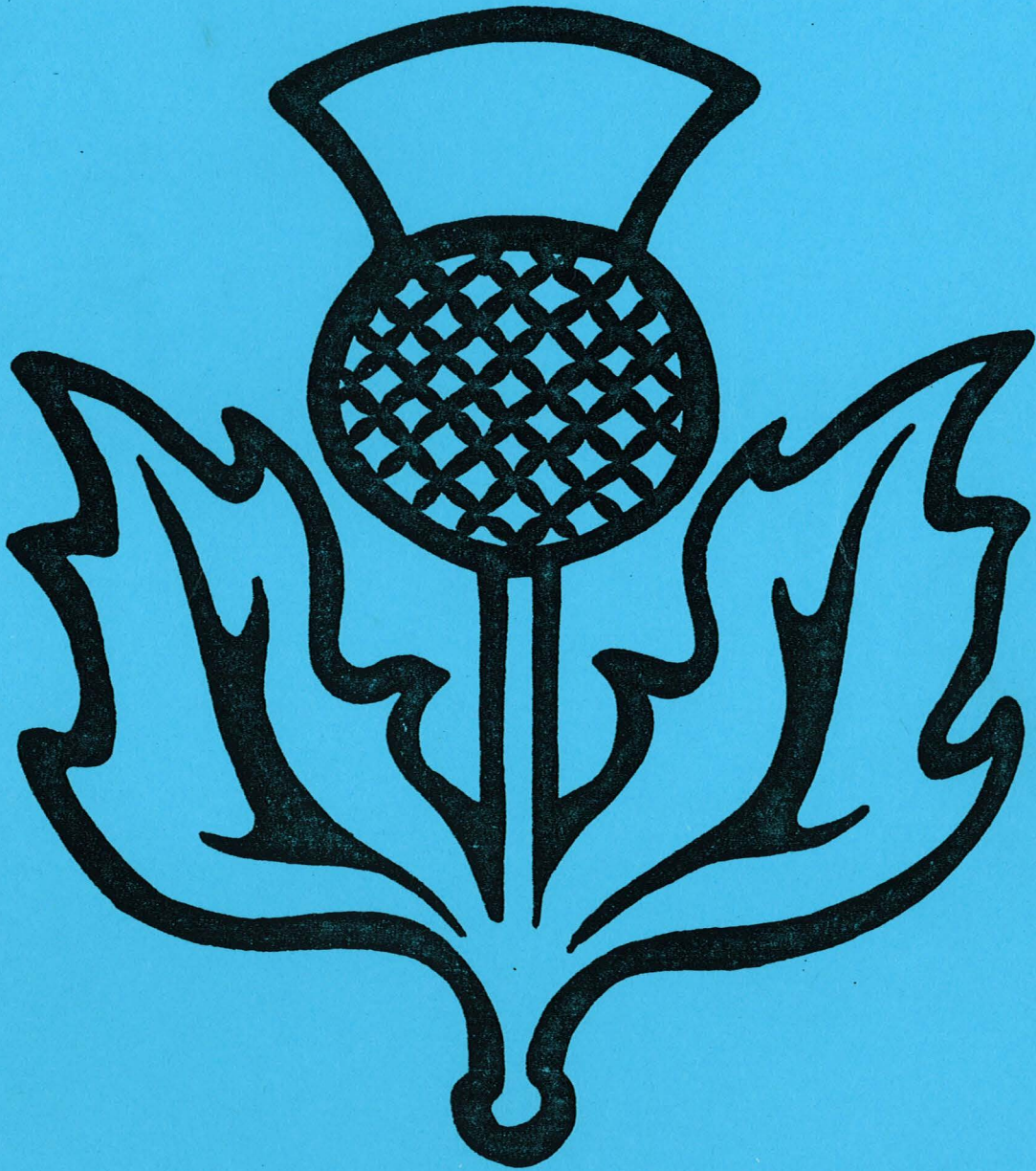


BCCG

Newsletter No.1 Vol.2

December 1978



BIOLOGY CURATORS GROUP NEWSLETTER

VOLUME 2 NUMBER 1

DECEMBER 1978

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EDITORIAL

Few members who attended the BCG meeting in Manchester could have failed to be impressed by the work being carried out in museums in the North West. The atmosphere and enthusiasm created by the North West Collections Research Unit is obviously resulting not only in better documentation of biological collections, but providing a useful forum for communication at a regional level. If the provinces expect peripatetic curatorial help from the B.M. (N.H.), a prerequisite must be well documented and researched collections at the local level, and the development of C.R.U's in other regions must foster this aim. Potential exists within the present BCG Committee structure to parallel developments in the North West, each region having a representative. Will 1979 see Collection Research Units flourishing in all the regions?

Many members will have been following the debate in Nature pertaining to Exhibition policy at the B.M. (N.H.). This issue includes an open letter on display from Brian Seddon, and I would be pleased to continue the discussion in the Newsletter.

Many hours of labour went into the enclosed index of Newsletters 1-10 by Geoff Hancock. To make subsequent index production an easier task all subsequent Newsletters will be numbered sequentially. Can you please regard Newsletters 1-10 as Volume One.

Finally I would like to express my thanks to all the contributors from north of the border who have helped to make this particular edition a bumper one.

Peter Davis



City of Birmingham

CITY MUSEUMS AND ART GALLERY
Birmingham, B3 3DH.

