever dwindling finances and no increases in staff are likely to stay with us in the near future. Parochial attitudes are breaking down however, and it is in the area of neighbourly co-operation that much progress is being made.

Exeter Museum has always been regarded as the 'County Museum' and as such is often asked for advice on problems of care, storage, documentation and display by the smaller museums. Such advice should be and is given where possible in order to protect and enhance the forgotten collections. The Area Museums Council for the South-West (AMCSW) has always been aware of the lack of expertise available to the smaller museums and has encouraged co-operation at all levels. Recently AMCSW has made available a sum of money to offset travelling expenses incurred during visits for the purposes of 'pastoral care'.

It should be stressed that at no time is Exeter Museum regarded as 'Big Brother'. Such an image can only be detrimental to the end product - good museums in Devon. Exeter Museum is looked upon as a parent museum, not interfering but there when needed. Information and assistance is only given when asked for, in the form of suggestions.

Initially the image of museums, as far as the public are concerned, is largely determined by the displays museums have to offer. In the context of natural sciences, the area of common ground in Devon is the local natural history gallery. These of course vary from a major gallery down to the corner of a room containing other materials. Close contact between museums is a way of realising the full potential of what are often extremely limited resources, thus minimising unnecessary duplication. The results of such co-operation are becoming evident in Devon. Rather than attempting to cover all aspects of the county's wildlife individual museums are concentrating on items and areas of particular relevance to their visitors.

Exeter was the first museum in the county to 'modernise' its displays. Areas chosen to illustrate the natural history were Eastern Dartmoor and the Exe Estuary. A similar project was planned at Plymouth Museum by David Curry - the areas chosen being Western Dartmoor and the River Tamar. Unfortunately cut backs have prevented this display from progressing past an advanced planning stage. Thus, the first two pieces of the jig-saw were in hand, if not in place. A unique opportunity to give this idea a boost presented itself in 1978. Torquay Museum received grant aid to re-display its natural history gallery. As a result of the enthusiasm of the president and the curator of the museum, finance was obtained from Torbay District Council and the AMCSW. Design staff were appointed under the JCP and STEP schemes operated by the Manpower Services Commission. The Committee of TNHS requested that Exeter Museum should supervise the project from its inception. The gallery is to be completed in two stages, the first phase of which, dealing with geology, is almost completed. The second phase includes the biological material and will cover southern Dartmoor and the River Dart.

By means of direct help and co-operation with colleagues the area of South Devon has been split up between the major museums. Each display will stand on its own merits as being representative of the county as a whole whilst still maintaining a local identity. Work at Exeter is complete, the project at Torquay will finish at the end of the year. It is hoped that Plymouth will commence their re-display next year.

Some of the smaller museums in the county also look towards Exeter for a positive display theme. The most recent case is that of the Fairlynch Museum and Arts Centre at Budleigh Salterton. This Museum had the all too familiar assortment of faded and dilapidated birds along with some specimens from other groups, but wanted to create a modern display with decent specimens, however small this might be. After discussion it became apparent to all concerned that in order to make the best use of the resources available only a small part of the natural history of the area should be chosen. Budleigh is situated at the mouth of the River Otter which has within its estuary a text book example of a salt marsh. Here was the ideal opportunity to present a small but useful display about a local habitat whilst at the same time adding to the awareness of the threats to wetlands in general. Exeter Museum has agreed to help with this display in any way it can, including acquisition and loan of specimens as well as the more detailed writing of scripts etc.

The importance of display in relation to other curatorial duties, especially outside our own institution, is debatable. It is my opinion that the experience we gain, the contacts we make and the knowledge of other collections we amass is ample return for the small amount of time we spend. In my own case this time amounts to approximately one day per week. As far as the museums in Devon are concerned consultation of this nature has produced more relevant displays, and hopefully a better service. A further spin-off is the interest shown by local people. In particular the District Council at Torquay is taking a far greater interest in its museum, to the point of increased financial aid.

Kelvin Boot
Ramm, Exeter.

THE BUTTERFLY COLLECTION OF THE ROYAL ALBERT MEMORIAL MUSEUM ITS HISTORY AND DEVELOPMENT

The first record of any exotic butterflies being received in the Royal Albert Memorial Museum was on 21st April 1904, when a number of unset butterflies from West Africa were presented by a Doctor Gray. This was followed on 4th May 1904, by twenty-six Indian butterflies being donated by a Miss Gray.

On 10th July 1917, the records show that four cabinets of insects were purchased which comprised "exotic butterflies and moths from the collection of Mr. Carter of Torquay". Three years later Col. Talbot presented an unset collection of Indian butterflies and in 1923 collections of Burmese and European butterflies were donated by C. G. Dawkins and Lady Davey respectively.

Between 1926 and 1928 various small collections were received from donors comprising African, American, European and Burmese butterflies, and in December 1930, fifty-six butterflies were received from a Major A. B. Gay of Lapford, Devon. This was to prove the first of many donations, extending over more than thirty years, from a man who was to work at the Royal Albert Memorial Museum in a voluntary capacity from 1932 and who, in 1936, was to become Assistant Curator with direct responsibility for the entire natural history collections.

From the earliest days, the exotic butterflies were housed in various cabinets in the natural history gallery, and to these cabinets the public had freedom of access. For this reason a great number of the original insects became badly damaged, so much so that they had to be discarded. In fact it is doubtful if many of them have survived to the present day.

It was one of the first duties of Major A. B. Gay to take the butterflies from public view; to obtain a set of volumes entitled "The Macrolepidoptera of the World" by Doctor A. Seitz, and commence building up a collection of world butterflies following the classification as laid down by Doctor Seitz.

Here it should be said that Major A. B. Gay was a man of independent means with no living relatives, consequently from his own pocket he purchased, over a period of many years, a great many rare and valuable specimens for the Museum, in addition to fourteen 30-drawer cabinets in which to house the collection.

Throughout his period of office Major A. B. Gay was instrumental in obtaining for the museum such outstanding collections as those of Joicey, Hebbert, Symington, Solley and Hall, to name but a few, plus many thousands of specimens presented by the Trustees of the British Museum of Natural History in London.

In 1955 Major Gay was able to arrange for Captain G. C. Woodward's extensive collection of exotic butterflies, housed in twenty-six cabinets, to be donated to the museum, and in 1958 he was equally successful in obtaining the presentation of the F. Blanchford collection of exotic butterflies in eight cabinets.

At one period the collection contained 27 type specimens together with 34 co-types. However, it was considered desirable that the types, with one exception, should be housed in the National Collection and consequently in 1935 they were passed to the British Museum of Natural History for safe custody. Of the co-types 27 specimens were presented to the museum by Major A. B. Gay.

Up to the time of his death, in March 1959, Major Gay had classified and arranged in the consolidated collection all of the butterflies so far received, with the exception of the Woodward and Blanchford collections.

In June 1959, I was appointed Curator of Natural History and, in addition to my routine work, I had the responsibility of classifying and arranging the Blanchford collection - which was the smaller of the two - and this was finally absorbed into the consolidated collection in 1965.

During this time also, six 30-drawer cabinets were purchased to accommodate the expanding consolidated collection. The money for the purchase of these being supplied from the Major A. B. Gay Bequest Fund, and partly from the money raised by the sale of obsolete non-uniform cabinets donated with insects over a period of many years.

Between 1965 and 1973 the American and African species of butterflies in the Woodward collection had been classified and absorbed into the museum collection, but it was not until 1976 that the Woodward Indo/Australian and Palearctic butterflies, numbering 14, 933 specimens, were classified and incorporated, and the main consolidated collection completed.

The classification and incorporation of the Blanchford and Woodward collections necessitated a massive and complete re-arrangement of the consolidated collection, and as this work progressed so it became imperative to purchase a further sixteen 30-drawer cabinets, the money for which was, in the main, provided from a generous bequest made to the museum by the late Charles Henry William Griffiths of Taplow, Bucks.

As it stands today, the museum collection houses 58, 503 specimens distributed in 1, 080 drawers and, because of its magnificent range of species, varieties and the many rarities it contains, ranks as one of the finest collections of world butterflies ever assembled in Great Britain.

The museum collection is always made readily available to professional entomologists and serious students of world lepidoptera, but in all the circumstances, it must be restricted in its use to such specialists.

C.V. Anthony Adams,
Curator of Natural History, June 1959 - Jan. 1979
Ramm, Exeter.

NB: A list of genera, excluding British material, consisting of 113 pages has been prepared and is available from the Royal Albert Memorial Museum on request. Please include £1 to cover postage and packing.

The sad end of old blue

THE MOST secret butterfly site in Britain, known only to be "somewhere in Devon," is still on the top secret list although its most illustrious occupant is now almost certainly extinct.

Insect experts say it may be another year before they can reveal the last hiding place in Britain of the Large Blue butterfly, or Maculinea Arion.

In its final resting place in Devon, the last colony of 22 Large Blues produced their eggs as usual this year, but dismayed entomologists found that none of the eggs was viable — and that spelt the sad end of an insect which has topped the "most endangered" list for 300 years.

Successive droughts followed by poor weather during the hatching period provided the final nail in the mini-coffin of the Large Blue which is slightly smaller than its common Tortoiseshell cousin.

Easy catch

One of the butterfly's problems was that it did not mind people. "It was incredibly easy to catch and one collector could get through the whole lot on one site in a day," Dr. Jeremy Thomas of the Institute of Terrestial Ecology in Dorset said today.

"They did not in this case because we wardened the site all the time. It has always been a rare specimen and there have never been more than 90 colonies in the past 300 years.

"The main factor in its extinction is that their habitat changed in small ways and became much less stable. With the population already low and then nobbled by the droughts they were just unable to cope."

Good condition

Despite the demise of the Large Blue, the Nature Conservancy Council, who have maintained an intensive research programme on the species since 1972, intends keeping the Devon site in good condition in case an unknown survivor should turn up.

Consideration will also be given to re-introducing the butterfly from the Continent. However, the insect is rare there too and there is some dispute in butterfly circles as to whether the British Large Blue is in fact the same as the European Large Blue.

Express and Echo 12/9/79

THE MONTAGU COLLECTION OF MOLLUSCA AT THE ROYAL ALBERT MEMORIAL MUSEUM, EXETER

George Montagu (1753-1815) is regarded as one of the British naturalists responsible for establishing the foundation of modern scientific study by assisting in the identification of the British fauna. Although best known for his work in British ornithology he also contributed much to marine zoology, terrestrial Mollusca and British Mammalia. One of Montagu's chief works was his Testacea Britannica (1) for which he used material from his collection in the descriptions and coloured places. A biography has been published on Montagu and his work by Cleevely. (2)

Montagu's collection of Mollusca has been distributed between the B. M. (N. H.) and the RAMM, Exeter. In November 1874 part of Montagu's collection was given to the RAMM as a bequest from Henry D'Orville, Montagu's natural son.

The majority of the collection is housed together, however the original catalogue showed that many specimens were missing. (Most of these have now been found) In most cases a label bearing Montagu's original determination still exists. There is no information remaining for the majority of the specimens on the locality of collection. Montagu did not himself select holotypes and consequently much of the type material consists of a group of shells or syntypes. In a few cases lectotypes have been subsequently selected.

Montagu authored many species and there are several Montagu type specimens not accounted for. It can be very difficult to determine type material from historical collections but a preliminary look through the collection has revealed some probable type material. In view of this and the number of enquiries we receive about the collection, a provisional list of the Montagu type specimens believed to be at the RAMM has been prepared (those marked with an asterisk are recently found specimens). Further work on the collection by specialists may reveal more type material and verify the status of that recently found.

The provisional list of type material is given below with the Exeter accession number, Montagu's original name, number of specimens and the current biological name.