Telephone 021-235 9944

Dennis Farr MA FRSA FMA
Director

your ref
our ref NHD/BAS/PT/80
date 9th November, 1978
telephone calls to Dr. Seddon
direct line 021-235 2838

An Open Letter on Exhibition in Natural History Museums.

"Consternation" is certainly the most appropriate way to describe response to recent changes in the exhibition galleries of the Natural History Museum, London, as debated by Dr. Miles and Dr. Halstead (Nature Vol. 275, p. 682 - 3, 26th October 1978). But the implications of the new exhibition policy spread far more widely than among interested scientists: it will set the seal of approval on a trend which already has influenced many provincial and city museums. Its effect is to make the exhibits subservient to the story and therefore to use specimens (or substitute models or photographs) as adjuncts to a dominant theme.

Two of the clearest consequences may be mentioned. One is that the content of exhibitions no longer reflects the strengths of the collections and the development of "displays" independent of the collection resource can lead to questioning of the need to maintain the latter. This danger is more significant in provincial and local museums where the entertainment function is accorded a high priority and the collection function is less well understood by the managing committee.

The second consequence is that such highly structured exhibits can only be read in one way, i.e. in the intended context, and often it can only be viewed meaningfully by following the prescribed sequence. This precludes the visitors' option to view selectively and his freedom to interpret facts for himself and to extract information in a context of his own choice.

The obsession to educate, in terms of a "message" usurps the role of a museum as a place of exploration and discovery. Dr. Miles should ponder on statistics he offers us to realise that the style of earlier exhibitions had not deterred the flow of visitors to the Natural History Museum nor will his innovations increase the enthusiasm of the "most common" age groups among the museum audience.

B. Abell Seddon
Keeper of Natural History
Birmingham City Museums.

THE 'ECOLOGY' EXHIBITION AT THE B. M. N. H.

Geoff Swinney will be reviewing the Ecology exhibition in the Museums Journal before too long so, in response to the Editor's request for some first impressions, June Roberts has written an outline and I have contented myself with a few scattered thoughts and comments. SF

First impressions of the new ecology gallery are favourable by comparison to recent changes elsewhere in the same building. A mammal gallery on the first floor has been sacrificed, and certainly the exhibition has been designed to enhance the interior architecture rather than conceal it. An expanse of soft green carpeting lures one in and, with the use of coarse-grained wood exhibition structures, harmonise well with the theme. A pleasantly high level of natural lighting has been retained.

The exhibition extends along either side of a pillared gallery, with extensive space and seating in between. The topics are numerically linked leaving the visitor no choice to wander. The first concept, energy, continues as the linking theme of the exhibition. Plants, animals and their feeding methods are taken next in turn. Throughout the exhibition examples are demonstrated from two purposely chosen habitats - an oak woodland and sea shore. Familiarization with these two is taken to questionable lengths in a large diorama on food chains, where the visitor may ponder at an oak woodland implanted on a rocky shore. However it appears to communicate the concept of food chains to a hopefully enlightened audience. A few food chains later, there follows another large impact display with a giant marine food web, composed of encased specimens interlinked by threads and a niche inviting the onlooker to step in and complete the web. This leads on to trophic levels, and lastly ecosystems. The final gimmick also has the last word in visitor participation - enabling a person to sit before a screen with push-button responses to 'participate' in solving an ecological problem - which is to account for the population explosion of winter moth caterpillars in an oak woodland.

The use of push-button responses and "What the butler saw" peepshows in the exhibition are used to better ends than the gadgets in the Human Biology exhibition and to provide test points of absorption - by relating the questions to the preceding topic. It is refreshing to see so many dioramas and so few models, and a high proportion of back-lit transparencies add to the quality of presentation.

As a relative newcomer to biology I was able to view through the eyes of the proverbial 11-13 year old. Nonetheless, I felt that a higher tier of information ought to be included in a National Museum exhibition on such an 'in' subject. JR

In comparison with the multi-coloured light show downstairs, the displays are better (with some very pleasing case design), the education is much better, but I am still not convinced that they have got their museum approach right.

It starts with audio-visual presentations again - and the audience capacity is so limited that many slip the first part; something you cannot have if you are adopting a strictly sequential approach.

Indeed the use of interdependent displays assumes that visitors want to follow a story even if it means queuing to see some labels. Not many that I watched had either the patience or the inclination.

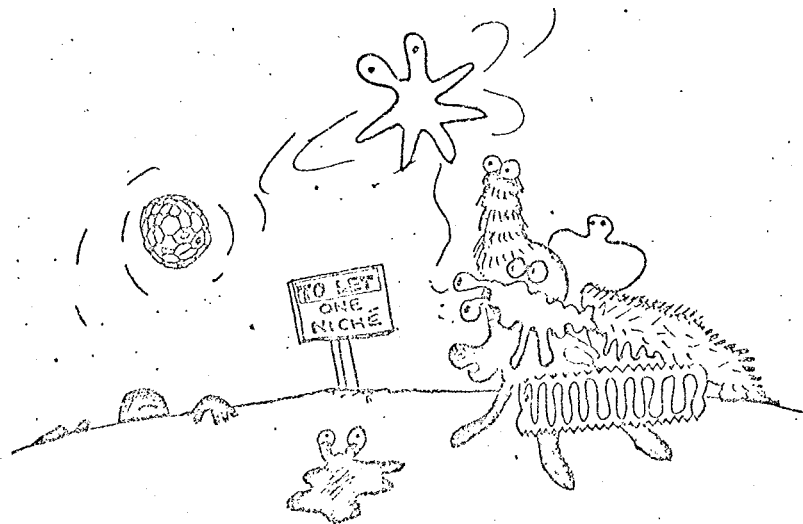
Some of the specimens (yes, there are specimens!) seem a little tatty, and the modelling is not always up to the standards of some provincial museums.

Good to see acknowledgements of help from a number of provincial museums - dare one wonder what cooperation there was with the staff at the B. M. (N. H.)?

There is a very well constructed diorama showing an oak woodland with its roots in a seashore (literally), complete with deep water species. I do hope schoolkids and foreign visitors appreciate the stylisation or they are going to have some very funny ideas about the British countryside.

Finally, the crowds are much bigger and the models much more communicative to the wide-eyed excited kids elsewhere in London this Christmas - so do visit Selfridges window and see the superb scenes from 'Wind in the Willows'. There is also a rather nice quotation which might be thought to have some little relevance in the present context: 'Once it was nothing but sailing whatever Toad takes up he gets tired of it!'

Steve Flood
June Roberts
St. Albans Museum,
Hertfordshire.



THE IDENTIFICATION OF LARVAL TICKS FOUND ON SMALL MAMMALS IN BRITAIN

The latest in the 'Occasional Publications' of the Mammal Society, written by K. R. Snow. The booklet provides a key to, and descriptions of, the five species of tick found on rodents, lagomorphs and insectivores in Britain. It may be obtained from the Publications Officer, The Mammal Society, Larknead, Barton Mills, Bury St. Edmonds, Suffolk IP28 6AA, price (to non-members of the Mammal Society) 25p + 7p s. a. e. ($6\frac{1}{2}$ " x $8\frac{1}{2}$ ") or 10p p + p.

JARS WANTED

Does anyone know of a supplier of large, squat screw-top jars of the 'extra-wide mouth' variety for storage of fluid preserved specimens? This shape is available from a number of manufacturers in sizes up to 500 ml, but do they exist anywhere in 1000 ml and 2000 ml capacity with the same squat shape? Information please to John Skinner, Central Museum, Victoria Avenue, Southend on Sea SS2 6EX.

GCG NEWSLETTER

Volume 2 No. 3 of GCG Newsletter includes articles on the JG Cumming Fossil Collection, Oak Hill Park Museum, Accrington, Blackburn Museum, John William Elves (1850-1918), the Philpot Collection, the Sherborne School Museum and Type and figured brachiopods and bivalves in the Yorkshire Museum. There is also a useful supplement on the internal conventions used with the IRGMA Geology and Mineral Specimen cards in the Documentation of the Geology Collections of Tyne and Wear County Council Museums.

HANDBOOK FOR BIOLOGICAL RECORD CENTRES

Copies of the Handbook have been distributed to all record centres, but additional copies are now available (price £1.10) from Stephen Flood, St. Albans Museum.

HOW TO CREATE LIFE

1. Dissolve contents in $\frac{1}{2}$ pint tap water
2. Place container in warm daylight place
3. Leave for 2 days

HEY PRESTO - you have created life!

'.....perhaps this was the way life first started on the Earth, maybe man himself will one day discover the magical mysteries of suspended life that Artful Artys have known for millions of years

(From instructions with 'The Amazing World of Artful Artys' on the rearing of the brine shrimp Artemia)

DIRECTORY OF NATURAL HISTORY AND RELATED SOCIETIES

The General Library of the British Museum (Natural History) jointly with the Council for Nature is gathering names and addresses of British natural history and related societies in order to produce an up to date directory of such societies. It is hoped that the completed work will be as comprehensive as possible and all suggestions of local societies and groups suitable for inclusion would be welcomed by Audrey Meenan, General Library, British Museum (Natural History) Cromwell Road, London, SW7 5BD.

The information for inclusion in the directory will eventually be collected by questionnaire. Please could you let Audrey Meenan know fairly soon if you know of any society or group, however small or remote, that you think may warrant a place in what could be a very useful published list.

Martin Brendell
British Museum (Natural History)

SUBSCRIPTIONS

BCG subscriptions are due on the 1st January 1979. Please try and pay promptly to give our Treasurer an easier task.

Personal membership is now £3, Institutional membership £5.

RESTITUTION OF CULTURAL PROPERTY

The Chairman has received a letter from Len Pole of the Museum Ethnographers Group concerning this issue, in which he states that MEG is at present discussing the formulation of an attitude to the problems raised, but has not as yet reached any firm conclusion. A forum for 'the two way exchange of ethnographic material' has been set up by ICOM and is called MUSEP - the Museum Exchange Programme.