List of Type Specimens of Mollusca in the Montagu Collection housed in the Royal Albert Memorial Museum, Exeter 22/8/1979

British Gastropods (Marine)

cat. no.	Montagu's name	no.	species
* 4170	Patella apertura, Mont. 1803	1	Diodora apertura (Mont
4175	Trochus tumidus, Mont. 1803	3	Gibbula tumida (Mont)
4178	Trochus umbilicatus, Mont. 1803	12	Gibbula umbilicalis (da Costa)

cat. no.	Montagu's name	no.	species
* 4187	Turbo vinctus, Mont. 1803	3	Lacuna vincta (Mont)
4188	Turbo quadrifasciatus, Mont. 1803	5	L. vincta (Mont)
* 4191	Turbo canalis, Mont. 1803	2	L. vincta (Mont)
4186	Turbo crassior, Mont. 1803	3	L. crassior (Mont)
4225a	Turbo truncatus, Mont. 1803	3	Acmea subcylindrica (L.)
4211	Turbo vitreus, Mont. 1803	5	Cingula vitrea (Mont.)
* 4219	Turbo striatus, Mont. 1803	5	Cingula semicostata (Mont.)
* 4213	Turbo cingillus, Mont. 1803	4	Cingula cingillis (Mont.)
4215	Turbo zetlandicus, Mont. 1815	3	Alvania zetlandica (Mont.)
4222	Turbo punctura, Mont. 1803	4	A. punctura (Mont.)
* 4210	Helix labiosa, Mont. 1803	4.50	Rissoa membranacea (J. Adams)
4272	Turbo unifasciatus, Mont. 1803	4	Barleeia unifasciata (Mont.)
4214	Turbo ruber, Mont, 1803	3	B. unifasciata (Mont.)
4314	Helix subcarinata, Mont. 1803	4	Tornus subcarinatus (Mont.)
4235	Murex tubercularis, Mont. 1803	2	Cerithiopsis tubercularis (Mont.)
* 4231	Murex adversus, Mont. 1803	3	Triphora perversa (L)
* 4232	Turbo unicus, Mont. 1803	2	Graphis albida (Kanmacher)
* 4249	Cypraea voluta, Mont. 1803	11	Erato voluta (Mont.)
4248	Cypraea europaea, Mont. 1808	11	Trivia monacha (Mont.)
* "	Cypraea bullata, Mont. 1803	1	T. monacha (Mont.) -young
* 4243	Bulla haliotoidea, Mont. 1803	4	Lamellaria perspicua (L.)
4266	Murex muricatus, Mont. 1803	1	Trophon muricatus (Mont.)
4259	Buccinum minimum, Mont. 1803	3	Chauvetia brunnea (Donovan)
4250	Murex turricula, Mont. 1803	6	Lora turricula (Mont.)
4252	Murex rufus, Mont. 1803	1	L. rufa (Mont.)
4255	Murex attenuatus, Mont. 1803	2	Mangelia attenuata (Mont.)
* 4251	Murex septangularis, Mont. 1803	1	M. coarctata (Forbes)
4253	Murex nebula, Mont. 1803	6	M. nebula (Mont.)
4257	Murex gracilis, Mont. 1803	1	Philbertia gracilis (Mont)
4258	Murex purpureus, Mont. 1803	2	P. purpurea (Mont.)
4254	Murex linearis, Mont. 1803	2	P. linearis (Mont.)
4073-87	Bulla obtusa, Mont. 1803	13	Retusa alba (Kanmacher)
4241	Turbo interstinctus, Mont. 1803	3	Chrysallida obtusa (Brown)
* 4273	Turbo decussatus, Mont. 1803	1	C. decussata (Mont.)
4240	Turbo spiralis, Mont. 1803	3	C. spiralis (Mont.)
* 4238	Turbo unidentatus, Mont. 1803	1	Odostomia unidentata (Mont.)
* 4236	Turbo elegantissimus, Mont. 1803	6	Turbonilla elegantissima (Mont.)
* 4101	Voluta bidentata, Mont. 1808	2	Leucophytia bidentata (Mont)
* 4100	Voluta denticulata, Mont. 1803	3	Phytia myosotis (Drap.) var denticulata, Mont.

British Gastropods (Land and Freshwater)

4123	Turbo laminatus, Mont. 1803	7	Marpessa laminata (Mont.)
4124	Turbo biplicatus, Mont. 1803	2	Lacinaria biplicata (Mont.)
4140	Helix cantiana, Mont. 1803	3	Monacha cantiana (Mont.)
4145	Helix caperata, Mont. 1803	9	Helicella caperata (Mont.)

	cat. no.	Montagu's name	no.	species
	British Bivalves (Marine)			
*	3858a	Mactra triangularis, Mont. 1803	1	Astarte triangularis (Mont)
	3894-9	Tellina flexuosa, Mont. 1803	10	Thyasira flexuosa (Mont.)
*	3903-4	Tellina radula, Mont. 1803	2	Lucinoma borealis (L)
	3905-7	Tellina rotundata, Mont. 1803	3	Diplodonta rotundata (Mont)
	3908-17	Mya suborbicularis, Mont. 1803	11	Kellia suborbicularis (Mont)
	3918-20	Cardium rubrum, Mont. 1803	3	Lasea rubra (Mont.)
	3881-4	Cardium elongatum, Mont. 1803	4	Cardium ovale, Sowerby
	3847	Venus minima, Mont. 1803	2	Gafrarium minimum (Mont.)
	3848	Venus triangularis, Mont. 1803	2	G. minimum (Mont.)
	3804-9	Venus pullastra, Mont. 1803	6	Venerupis pullastra (Mont.)
	3810-4	Venus perforans, Mont. 1803	5	V. pullastra (Mont.) var perforans, Mont.
	3729	Donax castanea, Mont. 1803	2	Ervilia castanea (Mont.)
*	3758-60	Tellina squalida, Mont. 1803	3	Tellina squalida, (Mont.)
	3730	Mactra tenuis, Mont. 1803	2	Abra tenuis (Mont.)
*	3731-5	Ligula prismatica, Mont. 1803	5	A. prismatica (Mont.)
*	3780-2	Mactra cinerea, Mont. 1808	3	Mactra corallina (L) var cinerea, Mont.
	3776-7	Mactra truncata, Mont. 1808	2	Spisula solida (L) var truncata, Mont.
*	3695-6	Mya pubescens, Mont. 1803	2	Thracia pubescens (Mont.)
	3693	Mya distorta, Mont. 1803	1	Thracia distorta (Mont.)
	British Bivalves (Land and Freshwater)			
	4029	Mya ovalis, Mont. 1803	1	Unio tumidus, Philipsson var ovalis Mont.
*	4202	Turbo dispar. Mont. 1811	1	Littorina dispar. (Mont.)
*	4223	Turbo bryereus, Mont. 1803	2	Rissoina brye rea (Mont.)
*	4239	Helix decussata, Mont. 1803	2	Rissoina decussata (Mont.)
*	4284	Tellina laskeyi, Mont. 1808	2	Psammobia laskeyi (Mont.)

REFERENCES

(1) MONTAGU, George. Testacea Britannica or Natural History of British Shells, marine, land and freshwater. London 1803. Supplement 1808.

(2) CLEEVELY, R.J. Some background to the life and publications of Colonel George Montagu (1753-1815). J. Soc. Biblphy nat Hist. (1978)8(4):445-480.

(3) NASH, R. and ROSS, H. The Type Method and the "Species". B.C.G. Newsletter No. 9 29-34.

Rosemary Brind
RAMM, Exeter

THE BIRD COLLECTION OF THE ROYAL ALBERT MEMORIAL MUSEUM, EXETER

The bird collection at the Royal Albert Memorial Museum, Exeter, has long been recognised as one of the finest in the country. Containing approximately 9,000 specimens the collection represents a valuable reference and research resource. The collection is world-wide in coverage and of particular interest are the collections from the Americas and Australasia. Although the majority of the specimens have come to Exeter direct from individual collections a large number are from the collections previously housed in other museums. This reflects the collecting policy of the RAMM, in the past. Exeter was still actively collecting foreign material at a time when many other museums were disposing of it. The present collecting policy is somewhat different. Foreign material is 'passively' collected i.e. by donation only and not by purchase or other active methods.

The majority of the collection is in the form of study skins. These are housed in one room in standard cupboards on metal racking. Each cupboard contains drawers of differing sizes enabling even the largest birds to be incorporated into the system. Each specimen is protected from dust and adjacent specimens by means of polythene tubing. Mounted specimens are by their very nature more difficult to store conveniently. Various rooms containing cupboards and boxes house this part of the collection. Within this system the birds are theoretically arranged and named according to the B.M.(N.H.) catalogue. Since the original sorting in the 1940s many more specimens have come into the museum. The existing system was not always adhered to with the result that many birds are in the wrong place. In addition nomenclatural changes and alteration of taxonomic positions have further diminished the ease of retrieval and hence the usefulness of the collection.

This haphazard arrangement is also reflected in the various lists and catalogues pertaining to the collections. The accession registers contain the all too familiar 'see attached list", what list? The 'master catalogue', constructed by Willoughby Lowe in the 1940s has not been kept up to date with either acquisitions or disposals.

In order to restore this collection as a useable resource, I have embarked upon a complete re-storage and re-cataloguing project. Much of the collection, including all of the study skins, have recently been fumigated by Rentokil using Methyl Bromide. Continuous 'protection' is afforded by the use of a combination of PDCB and Thymol paper. It is hoped a further fumigation will take place in the near future enabling the remaining material to be absorbed into the main collection. Exeter is at present investigating the possibilities of installing its own fumigation chamber. Such an asset will help clear the backlog and provide for the immediate cleansing of new material in the future. Infestation will then be reduced to the absolute minimum. For economic reasons storage will follow the existing system for the present. The possible removal of the entire collection to an adjacent building precludes expenditure on storage at this stage.

MDA cards are being used for recording and documentation purposes. At least my successors will know which sources I used for reference. The taxonomic arrangement is as laid down in Gruson. Identification is facilitated by the use of the most up to date monographs and regional works available - an ever present drain on finances.

The large size of the collection precludes the publication of a complete catalogue. As each group is processed relevant workers and institutions will be circulated with the resulting information. In addition I intend to place a summary of these results in the BCG Newsletter for the information of colleagues. The first summary is included with this article.

References: B. M. (N. H.). Catalogue of the Birds in the British Museum (Natural History) 1874-1895

Gruson and Forster. Checklist of the Birds of the World. Collins. 1976.

Bower Birds - F. Ptilonorhynchidae

Thirty-two specimens representing five genera and eight species.
Species present are:-

Ailuroedus crassirostris (Paykull)
Amblyornis macgregoriae DeVis
Amblyornis subalaris Sharpe
Sericulus aureus (Linn.)
Sericulus chrysocephalus (Lewin)
Ptilonorhynchus violaceus (Vieillot)
Chlamydera maculata (Gould)
Chlamydera cerviniventris Gould

Birds of Paradise - F. Paradisaeidae

One hundred and eighteen specimens representing fifteen genera and thirty species.
Species present are:-

Loria loriae Salvadori
Manucodia ater (Lesson)
Manucodia chalybatus Pennant
Phonygammus keraudrenii (Lesson et. Garnot)
Ptiloris paradiseus Swainson
Ptiloris magnificus (Vieillot)
Semioptera wallacei (Gould)
Seleucidis melanoleuca (Daudin)
Paradigalla carunculata Le sson
Paradigalla brevicauda Rothschild et. Hartart
Drepanornis albertisi (sclater)
Epimachus fastosus (Hermann)
Astrapia nigra (Gmelin)

Astrapia splendidissima Rothschild
Astrapia stephaniae Finsch et. Meyer
Astrapia rothschildi Foerster
Parotia sefilata (Pennant)
Parotia carolae Meyer
Parotia lawesi Ramsay
Pteridophora alberti Meyer
Cicinnurus regius (Linn.)
Diphyllodes magnificus (Pennant)
Diphyllodes respublica (Bonaparte)
Paradisaea apoda Linn.
Paradisaea raggiana Sclater
Paradisaea minor Shaw
Paradisaea decora Salvin et. Godman
Paradisaea rubra daudin
Paradisae guiliema Cabanis
Paradisaea rudolphi (Finsch)

Many of these specimens are accompanied by data. Others, notably zoo specimens and those imported for the plume trade, are not.

The collections of Ptilonorhynchidae and Paradisaeidae are made up from donations made by the following people:-

Cooper, Dr. H.J.	Lyme Regis
Downall, Miss	
Frood, Dr.	Topsham 1907
Gunn, Mr. T.E.	Norwich 1941
Heath, Mr. J.	Bristol
Hynes, Mrs D.M	
Ipswich Museum	1960
James, Mrs.	Knowle, Devon 1948
Lightbody, Mr. J.H.	Budleigh Salterton 1919
Lyons, Mr. P.E.	London 1947
Maxwell, Mr. P.H.	London et. Torrington 1939, 1940, 1946, 1949
Milton, Mr. A.M.	1940
Nicholls, Mr. R.P.	Kingsbridge 1915
Norwich Castle Museum	1956
Peard, Miss.	London 1938
Peek, Sir W. Bart.	Rousdon 1907
Peel, Mrs C.M.V.	1932
Pickard, Col. R.	
Primley	(Paignton) Zoo 1940
Rashleigh, Mrs	Okehampton
Rowan, Mrs H.B.	Hemyock 1931
Smee, Mr. W.J.N.	Exeter
Stamfordham, Lord	St. James' Palace 1916
Veitch, Sir H.J.	Chelsea 1924
White, Mrs	
White, Vc. Adml. R.W.	Exeter 1924
Whiteley, Mr. H.	1940
University College of the South West	1906

Anybody requiring further information about the above or the collection itself, or indeed anybody able to supply information to me, is welcome to write to:-

Kelvin J. Boot,
Curator of Natural History,
Royal Albert Memorial Museum,
Queen Street,
Exeter.

WARLEIGH POINT WOOD NATURE RESERVE AND NATURE CENTRE, DEVON

In 1965 the Devon Trust for Nature Conservation was offered the lease of Warleigh Point Wood as a Nature Reserve. The wood, some 12.8 ha. in area is a triangular spur of deciduous woodland situated $1\frac{1}{2}$ miles north of the City of Plymouth on the confluence of the River Tamar and River Tavy. It is bounded on one side by the River Tavy and on the other by the Plymouth to Gunnislake railway branch line.

It was apparent from the outset that the area was of great ecological importance as it was divided into areas of different types and stages of deciduous woodland, illustrating clearly the effects of man's management.

During the preparation of the original management plan it was concluded that the Reserve contained sufficient variety of habitats to be of great educational value to all schools and colleges within the Plymouth area. It was decided therefore to develop the woodland for educational field studies, provide facilities for the teaching of elementary ecology and to establish a permanent Nature Trail.

Close co-operation between the Devon Trust and the staff of the Plymouth City Museum was initiated at an early stage and the latter prepared a report on the educational potential of Warleigh Point Wood. This report, among other things indicated the possibility of renting the disused Tamerton Foliot Railway Station a fine limestone building adjacent to the reserve.

After prolonged negotiations with British Rail the Plymouth City Museum, under the auspices of its Schools Museums Service was granted the lease of two rooms and toilet facilities on the ground floor of the disused station to establish a Nature Centre.

Using grant aid from the LEA work began on transforming and equipping the rooms. One room (the old waiting room) was converted into a classroom with seating accommodation for 30 children, the other (the ticket office) became an exhibition room with displays demonstrating the flora and fauna of the Reserve.

A Nature Trail was planned and laid out around the Reserve to include as many ecological features as possible, clearance work being carried out by volunteers from a local Secondary School.

A trail booklet was also prepared to serve as a guide to school teachers bringing parties to the Reserve. It noted interesting points of field study which would suggest to the teacher possible schemes of work for their pupils. Descriptive boards were erected around the trail but these were soon defaced by vandals; a major problem, as the Reserve is situated near two large housing estates.

Just inside the entrance to the Reserve there is broad-leaved coppice which is being managed on a coppice regime. Here children can learn

about this ancient form of silvicultural management and study the effects of this management on wildlife.

Adjacent to the coppice is an area of scrub which was once woodland, clear-felled in 1964. This area is particularly useful as an example of plant succession and colonisation. Photographic records keep the children informed of its continuing development.

Along the northern boundary of the Reserve is a belt of mature broad-leaved woodland which demonstrates many features of ecological interest including a stream and a pond. These aquatic habitats provide an ideal opportunity to compare the adaptations which organisms adopt to survive in flowing and still water.

As the Reserve is situated at the confluence of two major rivers it provides an ideal situation in which to study the ecology of a boundary zone between a purely terrestrial environment and that of the river and sea.

The first school party visited the Nature Centre in September 1967, a standard procedure for using the facilities being worked out in advance. The walk around the Nature Trail is preceded by a talk from the Guide Naturalist on the features one would expect to see. Time is also spent on viewing the exhibits at the Centre.

The majority of visits are made by local Primary Schools who after a preliminary visit usually carry out simple project work such as quadrats, pond study, tree study, shore study etc. To cope with the large influx of school visits during the summer months a qualified teacher has been employed as a Guide Naturalist. Teachers' courses are also organised in conjunction with the local Teachers Centre.

Despite large numbers visiting the Reserve during the summer term there is little sign of damage to animal and plant populations. This is undoubtedly due to the close supervision of the children and the instruction they receive on biological conservation before entering the Reserve.

After three years it was found necessary to expand the Nature Centre facilities. To this end a further lease was taken on the two remaining rooms on the ground floor of the station which were converted into an office and a workshop and tool store.

The Nature Reserve is leased and managed by the Devon Trust for Nature Conservation with the Keeper of Natural History at Plymouth City Museum acting as Warden. The Reserve is not open to the public (except by appointment) but school parties can visit at any time of the year. Management of the reserve (carried out by local Secondary School pupils and by the Plymouth Polytechnic Branch of the British Trust for Conservation Volunteers, under the supervision of the warden) seeks

a) To conserve examples of all the main types of woodland habitat and animal populations represented in the Reserve.

b) To set aside certain areas for long-term study.

c) To encourage the establishment of a diverse broad-leaved woodland through the management of the existing species and by introductions.

d) To carry out maintenance of the permanent Nature Trail.

The administration of the adjoining Nature Centre is carried out by the Keeper of Natural History at the Plymouth City Museum with financial assistance being provided by the Schools Museums Service of the Devon County Education Authority.

This venture has achieved more than was originally hoped. Quite apart from the undoubted educational success it has demonstrated what can be achieved by mutual understanding and co-operation between various bodies and organisations. It has provided and will continue to provide not only a mental and instructional outlet, but also physical appreciation of all that is involved in the conservation and interpretation of our countryside.

David Curry
Keeper of Natural History
Plymouth City Museum

NEW NATURAL HISTORY DISPLAYS IN PREPARATION AT BRISTOL CITY MUSEUM

At Bristol City Museum, we have been working on a new gallery of British Natural History for several years. It is still not finished and will not be opened until next year (1980) but we thought it would be useful to give an account of our aims and of our experiences so far. We would be very pleased to see anyone who is interested and to show them the layout and construction details. We may also, perhaps get some useful comments from others who have been through the same 'mill' recently.

Our new Natural History displays were scheduled to follow the new displays of South Western British Archaeology which were completed in 1970. For various reasons, a positive start on our gallery was delayed until 1973 when the initial brief was eventually written. This covered the displays proposed for the three inter-connecting galleries running along the northern side of the two ground floor halls in our main, Queens Road, building. The back gallery contains our foreign animal displays. The other two will be used for the British displays. It is the displays in the front gallery, nearest the main entrance, which are under construction at the moment. The aim is to display a selection of British plants and animals in an ecological context. The display areas are based on a series of different habitats relevant to our local area. The displays at present under construction are based on marine and freshwater habitats; the other gallery with British material will cover terrestrial habitats.

We are very aware that our displays will not give a balanced or comprehensive view of ecological relationships in the selected habitats. The most we really hope to do is to show species which visitors might be able to see for themselves, displayed in instantly recognisable settings, with a brief explanation of the constraints of the habitat and an indication of the ways of life involved. To this end, each display area has a large painted backdrop. The paintings were executed for us by a freelance artist, Tim Rossiter, who was able to work for us under a STEP scheme, and was subsequently kept on as a temporary member of the Museum's staff for a further three months. The views shown in the paintings were composed with reference to photographs of appropriate localities, but only in the case of Chew Valley Lake and the Severn Estuary, was the view of a particular place represented.

The principal habitats described are - 'Open Sea', 'Shallow Sea', 'Coastal Birds', 'Rocky Shore', 'Sandy and Muddy Shore', 'Estuary, Reservoir and Lake' and 'Stream, River and Canal'. We have been flexible in defining our local area. Although we have no real sea nearby, only the Severn Estuary, there are many birds to be seen on the estuary which may come from breeding grounds on the North Cornish coast or on (what was) the Pembrokeshire coast (now in Dyfed). The same applies to the occasional young Grey Seal which comes our way.

Accordingly our marine displays encompass the North Cornish coast, which provides the backdrop for our Coastal Birds display and the Welsh side of the Estuary represented by a view based on the Gower Peninsular which forms the backdrop to the Sandy and Muddy Shore case. For the visitor to the gallery, this 'local area' will be defined by a relief map showing the country from Gloucester down to the 'Pembrokeshire' islands and Tintagel on the other side, with the estuary and the Bristol Channel as the central feature. The map will be displayed with transparencies of places of particular interest, named on the map and marked with pea lamps.

The layout of the gallery is essentially a figure of eight with access between the two loops of the eight leading from marine displays in one to freshwater and damp pasture displays in the other. Access into the gallery is from either end though the principal entrance is that near the front of the building and leading into the marine sections, with the relief map in the centre. Eye-catchers in this section are two full-size models, one of a small section of a Cornish cliff, with a view out to sea and the other of a sea cave with a Grey Seal in it. The Cornish cliff scene is set in late winter so we just have a few Guillemots on the ledges 'prospecting' before the breeding season which has saved having to prepare too many mounted specimens. The seal in the cave has its head away from the visitor, pointing towards the mouth of the cave. This gives a very good view of the tail and hind legs and disguises the fact that the head of this old specimen is not as well mounted as might be wished. It is a disadvantage in a display which is meant to be natural that the fur of the animal is of course not wet as it might well be in the wild and wet fur would look a different colour from dry fur. We will, however, be displaying two colour photographs of seals near Skomer to try to show how they would really look (allowing for the vagaries of photographic colour reproduction). The two models were made for us by Derek and Patricia Freeborn of East Horsley, Surrey, who accompanied museum staff on a visit to the Tintagel region to choose suitable coastal rocks (near cliffs with sea bird colonies) from which they took latex moulds (with the permission of the land-owner of course). The making of the moulds took a week, and were used to make fibre-glass models of the Guillemot cliff and the Sea cave and another rock surface on which we will display models of coastal plants in flower such as Thrift and Sea Campion.

These coastal plants and other plant models to be used in the gallery, have been made by Sonia Storey of the Wax Flower Studios at Clevedon, Avon. (Her work was displayed at the 1976 Museums Association Conference at Bristol). The models are scientifically accurate and much more robust than traditional wax ones and are aesthetically very pleasing. The leaves and stems can be moved gently into new positions which they then retain. When we install them in the finished cases we will be able to arrange the leaves in relation to the predominant light source in the case which should make them look even more convincing.

We already have a marine aquarium and freshwater tanks on display and these will be transferred to the appropriate sections of the new gallery. The working area behind the freshwater tanks forms one side of the 'neck' of the figure of eight layout of the gallery and is a triangular space. We had hoped to have the marine tank in one of the other sides of the triangle thus giving an economical, common working area for both marine and freshwater tanks which would face different ways into their respective appropriate display sections but unfortunately we were not

quite able to fit these into the space available in the gallery and the marine tank with its work area is separate.