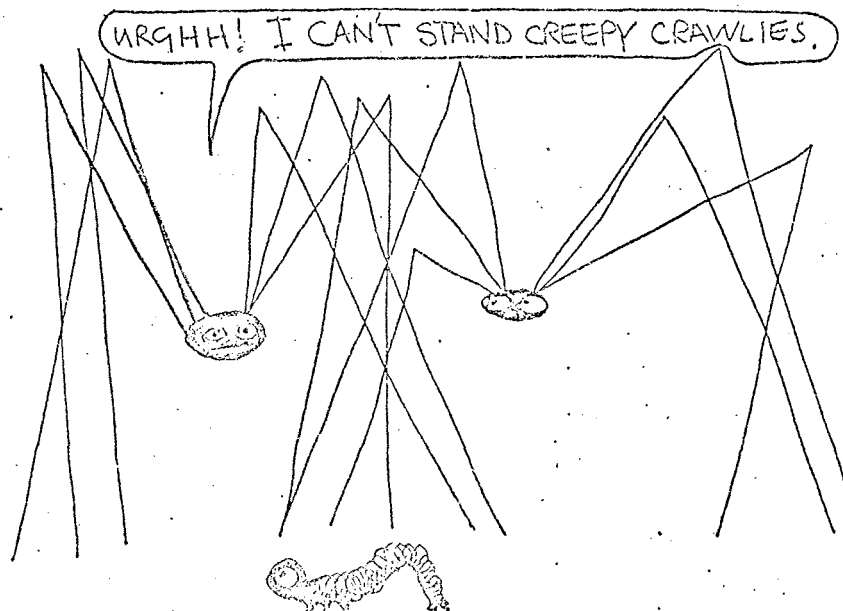
POLECAT DISTRIBUTION SURVEY

The aim of this survey is to collect information on the distribution of the polecat both past and present. The survey has been running for about 18 months and has provided a fairly large number of new sources of records. A number of museums have also been found to have 'new' records. This raw material will in time be used with all the other information for a long term (full-time) study of polecat distribution. The distribution of the polecat is increasing slowly after the range was reduced to a small area around Aberystwyth, of 40 miles radius. The study aims to document the increase in range of the species. The survey has so far been running for nearly 16 years and although this sounds a long time only about 800 records have been collected during this period.

The information required is details of all specimens that museums have in their collections. Specific information required includes 1. Sex, 2. Form of record i.e. skull, skin, mount, 3. Locality 4. Grid reference, 5. Date, 6. Museum Accession No. 7. Can the material be examined? 8. Can bodies (fresh) be provided? (they can be returned if required), 9. Measurements.

Records from the period between 1800 to the present day would be particularly useful as there is more work to be done on the rate of decline of the polecat. The main source of these records will be Church Warden's Accounts and any records of this type will be gratefully received.

All information to Mike Teall
The Bourne
Cranes Road
Sherborne St. John
Basingstoke
Hants, RG24 9HY.



REPORT OF THE MEETING OF THE BIOLOGY CURATORS GROUP
HELD AT MANCHESTER MUSEUM, 1st DECEMBER 1978.

Despite freezing fog and sub zero temperatures, BCG members struggled to the comparative warmth of Manchester Museum on December 1st.

The meeting was divided into two sessions, the first an explanation of the computerisation work being undertaken at Manchester Museum by Bill Pettitt, the second a discussion of several points raised by Graham Walley at the last AGM (see BCG Newsletter No. 8 p.30) covering a number of topics. The following is an account of the meeting prepared from the Editors hurried notes of the sessions.

THE WONDERFUL THING ABOUT COMPUTERS IS.....

Bill Pettitt explained the progress made to date on the computerisation of the Spence Collection at Manchester, and the pilot projects on collections of birds, spiders, aphids, archaeology and data collected by the North West Collection Research Unit. Favourable comments were directed at GOS, which had been revealed to all at an M. D. A. Seminar at Duxford in October.

Implementation of GOS outside Cambridge is to take place at Manchester in the near future, with financial assistance from the North West Area Museums Service being used to employ a person to supervise the implementation of GOS and the language BCPL.

The composition of UMRCC was explained, and the feasibility of establishing links between other computer centres and Manchester described. In this way GOS can be made available to other museums in Great Britain.

The stages in computing data were explained, with particular reference to the Manchester experience and man hours involved. This is summarised below (time (hours) indicated per batch of 50 records)

<u>Phase 1</u>		<u>Phase 2</u>		<u>Phase 3</u>
Code data onto sheet	Punch →	Input Listfile Call check Edit	→	Test index Errors, Vocab Edit Repeat
8.00	0.05	0.05 0.05 4.00 1.00		0.05 0.5 0.25 0.20

Phase 4

Second Card
Check

Magnetic
Tapes

0.05
0.05

Phase 5

Major concordance
Edits

Desired output

2.8

Total man hours/50 records = 18, or a possible achievement of approximately 4500 records/person/year (the operation can be split between Curator, Coder and computer operator.)

With the success of the project evident, Bill Pettitt went on to describe the next stage, the implementation of a 20 person M.S. C. scheme to computerise varied collections (flints, roman pots, shells, spiders, liverworts, ammonites etc) in the Manchester Museum.

A number of handouts were made available to BCG members at the meeting, including a note on the M.S. C. scheme, minutes of the meetings of NWCRU, collections data coding forms, a list of liaison officers at University Computing Centres (for links to GOS at Manchester) and a sample of raw data as input to the computer. Copies of these are available from Bill Pettitt at Manchester Museum.