The central display in the freshwater section will be an oval free-standing unit containing a life-size model of a small section of a 'rhine' - this is the local name for the drainage ditches which provide a rich habitat in the local peatlands of Somerset and Avon. Plant models made by Sonia Storey will be set into the model by Derek and Patricia Freeborn. In the same display unit, there will be a more formal display of animals of damp pasture and a feature of this display will be a cast in fibre-glass of the trunk of one of the pollarded willows which are another, but fast disappearing, feature of the levels. We obtained an actual willow tree from a farmer who wanted it out of the way and an Alder trunk for a model in another case from a local peat firm who were most co-operative and who regularly remove trees (unfortunately) to open up land for further peat digging.

The freshwater section of the gallery will also have a relief map. This map is of a smaller area of country from Gloucester to the foot of the Quantocks. It will emphasise the local wetlands with water courses picked out in blue paint fluorescent under ultra-violet light. This makes a striking exhibit but the clear blue of the Severn Estuary on this map is more reminiscent of one's idea of the Mediterranean in summer than the murky reality of our estuary. It would not be physically possible to mark all the water courses down to all the ditches round individual fields but one might say that we had as many put in as we could afford. Beside this relief map will be a panel of Cibachrome colour transparencies and text which together will draw attention to conservation issues affecting wetlands in a local context. The purchase of this map which (like the other one) was made for us by the Freeborns, was grant-aided by the Nature Conservancy Council.

The construction of the main structures housing the displays was started in 1977. The work has been done by our own carpenters and is now substantially complete although the facias have still to be finished, the glass doors installed and the false ceiling put up. The two central features will be constructed later.
The cases have all been built on a continuous platform at a height of 460mm (1'6" - the gallery is being built in Imperial units). The front openings of the cases extend up to 2.29m (7'6") from the floor but the interiors up to 2.9m (9'6") from the floor. The fronts of the cases are curved to follow the line of the figure of eight design. The glass will be straight, in the form of hinged doors and unhinged panels set at angles where they abut on one another. The curved fronts of the cases has made for a great deal of extra carpentry work but several visitors have commented on the peaceful and natural effect that the curves give to the gallery and we feel that the extra effort will have been worthwhile. One point about the construction which we have had to watch concerns fumigation. We plan to fumigate our stores and displays periodically with methyl bromide and for this it is important not to have any 'dead' (i.e. totally enclosed) space in structures and fittings. This is because the gas may not penetrate freely into the space for effective fumigation and, worse still, if it does get in, it may linger on when the rest of the gas has been evacuated at the end of the fumigation process. Also because of the proposed use of methyl bromide, we will not be able to use conventional foam-rubber backed carpet tiles in the gallery. We understand that canvas-backed tiles are available which would be compatible with the gas.

Our gallery displays have, for various reasons, been a very long time in construction. To help us in the co-ordination of the various inter-related processes involved, ranging from design, construction and art work to photography, taxidermy and script writing, our corporation Management Services Department was called in at the end of 1977. Since then we have held progress meetings at roughly monthly intervals involving our Museum Director, Management Services, Design, Construction, Graphics, Natural History Conservation and Natural History curatorial staff. These meetings have made it possible to examine the reasons for various delays which have occurred, though not necessarily to solve them. Management Services drew up (more than once) a network diagram for the entire process of setting up the gallery. This showed the critical path activity, throughout most of the work to be the carpentry effort. The network diagram proved a most useful checklist for our progress meetings and it did set out clearly for reference, the dependence in time of one activity on another. It was much less useful as an indication of progress on the curatorial and design sides since the different jobs tend to be done in small batches. For instance, possible sources of photographs for reproduction were approached but the photographs which were forcoming were relevant to many different displays in the gallery. This left many gaps to be filled from other sources although the diagram suggested one would collect the photographs case by case. Eventually Management Services produced several successive bar charts which were much simpler and therefore more effective in use.

The main structures are complete now and also the large backdrop paintings. We are now involved in devising the settings for the specimens within the cases. Except in the models already described, the mounting of the specimens and the fittings will be formal, not naturalistic. Nevertheless they have to be sympathetic in colour and shape to the backdrop in each case. Trying to ensure that this is so but that justice is also done to the specimens themselves has necessitated a lot of discussion between curatorial and design staff. Natural History staff insist that the mounted birds and mammals should have accessible fixings so that they can be replaced later on if necessary; in most instances they will be mounted on separate bases which will be recessed into the main display surfaces. We have found that it is much easier to plan arrangements with the actual specimens of say, mounted birds to move around to find the best layout. A 'chicken and egg' problem arose early on when the design staff wanted to know the attitudes in which the birds would be mounted before they designed a case setting and the curatorial staff wanted to visualise the setting before recommending the attitudes in which the birds should be mounted. Probably it is best to prepare the material with a good variety of attitudes, in advance and then an acceptable arrangement can almost certainly be found with a little trial and error.

The specimens we will be displaying include mounted and freeze-dried mammals and birds, freeze-dried reptiles and amphibia and models in fibre-glass of marine and estuarine fish. Some, but not all the birds and mammals, have been mounted in our laboratories but all the freeze-dried specimens have been prepared there.

The fish models have been made by a free-lance model-maker, Avril Johnson, and painted by Tim Rossiter. We shall, of course, have live fish and invertebrates in the aquaria. There will be a few insects on display and mollusc shells, and freeze-dried crustaceans. The model plants have already been mentioned. We also anticipate using seaweeds treated with glycerine. To illustrate soft-bodied invertebrates and the soft parts of molluscs, we have a series of specially painted pictures by another fre elance artist Phillip Weave. There are several of these covering marine and freshwater organisms; they will be displayed as Cibachrome backlit transparencies. Diagramatic pictures of organisms on rocky shore, sandy shore and a pond respectively, by a different artist, will also be shown this way . To further illustrate species not represented by Museum specimens, we have reproduction rights for colour photographs of marine plankton and other organisms and freshwater life, from Oxford Scientific Films Ltd., Heather Angel and Dr. D. P. Wilson. Photographs of nesting sea birds have come from Derek and Marjorie Parrish of Dorset and Studio Jon of Fishguard. Gloucester Museum has kindly allowed us to copy some of their photographs of fishing by traditional methods in the Severn Estuary. Other photographs have been lent by friends in the museum profession. Photographs of suitable quality of local habitats have proved difficult to get. Many were apparently available but so often seemed not quite to show what was wanted or would not have stood enlargement up to 8" x 10" or 10" x 12" which we require. Several of the tourist boards were helpful in sending photographs for approval and some of the photographs were of very good quality but they did tend to have too much 'human interest' for our purpose. We have been surprised at the time and effort involved in assembling suitable photographs and this job is still not complete.

The lighting of the cases has not yet been worked out. It will be mainly by fluorescent tubes mounted on a track inside the front of each case with a limited use of 'spots' to add 'punch' without too much heat. Ideally, of course, the colours of the interiors would have been chosen using the lighting tubes, which would eventually be used and we are hoping that no difficulties will occur when the type of lighting is finally chosen. Ease of tube replacement is an important point in planning the lighting of a display. Our main lighting will be mounted inside the front of the case, so the tubes will be accessible through the doors. However, there will be many backlit transparencies and caption panels to be catered for and access to these needs careful planning. The model of the Guillemot cliff has access, near the back for its lighting and like all the other main cases, it stands against the wall of the gallery. The adjoining display, the section of 'cliff' with plant models, has had to be supported on a rather expensive custom-made support with a very strong piano hinge allowing the whole section to be swung forward to give access to the back of the other 'cliff'. The lighting at the end of the sea cave can be serviced from an adjoining room.

We are in the process of writing scripts at the moment. The interior layout of each of our cases is different and this means that the layout and length of the captions for each case have to be discussed individually with the design staff.

We are insisting that we have the name of each specimen on a label close to the specimen but we will be grouping individual captions together for tidiness though we are anxious that in the largest cases, some of the captions may be rather far from the specimens. In the 'cliff' case and other models, names will not be written near the specimens but a keyed diagram will be used. In some cases notably the 'rocky shore' there will be a large number of species displayed and here we have decided to provide a continuous text with key words in bold type and with few, if any references, to individual species. However basic information about their mode of life, feeding habits and position on the shore will be given in coded form with a series of symbols which have been devised with the help of the design staff. These symbols have been made up commercially as transfers which can be rubbed onto the art work for the graphics. Whether visitors will find these too laborious to decipher remains to be seen.

Perhaps inevitably the gallery is turning out a little differently from what we envisaged when the brief was written. We think that there is a pleasant and appropriate feeling of space which is right and proper for displays dealing with 'outdoor' subjects. (It will be interesting to see if we lose any of this when the canopies of the partial false ceiling are up). Our large cases contribute to the feeling of spaciousness and will also be easy for children of all sizes to look at but they do not lend themselves to the display of smaller specimens. These will mostly be mounted on panels within the cases but we wonder whether they will be sufficiently near the glass for details to be appreciated. We also intended to mix specimens from different taxonomic groups in each or most of the cases but we found that in this gallery, birds with mammals are best displayed separately from invertebrates; this necessitated the shuffling round of specimens on our lists and the renaming of some of our display areas. We had also hoped to display numerous photographs of local examples of habitats dealt with in general in the actual displays but it has not been able to accommodate these in the positions and numbers which we had hoped.

Finally I might add that when I have said 'we think' in this article I have been implying that my opinions are shared absolutely by the other Natural Historians in my section, namely Charlie Copp and Sue Swansborough and until this year Don Stewart; no doubt they will be explaining to me shortly that that is not strictly true.

Anne Hollowell
Bristol City Museums

STORAGE FACILITIES FOR THE NATURAL HISTORY COLLECTIONS AT BRISTOL CITY MUSEUM.

From 1972 to 1974, Bristol City Museum and Gallery undertook a major reorganisation and re-fitting of the basement storage areas in the main Queens Road building. The project has been described in general terms by Paul Elkin in the Museums Journal, Vol. 75, September 1975, but what follows may give some idea of the advantages and problems we have experienced since then with storage of the reserve collections in Natural History.

Our Natural History section has one large store 18.5m x 23m (75' x 60'). It is a working area as well as a store and has a run of benches, a sink and filing cabinets. It is a fumigated area and since its initial fumigation with methyl bromide in 1974, any specimens coming in from elsewhere are always fumigated first in our fumigation chamber attached to our laboratories. This means that we have to have a smaller storage area elsewhere for incoming material awaiting fumigation. At the moment this doubles as the curators office. The floor of the store, originally rough concrete, is now covered with vinyl tiles which has greatly decreased the dust problem which was previously a severe one. The original rough stone walls on two sides have been lined to eliminate surfaces on which dust used to lodge and the heating pipes running through the store have been lagged not only conserving heat but mitigating fluctuations in air temperature. The ends of one of the rows of cupboards envelope these pipes - a situation not ideal and which was not foreseen at the planning stage (the pipes were not marked on the floor plans used for the various initial proposals for the layout of the racking) therefore ventilation remains a problem. We have a single extractor fan ducted to the outside but the air drawn in from elsewhere in the basement is far from fresh. Recently after complaints of headaches and malaise the fluorescent tubes over the working area were replaced by Osram Lifeguard Daylight tubes with a spectrum more nearly approaching daylight. The tubes they replaced were found to have a much reduced light output after being in use for several years and this must have added to the problem. For the benefit of the specimens, a Rotaire Dehumidifier (air flow 300 m 3/hr) has been installed. The setting of the humid; stat has given a little trouble and a gradient in humidity occurs across the store. This may be partly due to the fact that one of the rows of cupboarding runs right up to the far wall at one end, and must impede the air circulation. It is probably better both for our circulation and for escape in case of fire, if none of the rows extends quite to the walls. We hope in due course to have emergency lighting as our store could be difficult to get out of in total darkness. We have two statutory fire escape doors one to the front of the building and one to the back. These are both on one wall which is a disadvantage though there is a third 'unofficial' exit in another wall. Our working area (and water supply) is sited in the corner adjacent to the ventilation but for security purposes it would have been better by the entrance to the store. All in all, our stores are good for the specimens but still not so good for the people working in them.