AFTERNOON SESSION

This followed the lunchtime session, and a lively discussion interrupted by the occasional perambulation resulted. Graham Walley spoke briefly on the proposals put forward to the last A. G. M. and comments were made regarding the following issues:

a) Development of conventions for the M. D. A. Natural History card. The availability of past and present M.S. C. schemes had provided biology curators with an ideal opportunity to catalogue their collections, but an essential prerequisite to this was the development of conventions regarding keywords - a control vocabulary. Undoubtedly various museums had adopted their own internal conventions, but agreed standards were required at a national level, and the view was expressed that M. D. A. should have dictated terminology to ensure compatibility of records (n.b. 1. the Editor would be pleased to receive any article relating to adopted internal conventions for the Natural History card 2. Bill Pettitt has agreed to write an article for the next BCG newsletter on this issue).

b) The production of a natural history sites catalogue and a natural history locality sheet. Considerable discussion took place regarding biological recording and in particular the relationships between BRC, the local record centres and the Nature Conservancy Council. Some concern was expressed about the role of the NCC field units, and it was felt that the present situation and future of biological recording required clarification and consultation at the highest level. The Chairman agreed to contact BRC and the Chief Scientists Team of NCC. Catalogues of sites were thought to be more useful at a regional level, and the majority of members were satisfied with the BRC 'Available habitats' card for site documentation.

c) The preparation of a register of type specimens. It was felt that this may be feasible for provincial museums, but virtually impossible for the major centres. The discussion moved into the role of the B. M. (NH) staff as peripatetic curators, but it was felt that a good deal more groundwork by provincial curators in assessing their collections was a prerequisite of more detailed study. The efforts of the North West Collection Research Unit provide a useful lesson, and indicate what can be achieved at the regional level.

d) The preparation of a 'Register of Expertise'. A number of points were raised which made such a register difficult or inopportune to compile. Particular reference was made to the swamping of referees with material and the assessment of standards of expertise. Although undoubtedly a useful aid to those biologists new to the profession, it was felt that other channels of discovering referees were available.

Other points discussed briefly related to:

Collections Survey Report. 500 copies of the report are being produced and should be available for the BCG/SBNH meeting in April 1979. Discussion took place on updating the report, and it was felt that this is another vital role of regional C. R. U's.

Carnegie grants for training in taxidermy. The trainees are to be located in Milton Keynes and Blackburn at Area Service headquarters, and it was thought desirable that at least some time should be spent by trainees in a museum environment. Some concern was expressed regarding the ability of the taxidermist in dealing with potential research material. Discussion took place on the possible formation of a 'technical division' within BCG.

International Conference, April 1979, BM (NH), and AGM of the BCG. It was decided that the AGM of the BCG will be held at 11.00 a.m. on Tuesday 3rd April at the BM (NH), to avoid clashes with the Conference programme. A detailed programme for the Conference will be found with this newsletter.

Specialist Session, Museums Association Conference. Portsmouth is this years venue for M. A. Conference, and the BCG Specialist session will be the morning only of Wednesday 11th July. One suggested theme is the links between museum and other statutory and voluntary organisations involved in countryside management and interpretation. Note that there will be no charge for attending this meeting.

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* THE ANNUAL GENERAL MEETING *

of

* THE BIOLOGY CURATORS GROUP *

will be held at

* THE BRITISH MUSEUM (NATURAL HISTORY) *

at

11 AM, TUESDAY 3RD APRIL

* * * * *

PAISLEY MUSEUM AND ART GALLERIES, NATURAL HISTORY
DEPARTMENT AND BIOLOGICAL RECORDS CENTRE, RENFREW
DISTRICT COUNCIL

Museums are a combination of collections, displays and activities, and the presumed purpose of articles such as this is to broadcast to the profession information about these facets so that facts, opinions and ideas may be exchanged.

On advice from the Editor I have decided to concentrate on "activities", and in particular on biological recording, which I think is of great importance to museums and to the society they work in. The contents of this article are a personal view as will be apparent, and much of what is said will be old hat to many others in more advanced centres.

To set the scene: our collections have not been well documented historically. There is probably no nationally important material present but we have useful reference collections in many groups. The displays, now about ten years old, are good, up-to-date based on local habitats but with some general interest features. Activities are treated as an important aspect of museum work. Contact with the public is made whenever possible, the constant aim being to extend people's interest in natural history, their respect for 'flora and fauna' and to encourage greater appreciation of the interdependence of humanity and the natural world.

This museum began the recording habit in 1975 when I arrived fresh from the Leicester course, full of ideas and raw enthusiasm. During the course I had visited Monk's Wood and had been exposed to Frank Perring's persuasiveness. I have also seen the records centres at Leicester and Dundee and had become convinced this was an essential role for museums to adopt. Many museums seem not to have a great involvement with local naturalists and there is much natural history that goes on without contact with the local museum.

Of course museums have an important job to do in providing an initial exposure to natural history by means of displays and by providing information on request but this is all done against increasing competition from television, books and magazines, nature centres with ranger guided tours, all capable of providing the initial stimulation in very attractive ways.

Recording gives a new sense of purpose to museums and makes it much more rewarding to be able to tell the audience "this is nature, and this is what we are doing to further its study and to safeguard it". It also provides a new bond between the museum and local naturalists which was once much stronger than is general today. When I look through the

collections and see how many people collected and gave to the museum I find it difficult to see a comparable support group in the local area these days.

The first move in setting up a records centre is of course sounding out the local feeling and measuring the likely support. In our case a forum was held in Spring 1976. The idea was welcomed but of course the amount of practical help to be expected was of a smaller measure. Being a newcomer to the area with new ideas naturally invites a 'lets wait and see' response. Also of course many active people are already doing their own work; so it became apparent that the initial work would fall to the museum. This does have several advantages in that:

- a) The centre remains independent and does not get immediately annexed by one particular group to the exclusion of others!
- b) the system can be fairly quickly established and become a physical reality to demonstrate the principles
- c) It means the organiser has to get involved in each of the groups and in the study of the area and so goes through a good and essential grounding.