The layout of the store consists of a main gangway running along one side from the entrance to the working area with some storage in alcoves to the right but the main rows of storage fitments running away at right angles to the left. The main storage fittings are made up from Dexion shelving. Our largest items are stored on open shelving of Dexion heavy duty, speedlock racking with metal panel shelves, giving long (3.2m, 10'6") uninterrupted spans. The items we store here include mounted skeletons, large disarticulated bones and large mounted mammals and reptiles. We now feel we would prefer to have this shelving enclosed to exclude dust and provide security. However, cladding would eliminate the flexibility of the shelf area arrangements and would make it difficult to get large items onto or off the shelving. The other large items, are the mounted heads and horns and these are stored on both sides of fixed weldmash screens and are supported on the mesh by meat hooks with their sharp ends filed down.

Our medium sized specimens include most of our mounted mammals, birds and reptiles. The birds were most of them originally in glass-fronted 'drawing room' display boxes and were taken out by the temporary assistants recruited for the storage reorganisation projects. These specimens were then fixed onto plain chipboard bases. We store these animals on Dexion Impex adjustable shelf units arranged to make four of the double-sided rows mentioned earlier. The units in two of the rows reach from the floor to a height of 8'6", a standard size for the shelf units. The remainder 3'6" high are mounted on Dexion Heavy Duty Speedlock beams leaving a space below which accommodates insect cabinets up to 4'6" high. The fronts of the shelf units were given a timber cladding by outside contractors and this supported aluminium track for sliding glass doors. Unfortunately the timber began to warp when the central heating came on in the following autumn causing trouble with the glass doors which then wouldn't slide smoothly; the glazing firm made repeated calls to ease the tracking. We have also had two instances where doors cracked without warning and 'daggers' of glass fell to the floor. We think the trouble occurred in doors which had been made too large in the first place and then, unknown to us, had simply been chipped away at the top to make them fit. These rough edges have since been rubbed down by the glaziers to try to eliminate angles where cracks might start. We wondered whether the glass could be tested for strain by the use of polarised light but apparently the results one gets by using such methods are difficult to interpret. We also recently had quotes for the fixing of protective film to the glass (such as is used for protection against bomb explosions), however the quotes ranged from £2,000 to over £3,000 to deal with all our glass and we abandoned the idea - at least for the time being. The film would have had the added advantage of giving appreciable protection against ultra-violet radiation. However, the problem could probably have been avoided if the doors had been made with a metal frame along the top as well as the bottom. The locks are in these bottom frames and are of the type used in some patio doors. They are locked simply by pushing in a pin. These have worked very well and it is an advantage to be able to see at a glance whether they are locked or not. We did have trouble with the locks initially but that was only because the warping of the timber frames meant that some of the pins were not opposite the holes in the doors behind which they were meant to engage! Because of the fact that the shelves are fixed with simple clips hung from holes inside the shelf units, the timber cladding does not interfere with adjustments to the shelves, except that the glass doors are in upper and lower sections and the shelf at their junctions are at a fixed height. The shelves are 3' in width and there are vertical partitions at 3' intervals in two of the rows. These partitions were optional. We chose to have them as we felt they would help to prevent the spread of any infestation which might occur. We now feel that it would be adequate to have had the partitions at 6' intervals as animals have an annoying tendency to have tails which are just too long for the space you want to put them in.

Our study skins of mammals and birds, and our shells are mostly housed in our co-called 'Smithsonian Units' which were designed well before the storage reorganisation project was envisaged. (They are used by other sections of the Museum as well). The carcasses are of robust, weight bearing construction very suitable for heavy items such as shells or archaeological or geological specimens (though our geology section uses a different system).

These units have been described in the Museums Association Information Sheet No. 10 ('The Storage of Museum Collections' by Geoff Stansfield, 1976, 2nd ed.). Our basic unit has a strong wooden carcase with hardwood runners closely spaced over the entire height of the sidewalls inside. The drawers are essentially sheets of 5 ply which fit between the runners and have sides set back from the edges except at the front and back. We find sides which are 50mm high are quite adequate for our material. The drawers have inside dimensions of 510mm (width) x 610mm (depth). The inside free height of 850mm in the carcase allows an average of 8 drawers in each unit if they contain such items as bird skins which often project slightly above the sides of the drawers. There is a single door which lifts off. Its lower edge is rebated and fits into a groove at the front of the unit. This and the other edges of the carcase are fitted with a plastic foam strip against which the lid is pressed when closed. The pressure is applied by the closing of two sash window catches at the top of the unit. There is 25mm diameter hole in the door covered in fine, brass mesh to allow the passage of air in and out, when the door is opened or closed. The mesh is intended to exclude pests of any but the smallest size and also helps to support a plug of cotton wool which helps to filter out dust. The lids are lifted by two metal 'D' handles placed vertically and parallel near the top. These units have been made by two different joinery firms, and since, some have been made by our corporation Engineer's Department. We experienced trouble once we switched from one firm to another because the drawers, although meant to be freely interchangeable within and between units, were of course not made to the original templates by the new firm, but from an arbitarily selected sample drawer.

The units were designed to be strong enough to be stacked one on top of another but it was also thought that they might be used standing directly on the floor to provide, in effect, a bench top. However, in our stores re-fitting three rows of Dexion Heavy Duty Racking (two back to back) was set up with modified roller conveyor fitments to provide a supported second and third horizontal row of units above those resting on the floor, and not supported by them. In practice it has not been found practicable to use the top level, partly because we realised too late, that a run of pipes would restrict the movement of the necessary stacker trolley (which we therefore have not bought). Also after two years in use, the weight of the units caused the racking beams to sag onto the units below and the beams had to be raised. This then left too little clearance between the upper level and the ceiling. Each unit resting on the floor, stands on a Dexion Speedframe platform with castors. Thus the positions of the units on the floor can be changed simply by wheeling them about. For the second row up we have a tall trolley made with Speedframe and with conveyor belt wheels on top onto which any unit can be pulled directly and the unit can then be wheeled to another position and the procedure reversed. Raising or lowering from ground to second level must be done separately by a standard hydraulic lifting device.

As well as standard-sized units originally known as 'quarter units' we have some doubles. A few of these are 'vertical doubles' which do not fit into our racking. They are identical to the 'quarter units' but twice the height and more economical in storage provided for money expended. Incidently a quarter unit with 8 drawers now costs about £220. The only additional feature of the tall units is the provision of a moveable internal metal tie about half way up which prevents the rather long sides from bowing outwards.

The doors on this size unit are larger and heavier but as they have to be lifted only a little before resting them on the ground, they do not seem unwieldy in use. Our horizontal doubles also have heavy doors which are similarly reasonably manageable. However, the wide drawers are not very convenient for one person to handle but by no means impossible. They are suitable for skins of large British mammals, geese and birds of prey. With these units we usually use only four drawers to a unit. The double units can only be stored at ground level and each rests on two Speedframe platforms with castors.

Similar but much larger platforms each with a chip-board cover are used for supporting insect cabinets off the floor. This prevents dust accumulating on the floor from getting under and between the cabinets, but does not allow for moving any cabinets separately. The platforms vary in length to one extent because in some rows of racking, structural brick columns supporting the ground floor are incorporated so that the span-lengths of the racking supporting the shelving above are not of a uniform length.

The working areas of the store are cleaned once a week. This regime was instituted after there had been anxiety about the level of arsenic which might be present in dust from old mounted specimens. The analysis of dust and hair sample showed the level of arsenic present to be apparently negligible but we are now provided with lab coats which fasten high around the neck and masks and plastic gloves to use when making any major re-arrangement of old specimens. Once every six months the whole store is given a thorough clean with all the moveable units being wheeled aside to allow cleaning of the floor beneath. This demands a systematic approach otherwise a massive 'traffic jam' of displaced units is liable to develop.

After the initial fumigation of the store in 1974, it was intended to re-fumigate every three years but in fact it will not have been done again until this Autumn. Fumigation of a store by methyl bromide is only possible if it can be isolated from other areas. This is so that the right concentration of gas can be built up but nevertheless the rest of the building will almost certainly have to be closed for two to three days until the fumigation process is complete.
The other necessity is that there should be adequate means of ducting the gas away to the outside when the gas is evacuated. Preparation before the fumigation is also laborious. This is because all enclosed containers have to be opened including insect cabinet drawers. Not only is the work laborious but containers with their lids ajar take up more space than normal and very often specimens have normally to be tightly packed to accommodate them in the space available. For our store, we found it took us a month with 3 or 4 people working hard. This time we are allowing the same time although we hope the process will be easier because of our previous experience and because some of our specimens are now packed in different containers. Incidentally, the importance of opening containers is not so much so that the methyl bromide can get in (it can penetrate the thinner grades of polythene and through cardboard) but because it may be reluctant to come out again and the time needed for complete evacuation of the gas could be much increased. Besides one just does not like to think even of the possibility of lurking pockets of methyl bromide!

I may add that we do not 'open' our birds eggs - as we are still around, presumably they are sufficiently porous.

Our experience with our efforts to improve our storage appears to be of interest to others. We have had a number of people round to see the stores in the museum including not only museum colleagues but also the public who have come during 'open days' to see our reserve collections in comparative comfort. We know our systems are not perfect, but we are always pleased to see colleagues to discuss the ins and outs. As I have said the specimens are certainly better off and the staff delight in being able to see and get at them even if there are still some difficulties.

Anne Hollowell
Bristol City Museums

Large blue is now extinct

SCIENTISTS in the Nature Conservancy Council and the Institute of Terrestrial Ecology have regretfully concluded that the large blue butterfly, maculinea arion, is now probably extinct in Britain; for the surviving butterflies in the last known colony of the species in Devon produced no viable eggs this year despite every possible effort to provide suitable conditions.

For most of this century the large blue has been Britain's rarest resident butterfly, although 30 colonies existed up to 25 years ago in Somerset, Devon, Cornwall and the Cotswolds, by 1965 most had disappeared.

This was due — as is now known — to the intensification of agriculture and the loss of rabbits (through myxomatosis) which maintained a closely grazed turf. Since the mid-1970s the population was reduced to the one colony in Devon.

Western Morning News
12/9/79

Large Blue

A BRIEF NOTE ON THE MAMMALS AND BIRDS DONATED TO THE BOOTH MUSEUM OF NATURAL HISTORY FROM 1973-1978 (inclusive).

The specimens to which this article refers are all wild animals donated by members of the public and do not represent any deliberate scientific collecting. Given the haphazard manner in which these specimens are obtained, this sample cannot be said to be representative of the fauna of the South East. Animals whose sphere of activity overlaps with that of human beings, e.g. gardens, roadsides and beaches are far better represented than those of a more retiring nature. The majority are road casualties, quite a few have fallen foul of window panes and cats, the minority come from animal welfare centres or have been shot (legally) or drowned or poisoned.

This collecting system, such as it is, provides an invaluable source of fresh materials for our collections. Everything is entered on the museum's register and this information is then available for regional or national data banks. At very least the specimens provide useful training material for staff or trainees in museum preparation techniques, from Taxidermy to Histology. It is, however, a system which requires time and diplomacy to develop and maintain. I have found that tactful reminders, postage refunds and official thank you letters are an essential part of the procedure. The latter can also serve to establish the legal ownership of any specimen.

Pages 157-160 contain a list of the mammals and birds donated to the Booth Museum from 1973-1978:-

* These two entries (38 House Martins in 1974 and 35 Pied Wagtails in 1976) have for the purpose of the graphs and the totals each been trated as a single entry. My reason for this is that both represent freak occurences (the former somehow managed to get stuck in a very muddy field, and the latter were accidentally locked in a greenhouse for the weekend) and as such I do not think their inclusion would be justified.