On one hand it is a symptom of the gulf between museums and the naturalists' movement. Many established naturalists were paying their first serious visit to the museum. On the other hand as the system is slowly developing and gaining some respectability, support is slowly being offered. Moreover the interest is coming from serious conservation minded naturalists and not the record-hoggers, the do-littles or the empire builders.

Development is unavoidably piecemeal but a rough chronological sequence is as follows. The initial work was to find or prepare county species lists for the more popular groups. In the Clyde Area a good, if dated, main source was the British Association handbook of 1901, listing flora and fauna. Since the system is designed for the future a fairly large range of biological groups was adopted, though information on some of them will be minimal for some time to come. The index cards I have used have, in addition to the map and recording lines, a space for general notes about the species status, national distribution, ecology and so on, so that each card has, or will have, a potted history of the species on it. There is also a box for a single word description on status: common, rare etc.

Choice of geographical area of coverage has caused some minor problems, not only here, but in Scotland generally. We are centrally placed in vice-county 76 - Renfrewshire, which has been the traditional recording area for a long time. Prior to re-organisation (1974 in Scotland) this

was a Borough museum with a county-wide interest. Reorganisation divided the county into three districts and politically our area of responsibility is now only Renfrew District. Our current interest in the larger area can rightly be defended in terms of our traditional interest and the fact that natural history interests of people within the district extend beyond the district boundaries. Up to the present no conflicts have arisen, the great bulk of the work has been of direct relevance to the Renfrew District. Eventually, however, I hope that the centre will make a 'quantum jump' in energy and then formal agreements will be required between Districts so that our service may be extended.

The second stage was the gathering of site information and it soon became apparent that no systematic site analysis had been conducted previously and many places seemed to be little studied, perhaps because they were off the 'beaten track'. It has to be said that this area, whilst of considerable inherent value, is flanked on the north by the beginnings of the Highlands, with a multitude of places of great beauty close at hand, and this is a great temptation to many naturalists. Initial searches showed that several bodies were all guarding the same items of information and that a comprehensive site data system such as a records centre could provide would be a great advance.

Using aerial photographs, six inch O.S. maps and the habitat maps which had been completed up to that time a search was made to identify all known or suspected sites of biological interest and catalogue them by 10km squares. This was initiated in response to a request from the Strathclyde Regional Planning department who were preparing a structure plan which would show areas of ecological value. (The outcome of this is another story). Previously notified sites were thirteen S.S.S.I.s and seventeen Listed Wildlife Sites (five of which were also S.S.S.I.s). The survey produced sixty-eight sites with some ecological value at least at the local level. Of course some of these sites were of lower quality than required for inclusion under the two schemes above, but this is one of the strong points of a properly organised centre.

Habitat mapping is, I think, an important and early activity to engage in. The handbook gives it a low priority, but there are several points to consider. The maps are a good basic recording tool for visual storage of information. The mapping demands on close look at the recording area which in many cases would not have happened before. Also it is a very good scheme for encouraging participation and interest in the record centre for non-expert naturalists and encourages the adoption of local areas by local people. They can be used to show the fragmented nature of the landscape, how few semi-natural places exist and so on.

We were fortunate in securing a four-person job creation team for a year, who participated in data collection and habitat mapping. With drawbacks like transport problems and bad weather the coverage was limited but we mapped half the county : 247 out of 550 k.m. squares. Portions of the remainder have been allocated to volunteers (local park rangers mostly) and next season should see the bulk of the work done.

I suppose there are many choices of storing site and area information depending on the size of the county, number of known sites and the sophistication of the centre. Here we use a suspension filing system with one space for each 5km. square (6" map). Within each division there is a folder for general area information plus a folder on each known site within the square. Each folder has an attached sheet for recording major items added to that file. A wall chart gives file locations for the sites as well as summarising the information held. A second filing system holds information on a biological-group basis; useful for storing multi-species notes or summaries etc. A third set of files is being developed on a habitat basis which is intended to store information on habitat distribution etc; verge survey work was carried out last year as part of a regional exercise. A semi-natural woodland survey is on the agenda for next year.

The use and usage of the records centre varies with the personality in charge, the local demands in terms of science, education or planning and the degree of development the centre has reached. At the basic level, as mentioned, it is an activity which can be used to encourage greater awareness by the public of their natural surroundings whether anything practical develops or not. Nearly every visitor here gets a demonstration. We have had a few visits from final year school pupils doing sixth year area studies and it presents a useful opportunity to explain by means of the maps and information store how the flora and fauna of that area is structured, and of course the conservation issues pertinent to that area. We have submitted reports to planning department where there has been a nature conservation issue but no major battles have been engaged in so far. Present development confines us at the moment only to the presentation of information: the respect paid to this is no doubt small as yet but it is still early days. At this level there should of course be an active county body which can provide the pressure to have the case heard fully and fairly. I think it is fair to say that this area is less well endowed in that respect than many others, but the record centre is useful in encouraging development in this field by producing the information and highlighting the issues.

The centre has played a useful part in providing biological information to, amongst others, a local firm with landscaping problems (we were able to indicate the value of their marshy factory grounds); to the R. S. P. B. on providing some information about the fauna in one of their reserves and to a local society about the records for a local site.