Graph No. 3 shows the individual totals of species, each column represents a single species. The list on page 160 shows the numerical order of these species:-

	1973	1974	1975	1976	1977	1978	Total
Red Fox	2	2	1	2	2	4	13
Otter	0	0	0	0	0	1	1
Badger	0	2	3	1	1	2	8
Stoat	1	0	0	1	1	1	4
Weasel	0	0	0	0	2	3	5
Feral Mink	1	4	0	0	0	1	6
Long-eared Bat	0	0	0	2	1	0	3
Pipistrelle	0	0	0	0	1	1	2
Rabbit	0	0	0	4	0	2	6
Grey Squirrel	3	1	2	0	1	7	14
Wood Mouse	0	0	1	0	0	2	3
House Mouse	0	0	0	3	0	2	5
Yellow-necked Mouse	0	0	0	0	1	0	1
Bank Vole	0	0	0	1	0	1	2
Brown Rat	0	0	0	1	0	0	1
Short-tailed Field Vole	0	0	0	0	0	1	1
Mole	0	1	0	2	0	3	6
Common Shrew	0	1	0	1	1	1	4
Hedgehog	0	0	0	5	2	0	7
Water Shrew	0	0	0	0	0	1	1
Lesser White-toothed Shrew	0	0	0	0	0	1	1
Pygmy Shrew	0	0	0	0	0	1	1
Cormorant	0	0	0	0	2	0	2
Grey Heron	0	1	0	0	0	0	1
Mallard	0	0	1	0	0	0	1
Shoveller	0	0	0	0	1	0	1
Shelduck	0	0	0	0	1	0	1
Sparrowhawk	0	0	0	1	2	2	5
Kestrel	1	0	1	2	2	1	7

	1973	1974	1975	1976	1977	1978	Total
Partridge	0	1	0	0	0	1	2
Water Rail	0	1	1	1	0	1	4
Moorhen	0	0	1	0	0	1	2
Coot	0	0	0	0	0	1	1
Little Grebe	0	0	0	0	0	1	1
Snipe	0	0	0	1	0	0	1
Jack Snipe	0	0	0	1	0	0	1
Green Sandpiper	0	0	0	1	0	0	1
Greater Black-backed Gull	0	0	0	0	2	1	3
Lesser Black-backed Gull	0	0	0	1	0	0	1
Black-headed Gull	0	0	0	0	3	1	4
Razorbill	1	0	0	1	0	1	3
Little Auk	0	0	1	0	0	0	1
Turtle Dove	0	0	2	0	0	0	2
Collared Dove	0	0	0	0	0	1	1
Gannet	0	0	0	0	0	1	1
Cuckoo	0	0	0	1	0	0	1
Barn Owl	0	5	4	4	0	1	14
Tawny Owl	0	1	2	2	1	2	8
Little Owl	0	0	0	0	0	3	3
Long-eared Owl	0	0	0	2	2	0	14
Short-eared Owl	0	0	1	0	0	0	1
Swift	0	0	0	0	2	0	2
Lesser Spotted Woodpecker	0	0	0	0	0	1	1
Kingfisher	0	0	2	3	0	0	5
Hoopoe	0	0	0	0	0	1	1
Wood Pigeon	0	0	0	0	0	3	3
Feral Pigeon	0	0	0	0	0	1	1
Swallow	0	1	1	0	0	1	3
House Martin	0	38*	0	0	0	0	1
Rook	0	0	2	0	2	0	4
Jackdaw	0	0	1	0	0	0	1
Jay	0	0	0	1	0	2	3

	1973	1974	1975	1976	1977	1978	Total
Great Tit	0	0	3	0	0	0	3
Blue Tit	0	0	0	1	0	2	3
Coal Tit	0	0	1	0	2	0	3
Long-tailed Tit	0	0	0	1	0	1	2
Nuthatch	0	0	0	1	0	0	1
Wren	0	0	1	1	0	2	4
Song Thrush	0	0	2	5	5	3	15
Blackbird	0	1	1	2	1	5	10
Redwing	0	0	0	0	0	2	2
Wheatear	0	0	0	0	1	2	3
Stonechat	0	0	0	0	1	0	1
Black Redstart	0	0	0	0	1	0	1
Robin	0	2	2	2	0	2	8
Nightingale	0	0	0	0	0	1	1
Sedge Warbler	0	0	0	1	0	1	2
Blackcap	0	1	0	0	0	0	1
Garden Warbler	0	1	0	0	0	0	1
Lesser Whitethroat	0	0	0	0	1	0	1
Common Whitethroat	0	0	0	0	0	1	1
Willow Warbler	0	1	1	1	1	0	4
Chiffchaff	0	0	3	0	1	0	4
Firecrest	0	0	0	0	0	1	1
Goldcrest	1	2	1	2	0	0	6
Yellow Wagtail	0	0	0	0	0	1	1
Pied Wagtail	0	0	2	35*	0	1	4
Grey Wagtail	0	0	0	0	0	1	1
Great Grey Shrike	0	0	1	0	0	0	1
Starling	0	0	1	2	1	2	6
Greenfinch	0	0	2	1	1	2	6
Chaffinch	0	0	0	0	0	3	3
Goldfinch	0	0	0	2	0	1	3
Siskin	0	0	0	1	0	0	1
Bullfinch	0	3	1	2	1	0	0
Yellowhammer	0	0	1	2	0	0	3

	1973	1974	1975	1976	1977	1978	Total
House Sparrow	0	1	0	1	1	1	4
Treecreeper	0	0	0	1	0	0	1
Totals	10	34	51	74	52	98	319

Number of donations:-

15	Song Thrush
14	Barn Owl, Grey Squirrel
13	Red Fox
10	Blackbird
8	Badger, Robin, Tawny Owl
7	Kestrel, Hedgehog
6	Feral Mink, Mole, Starling, Greenfinch, Goldcrest, Rabbit
5	Weasel, House Mouse, Sparrowhawk, Kingfisher
4	Stoat, Common Shrew, Wren, Willow Warbler, Chiffchaff, Pied Wagtail, House Sparrow, Water Rail, Black-headed Gull, Long-eared Owl, Rook
3	Long-eared Bat, Wood Mouse, Greater Black-backed Gull, Razorbill, Little Owl, Wood Pigeon, Swallow, Jay, Blue Tit, Great Tit, Coal Tit, Wheatear, Chaffinch, Goldfinch, Yellowhammer
2	Pipistrelle, Bank Vole, Cormorant, Partridge, Moorhen, Turtle Dove, Swift, Long-tailed Tit, Redwing, Sedge Warbler
1	Otter, Long-tailed Field Mouse, Brown Rat, Short-tailed Field Vole, Water Shrew, Lesser White-toothed Shrew, Pygmy Shrew, Grey Heron, Mallard, Shoveller, Shelduck, Coot, Little Grebe, Snipe, Jack Snipe, Green Sandpiper, Lesser Black-backed Gull, Little Auk, Collared Dove, Gannet, Cuckoo, Short-eared Owl, Lesser Spotted Woodpecker, Hoopoe, Feral Pigeon, House Martin, Jackdaw, Nuthatch, Stonechat, Black Redstart, Nightingale, Blackcap, Garden Warbler, Lesser Whitethroat, Common Whitethroat, Firecrest, Yellow Wagtail, Grey Wagtail, Great Grey Shrike, Siskin, Treecreeper

In graphs 1-2 I have excluded the figures for 1973 from the averages. This being the first year of operation the system did not begin to function until the latter part of the year and as such cannot be said to reflect that period accurately.

An examination of the graphs shows that they are roughly as follows:- Troughs from late Autumn to mid Winter, and mid Spring to early Summer. Peaks from late Winter to early Spring and mid Summer to mid Autumn. Graph 2 shows that the mortalities, while there is an approximate corrolation during the less pronounced October peak between bird and mammal mortalities.

Mammal mortality is at its highest during October (as far as the Booth Museum's records show). I can only suggest that this might relate to the fact that after the breeding season there are more animals in existence with correspondingly more pressure on territory and consequently more mortality. In the case of birds the most important factor influencing mortality must be migration. The late Winter early Autumn trough can, I am sure, largely be explained by the absence of the majority of birds. It is interesting to note that the number of Winter migrants given to the Booth Museum is so small as to be negligible, one of several factors which might result in the latter could be that the Winter weather deters much outdoor recreational activity. The April peak corresponds to a high mortality amongst returning migrants whose fat/energy supplies were not sufficient to tide them over the lean period prior to the onset of Spring. This also corresponds in some species to the pre-breeding territorial activity or in other species with the inevitable fledgling mortality rate. The mid Spring early Summer trough could suggest a food sufficiency, while the late Summer early Autumn peak could be said to represent amongst other factors the lessening of available foodstuffs.

A detailed analysis of this pattern of peaks and troughs would require the breakdown and discussion of each species represented on the graphs, taking into consideration factors such as the following. Weather conditions; behaviour e.g. migration, territorial conflict, etc., human activity e.g. hunting seasons, seasonal variation in outdoor activities, foodstuff availability, physiological data on the birds themselves, e.g. age, sex, health, toxicity levels, comparative measurements, etc. It is obvious that the size of the sample that the Booth Museum can supply is far too small and the time involved too short to justify this close an analysis, or for that matter to expect any "meaningful" results from any such work. This would not however be the case if the records were not those of one museum, and if other institutions associated with post-mortem zoological materials could also supply records. As these records are in existence, albeit separately, it would seem a "feasible" task to collect this information, perhaps via one of the Biological Records Centres, and thus to have available a suitably large sample on which to be able to base some potentially interesting research.