I do not imagine that this performance is anything special, indeed I am very envious of those other centres which I know do much greater deeds. I am trying to chronicle some of the events which this centre is engaged in at present and to demonstrate how closely they tie in with what museums have or should have been doing for a long time. It enhances the service to the public directly and indirectly. It gives the collections a purpose they have not had since the pins were shiny and new. It gives the museum a chance to participate more fully in the functions of the local authority, thus using its expertise and environmental knowledge.

Our collections, like most other museums, have a considerable cultural and scientific value, and I know that they should be preserved for as long as possible. But if usage is confined to an occasional curious public and even less frequent academic examination then all the curation, space and effort is rather under-rewarded and the collections moulder away slowly (or not so slowly) and become unusable without really having been used. They will need replacement eventually and for most museums the only really justifiable reason for collecting is that of localised specimens for distribution records. This is only worthwhile if the record centre exists to use the data. The best way to have them properly used "for comparative identifications and education" - is to encourage people to have an interest in learning to identify and study, small groups (say woodlice or carabids) - one good motive for these studies in distribution work. So the records centre may finally create a proper role for the collections and we will feel less like caretakers and more like scientists.

I suppose all this means a shift in emphasis for the natural history department, away from the purely display orientated work back to a more scientific role but with a new set of principles to guide our displays. It will mean a narrowing of the gulf between the dual aspects of our work - display and science, which has caused some serious problems in the past, not least being the dual purpose collections - half being only suitable for display, the rest being too small, too boring or not pretty enough! Now we have a new reason to display insects and pressed flowers and even systematic displays because we have got a new interest in their conservation and study.

I hope these notes will have shown that recording is flourishing in Scotland in some way or another. (I found recent letters in BCG newsletter from Glasgow based biologists interesting in this context). I also hope that I have given some re-assurance to other small centres who are struggling to find their way - you are not alone! Perhaps also there may be a note of caution about allowing display-orientated policies to sweep away all the scientific value of our inherited collections widening the gap between museums and the natural history movement - a gap which is too wide already. Recording is a valuable service that museums can do best and will help to bring support and meaning back to the collections and take the collections to the people.

David Mellor,
Paisley Museum

IN PRAISE OF SODA-WATER

"Let us have wine and women, mirth and laughter
Sermons and soda-water the day after"

Byron 'Don Juan'

Byron had the right idea. Although most museums are conspicuously lacking in the first four items that he mentioned, I would like to suggest that there is good reason for any zoologist working with aquatic invertebrates to keep a soda-siphon within easy reach. The fixation and subsequent preservation of many invertebrates in a near-original shape and condition depends greatly on what you do to the animal before you fix it. The advantages of dealing with animals fixed without distortion or damage are obvious, and the importance of narcotisation prior to fixation should not be underestimated. Many narcotics and methods have been tried for various animals with varying degrees of success. The traditional techniques using menthol and magnesium chloride are still excellent for certain groups, but take quite a long time to become effective and in some situations that time may not be available. Other, more recent narcotics, such as MS 222 have been used with success with fish and small crustacea but their side effects have not yet been fully researched.

In certain field and laboratory situations, a narcotic is often required to be speedy, simple and, if possible, non-toxic to the user. Gannon & Gannon (1975) found that, when working with zooplankton, the addition of a volume of soda-water equal to one-tenth of the sample volume proved a rapid and effective narcotic. Animals could be fixed without distortion, loss of gut contents or dropping of egg-sacs by females. Narcotisation was complete within two minutes.

During a recent visit to the Marine Laboratory at Plymouth, I attempted to narcotise various marine invertebrates by using the soda-water method. The siphon was filled with sea-water and the contents of the CO₂ bulb injected as usual. Various volumes of this carbonated sea-water (CSW) were added to the water containing the animals, and times noted when complete narcotisation occurred. The results are seen in the accompanying table.

Marine invertebrates are relatively unpredictable in their responses to narcotics, but a few general points can be noted from the table of results:

1. Carbonated sea-water is relatively rapid in effect. Only those animals which have some means of shutting themselves off from their environment took an hour or more to become narcotised (e.g. Balanus, Pomatoceros, Cardium). This is only to be expected, since Balanus

close their tergal and scutal plates, Pomatoceros retract into their tubes behind a stout operculum, and Cardium can close the two shell valves.

2. Broadly speaking, a mixture of 50% CSW to 50% sea-water appears optimal for rapid narcotisation without distortion or other side-effects. The pH value at this concentration is 6.5, which should have little side-effect on intertidal animals.

3. Small fish and crustacea seem to respond particularly well to this method.

Here, then, is a simple and effective narcotisation technique which may be applied to fresh water and marine animals, is non-toxic to the user, cheap and portable. Those working on fresh water animals should perhaps carry a small hip-flask to allow for periods of personal narcotisation. The soda-water method is not restricted to invertebrates. This method obviously requires more trials on more animal types, and I would be interested to hear of any results which are obtained. A synopsis of other narcotisation methods (see below: Lee & Smaldon, 1977) is available from me, free of charge.