Jeremy Adams,
Booth Museum of Natural History
Brighton

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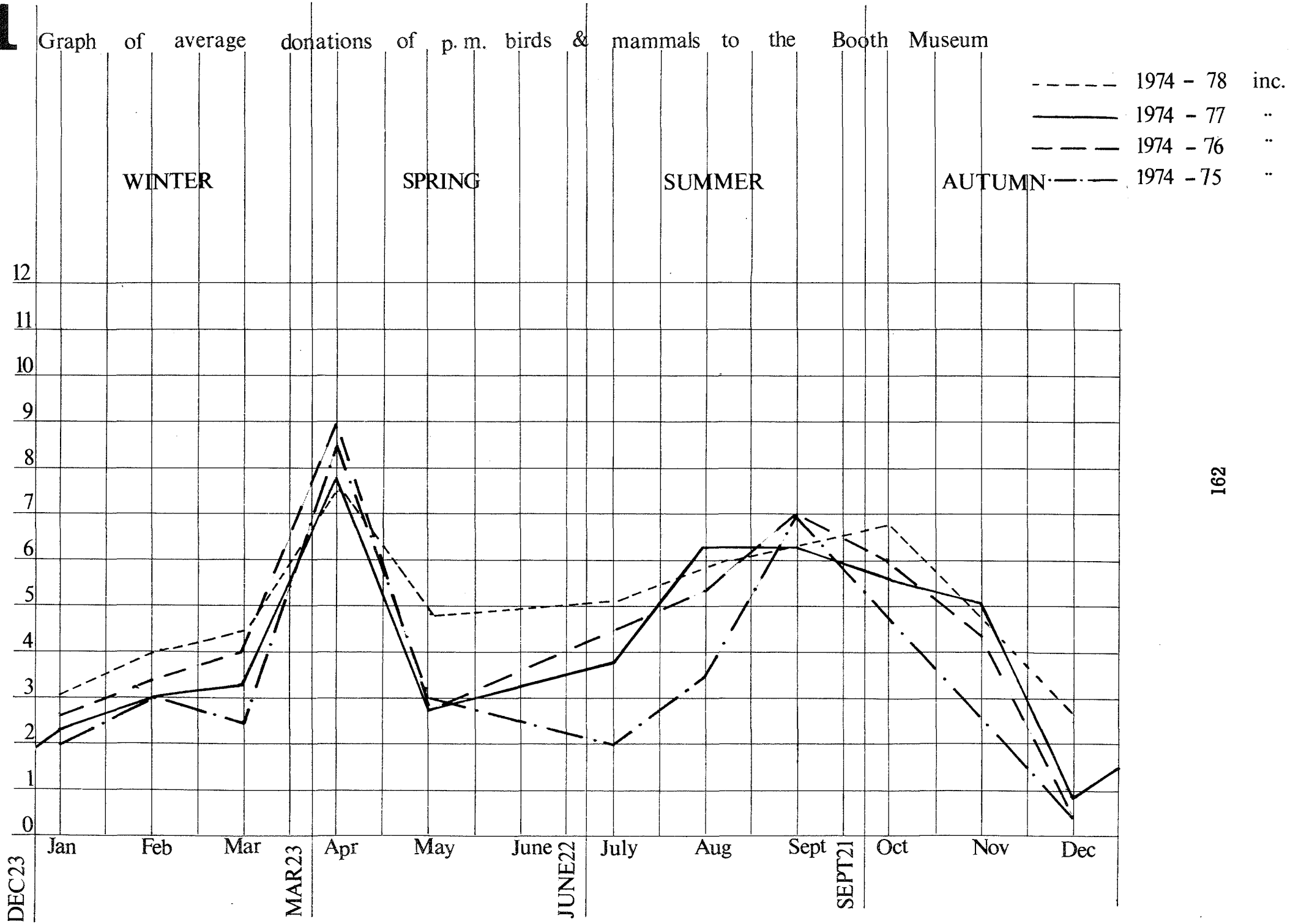
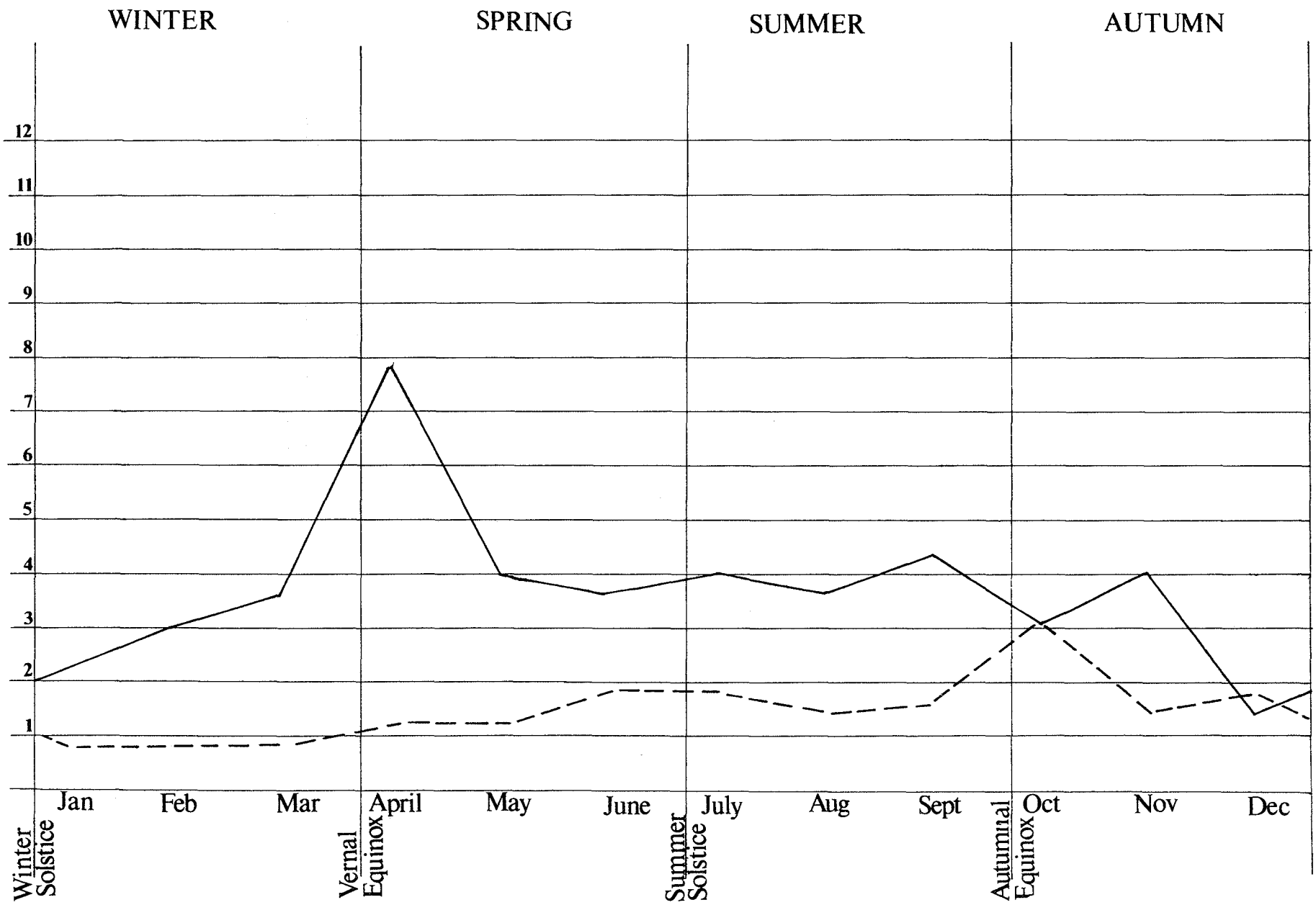
1 Graph of average donations of p. m. birds & mammals to the Booth Museum

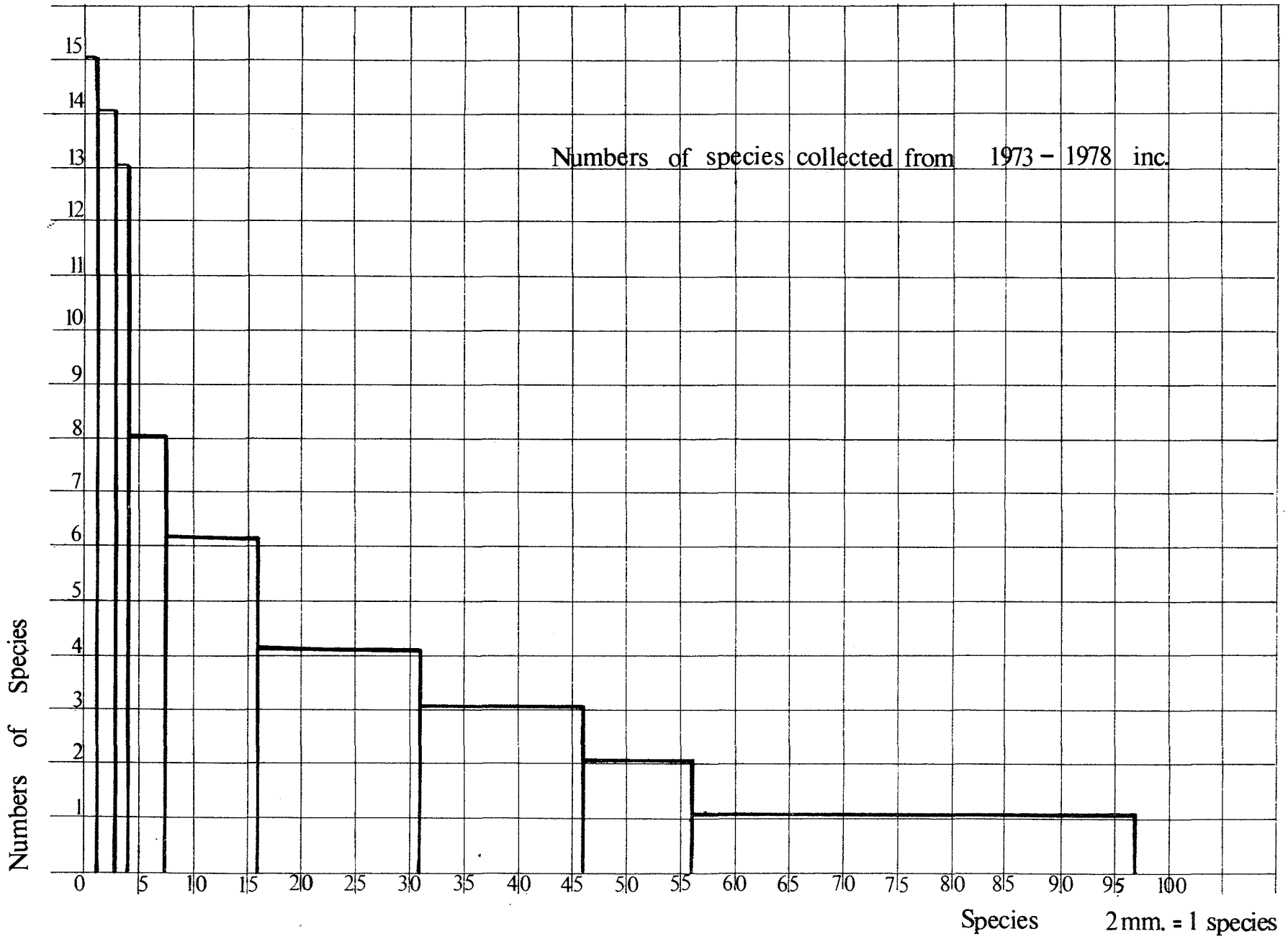


2

Comparison between average monthly donations birds with mammals 1974 - 1978



3


Numbers of species collected from 1973 – 1978 inc.
Numbers of Species
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
Species
2 mm. = 1 species

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GTN 2074

Your reference

Our reference
B/104
Date
20 August 1979

Dear Sir

PROPOSED WILDLIFE AND COUNTRYSIDE LEGISLATION

1. The Government intends to introduce a Wildlife and Countryside Bill during the present session of Parliament.

2. In order that account may be taken of the views of interested parties we are issuing a series of consultation papers, inviting comments on the issues raised in them. I enclose the third of these papers and shall be grateful to have any comments you wish to make by the end of September.* We are, however working to a tight timetable and it would be most helpful if you will let me know as soon as possible if there are any significant matters which are of concern to you or which you consider might be treated in a different manner. Your reply should be addressed to: Department of the Environment, Room 3/24, Tollgate House, Houlton Street, Bristol, BS2 9DJ.

3. The first two papers in the series which dealt with Bulls and Public Paths and with the Review of Definitive Maps of Public Rights of Way have been sent to interested parties. If you did not receive a copy of either of these and require either one or both, they are available on request from the above address.

Yours faithfully

J C GOLDSMITH

* NB: Replies will still be accepted at a later date.

Ed.

WILDLIFE AND COUNTRYSIDE BILL: CONSULTATION PAPER NUMBER 3

SPECIES PROTECTION

This is the third in a series of consultation papers relating to a proposed Wildlife and Countryside Bill. Any comments should be sent in time to reach the Department by 30 September 1979 addressed to the Department of the Environment, Room 324, Tollgate House, Houlton Street, Bristol BS2 9DJ.

BIRD PROTECTION

Following adoption of the EEC Directive on the conservation of Wild Birds, the United Kingdom has an obligation to amend its bird protection legislation by 1 April 1981. The Government is disposed to introduce the following provisions (those which are directly or indirectly related to the EEC Directive are indicated by an asterisk):-

*a. In general the taking of any kind of wild birds egg is already prohibited under the Protection of Birds Act 1954 (as amended in 1967); there are a few exceptions, however, and it is proposed to bring these under licencing control. Licences will be either specific or general (eg pest species).

*b. It is at present an offence to disturb wild birds listed in the First Schedule of the Protection of Birds Act 1954 (as amended in 1967). It is proposed to make it an offence to disturb nest building or fledging young near the nest in respect of all birds (except pest species). There would be exceptions for most reasonable activities which incidentally involve disturbance eg agriculture, forestry and gardening activities (apart from birds listed in the First Schedule of the current Act).

*c. It is proposed to list the prohibited methods of killing and trapping in a Schedule and not in the body of the Act. This list would take account of the methods listed in the Directive as well as methods currently prohibited. Additional prohibitions will be the use of tape recordings, electrical devices, mirrors etc, night lights and night gun sights and automatic or semi-automatic weapons (Appendix 1). Scheduling will allow more rapid amendment to take account of technological change. Certain exceptions would continue to be permitted under licence.

d. It is proposed to provide for the establishment of a bird sanctuary in those areas where shooting and other sporting activities are not protected by a legal right. At present the establishment of a bird sanctuary would automatically prevent wildfowling, water-skiing etc except where those activities are being exercised under a legal right (eg by the landowner). There are circumstances where such activities are compatible with the establishment of a bird sanctuary and it is proposed to enable a sanctuary to be established whilst allowing such activities to continue.

e. At present it is only an offence to take, damage or destroy a nest or egg of any wild bird. This means that although intent may be clear no action can be taken in law until the damage is done. It is proposed to make it an offence to attempt to do these things subject to the exceptions proposed in b. above.

*f. The Fourth Schedule of the 1954 Act lists wild birds which may be sold alive if close ringed and bred in captivity. It is proposed to reduce the present list by about half by limiting it to those birds which are most easily bred in captivity and for which there is a large existing stock but which could only be sold if captive bred and close ringed. It is also proposed to limit exhibition of UK wild birds to those on this list. A provisional listing is at Appendix 2.

*g. The Government is required by the Directive to initiate special controls over falconry and aviculture. It is proposed that all captive falconiformes and all First Schedule birds in captivity should be registered and ringed. This would accord with the recommendations of the Captive Hawks Report. It would be made an offence to possess or to assist in possession of a registrable bird within 5 years of conviction for an offence attracting special penalties or within 3 years of any other offence against the Protection of Birds Act. Similarly it would be made an offence knowingly to pass a registrable bird to a convicted person during the prohibition period, or to assist such a person in keeping a registrable bird.

*h. Reduce the permitted period during which a bird may be confined for exhibition or competition in a small cage from 72 hours to 48 hours.

*i. Under the Protection of Birds Acts all birds in the Second Schedule and Third Schedule may currently be sold if legally shot. It is proposed to limit the schedule of birds which may be sold (apart, of course, from those covered by f. above) to the 26 game and wildfowl species listed in the Directive. Closed season restrictions would remain. The proposed list is at Appendix 3.

*j. The sale of dead birds other than those listed in i. above would in general be an offence. However, the sale, primarily for educational purposes, of birds which have been legally taken and subsequently mounted by taxidermists would be permitted provided that the taxidermist was registered on a statutory list to be maintained by the Guild of Taxidermists (on behalf of the Department) and complied with a Code of Practice approved by the Secretary of State. It would not be a requirement for taxidermists to become members of the Guild but as a condition of registration (for which a small fee might be charged) they would be required to keep adequate records of the immediate source and destination of the birds they mount and to place their mark on mounted birds for ease of identification. Conviction for any offence under the Protection of Birds Acts would involve automatic debarment from the Department's register for a period of 3 or 5 years depending on the nature of the offence.

k. Provide a search warrant power in relation to all suspected offences against specially protected birds (ie those at present covered by the First Schedule of the Protection of Birds Act). At present warrants may only be issued for suspected offences involving the sale of wild birds, eggs, skins or plumage.

CONSERVATION OF WILD CREATURES AND WILD PLANTS ACT 1975

The Act (which does not cover birds) prohibits killing, taking, injuring, possessing or selling creatures or plants listed in Schedules to the Act; there are exemptions for authorised persons and licences can be issued permitting activities which would otherwise be an offence under the Act. The Nature Conservancy Council (NCC) have a duty to review the Schedules to the Act and advise the Secretary of State of any wild creature or plant that becomes so rare that its status as a British wild creature or plant is endangered by an action designated as an offence under the Act. It is now proposed to incorporate the provisions of Lord Skelmersdale's recent amending Bill which would:-

a. provide a definition for a new category of "vulnerable" species as those which whilst not in imminent danger of extinction are likely to become so,

b. list species covered by the above definition (Appendix 4). The NCC would be responsible for advising the Secretary of State of creatures which in their view should be added or deleted from the Schedule,

c. afford the same protection to vulnerable creatures as that afforded to endangered creatures except that it will be permitted for an authorised person to take any vulnerable wild creature for identification purposes (but not to mark) and to release it uninjured,

d. widen the definition of wild creature to include not only eggs, larvae and pupae but also other immature stages,

e. protect both categories, "vulnerable" and "endangered" against wilful disturbance although there would be certain exemptions for example for the householder and the farmer,

f. remove the requirement for the NCC in giving advice to the Secretary of State on the addition of creatures or plants to the Schedules to the Act to consider only whether offences under the Act were placing the species in jeopardy. Additions to the list could be made if any factor operating was considered to be imperilling the survival of the species,

g. increase the maximum penalty for an offence under the Act from £200 to £500.

It is also proposed:-

h. to prohibit certain methods of killing particular wild creatures. The prohibited methods will form a schedule to the Act (Appendix 5) and the creatures to which the prohibition applies will also be listed (broadly, the prohibition will apply to all mammals except pest species). This provision is expected to meet the Council of Europe Convention on the Conservation of European Wildlife and Natural Habitats. Exceptions will be allowed for, inter alia, prevention of damage to crops etc, public safety, research and education.

ENDANGERED SPECIES (IMPORT AND EXPORT) ACT 1976

This Act will be amended by the Bill to incorporate measures to meet any relevant international obligations, strengthen enforcement powers and simplify licencing procedures to:-

a. bring under licence control any product or article that the importer/exporter declares to contain parts or to be derived from a controlled species,

b. make it an offence to sell any article which is stated by the vendor to contain parts of or to be derived from a controlled species unless that item has been legally imported,

c. take powers to inspect on demand premises of licensees where live animals or plants are housed that have been imported under licence even where this is not a condition of a licence; this is to check that importers do not bring in endangered species while **only** declaring vulnerable or even exempted species,

d. alter the preamble to the Act to make it clear that the Act is intended to provide for controls over the import and export of endangered and vulnerable species in compliance with any international obligation (not only the Washington Convention) or for National purposes,

e. modify the licensing procedures to allow the maximum period of validity of a licence to extend beyond the 12 months and to permit the issue of licences for certain categories of species under the general advice from the Scientific Authority for Animals to remove the requirement for individual reference in each case. This will enable applications to be dealt with more quickly and economically.

The above proposals indicate the effect of each provision. No attempt has been made in this consultation paper to cover all the various exceptions, licensing arrangements, legal defences etc which will continue to be on much the same basis as in existing legislation, except where it is clearly indicated to the contrary.

Department of the Environment

August 1979

APPENDIX 1

Prohibited means and methods of killing capture and other forms of exploitation

BIRDS

Snares

Limes

Hooks

Live birds which are blind or mutilated used as decoys

Tape recordings used to decoy birds

Electrical devices capable of killing and stunning

Use of artificial light sources to attract birds

Mirrors and other dazzling devices

Devices for illuminating targets

Sighting devices for night shooting comprising an electronic image magnifier or image converter

Explosives

Nets

Traps

Poison and poisoned or anaesthetic bait (including gas)

Semi-automatic or automatic weapons with a magazine capable of holding more than two rounds of ammunition

Use of aircraft to pursue and take birds

Use of motor vehicles in motion to pursue and take birds.

APPENDIX 2

PROVISIONAL REVISED FOURTH SCHEDULE OF THE PROTECTION OF BIRDS ACT 1954

(Wild birds which may not be exhibited or sold alive unless close ringed and bred in captivity)

HAWFINCH	Coccothraustes coccothraustes
CHAFFINCH	Frinigilla coelebs
GREENFINCH	Carduelis chloris
GOLDFINCH (Eurasian)	Carduelis carduelis
BULLFINCH	Pyrrhula pyrrhula
REDPOLL	Acanthis flammea
LINNET	Acanthis cannabina
SISKIN	Carduelis spinus
REED BUNTING	Emberiza schoeniclus
BRAMBLING	Fringilla montifringilla
DUNNOCK (Hedge Sparrow)	Prunella modularis
TWITE	Acanthis flavirostris
MAGPIE (Common)	Pica pica
JAY (Eurasian)	Garrulus glandarius
JACKDAW	Corvus monedula
(RED) CROSSBILL	Loxia curvirostra
YELLOW HAMMER	Emberiza citrinella
PIED WAGTAIL	Motacilla alba
MISTLE THRUSH	Turdus viscivorus
SONG THRUSH	Turdus philomelos
BLACKBIRD	Turdus merula
STARLING (Common)	Sturnus vulgaris
DIURNAL BIRDS OF PREY	Falconiformes
OWLS	Strigiformes

APPENDIX 3

BIRDS WHICH MAY BE SOLD AFTER BEING SHOT

COMMON NAME	SCIENTIFIC NAME
Mallard	Anas platyrhynchos
Red grouse	Lagopus lagopus scoticus et hibernicus
Red-legged partridge	Alectoris rufa
Barbary partridge	Alectoris barbara
Partridge	Perdix perdix
Pheasant	Phasianus colchicus
Woodpigeon	Columba palumbus
Greylag goose	Anser anser
Wigeon	Anas penelope
Teal	Anas crecca
Pintail	Anas acuta
Pochard	Aythya ferina
Tufted duck	Aythya fuligula
Eider	Somateria mollissima
Ptarmigan	Lagopus mutus
Capercaillie	Tetrao urogallus
Coot	Fulica atra
White-fronted goose	Anser albifrons
Shoveler	Anas clypeata
Scaup	Aythya marila
Common scoter	Melanitta nigra
Black grouse	Tetrao tetrix
Golden Plover	Pluvialis apricaria
Jack snipe	Lymnocryptes minimus
Snipe	Gallinago gallinago
Woodcock	Scolopax rusticola

APPENDIX 4

VULNERABLE WILD CREATURES TO BE AFFORDED PROTECTION

Common Name	Scientific Name
INVERTEBRATES	
SPIDERS	
	Dolomedes plantarius
BUTTERFLIES	
Chequered Skipper	Carterocephalus palaemon
Heath Fritillary	Melitaea athalia
MOTHS	
Black-veined	Idaea lineata
Barberry Carpet	Pareulype berberata
BEETLES	
	Chrysolina cerealis
DRAGONFLIES	
Norfolk Ashna	Aeshna isoscles
GRASSHOPPERS AND CRICKETS	
Wart-biter	Decticus verrucivorus
Field Cricket	Gryllus campestris
Mole Cricket	Gryllotalpa gryllotalpa
MOLLUSCS	
Glutinous snail	Myxas glutinosa
Sandbowl snail	Catinella arenaria
Carthusian snail	Monacha cartusiana
VERTEBRATES	
FISH	
Burbot	Lota lota

APPENDIX 5

Prohibited means and methods of killing, capture and other forms of exploitation

MAMMALS

Snares

Live animals which are blind or mutilated used as decoys.

Tape recordings used to decoy animals.

Electrical devices capable of killing and stunning.

Use of artificial light sources to attract mammals.

Mirrors and other dazzling devices.

Devices for illuminating targets.

Sighting devices for night shooting comprising an electronic image magnifier or image converter.

Explosives

Nets (1)

Traps (1)

Poison and poisoned or anaesthetic bait (including gas).

Gasing and smoking out

Semi-automatic or automatic weapons with a magazine capable of holding more than two rounds of ammunition

Use of aircraft to pursue and overtake animals.

Use of motor vehicles in motion to pursue and take mammals.

---

(1) if applied for large scale or non-selective capture or killing.

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