G. Smaldon,
Royal Scottish Museum,
Chambers Street,
Edinburgh.

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TABLE

<u>Animal</u>	<u>Optimal % CSW</u>	<u>Time for complete narcotisation</u>
<u>Palaemon longirostris</u> (Prawn)	45	10 min.
<u>Crangon crangon</u> (Shrimp)	45	15 min.
<u>Gobius</u> sp. (Goby)	45	15 min.
<u>Gibbula</u> sp. (Gastropod mullusc)	60	30 min.
<u>Patella vulgata</u> (Limpet)	45	30 min.
<u>Nereis diversicolor</u> (Ragworm)	60	30 min.
<u>Cardium edule</u> (Cockle)	75	1 hour
<u>Pomatoceros triqueter</u> (Tubeworm)	75	1 $\frac{1}{4}$ hours
<u>Balanus</u> sp. (Barnacle)	45	2 $\frac{3}{4}$ hours

PERTH MUSEUM - ITS HISTORY AND COLLECTIONS: A BRIEF SKETCH

The area of Perth and Kinross District which Perth Museum and Art Gallery serves consists of some 2,000 square miles of largely non-industrial land containing a variety of highland/lowland environments, including within its boundaries many nature reserves, (both national and local), in addition to SSSIs. It's flora and fauna are exceptionally rich and varied and have been the subject of constant research since the earliest days of natural history in Britain.

The present extensive biological and geological collections in the Department can be largely attributed to the collecting zeal of the members of two societies: the Literary and Antiquarian Society of Perth (L and A Soc.) and the Perthshire Society of Natural Science (PSNS). Though the former society (now defunct) collected a great deal of important material which now forms the nucleus of the ethnography and archive collections, the bulk of the biological specimens were collected by members of the PSNS.

The following is an attempt to outline briefly the history of these societies and the subsequent history of Perth Museum and Art Gallery. It must be stressed that these notes are the result of preliminary research only and that hopefully more detailed accounts will appear at some future date.

History

The Literary and Antiquarian Society of Perth first met in 1784 and almost at once collections of all types began to accumulate. Prior to 1818 the Society's collections were kept in a 'closet' adjoining Perth Public Library and then in an apartment in that building. In 1822 it was proposed that following a public subscription a 'monument' to Thomas Hay Marshall, Esq. of Glenalmond be erected to contain halls for the Public Library and the L and A Soc. This building, opened in 1824 forms part of the present museum and is amongst the oldest surviving museum structures in Britain. The L and A Society's minute book contains records of some interesting, if vague, donations including "a very singular animal resembling the dragons of fabulous history", "an enormous centipede" and "a very elegant grasshopper".

The L and A Soc. continued to meet through the last century until eclipsed by the PSNS formed in 1867 and still thriving. The PSNS aimed right from the start to establish a natural history museum in Perth and some discussion took place with the L and A Soc. with a view to establishing a joint museum. The latter society, however, undoubtedly regarded the newer society with suspicion, there was acrimonious sniping between them in the press at this time and all plans for a joint museum came to nothing.

Following the death of the PSNS President Sir Thomas Moncrieffe in 1879 subscriptions were solicited and a purpose built museum was opened in Tay Street, Perth, in 1881. Under the able guidance of members of the PSNS, in particular Dr. Francis Buchanan White, the museum flourished and in 1895 Sir William Flower opened an extension. The Tay Street Museum was transferred to Local Authority ownership in 1902 and in 1914 the L & A Soc. Museum was taken over and such of the natural history material which was in good condition transferred to Tay Street.

In 1935 a bequest by Robert Brough (d. 1926) resulted in a new museum building with three art galleries, two natural history galleries, an ethnography gallery, two lecture theatres and large stores built adjacent to the Marshall Monument. All the collections (and displays!) were transferred to this building. All the major biological collection pre-dates this move and subsequently little attention was given to this aspect of the museum.

Staffing

Curators	Col. H. M. Drummond Hay (Honorary)	1884-95
	Alex M. Rodger	1895-1914
	Henry Coates (Honorary)	1914-18
	John Ritchie	1918-40
	J. Wood	1940-51
	W. Davidson	1951-75
	J. Blair	1975-

The Curator was latterly aided by various assistants. In 1977 taking advantage of the Job Creation Programme one assistant was employed to carry out basic sorting and cataloguing of the natural history collections. This year the post of Keeper of Natural Sciences was added to the establishment and a S. T. E. P. Scheme initiated during the course of which four graduates will continue the cataloguing and storage programme and develop a schools service.

Collections

The following list of collections must be regarded as a very superficial account resulting from work recently carried out. However it is sincerely hoped that even such a basic account will promote interest in the collection and stimulate further enquiries.

Fungi	653 specimens	Charles McIntosh (1839-1922)
		J. Menzies (1864-1945)
	7 folios	M. G. Cooke 1875
	(exsiccati)	F. B. White (1842-94)
Lichens	406 specimens	J. G. Baker
		I. Carroll
		W. Galp
		E. M. Holmes
		C. McIntosh
Algae (mainly seaweeds)		S. W. Brown

Algae (mainly seaweeds)
(585 slides
diatoms)

Mosses
Flowering plants

H. M. Drummond-Hay (1814-96)
E. W. Dallas

R. H. Meldrum (1858-1933)
There are four main herbaria:

1. The Prof. J. H. Balfour collection (8500 sheets) originally donated to the L and A Soc. in 1879 via a Dr. McIntosh. This is a fairly general collection containing both Scottish and Foreign specimens.
2. The ex-PSNS herbarium (20,000 + sheets) This is almost entirely a Perthshire collection containing a large amount of material gathered by F. B. White for the "Flora of Perthshire" and his "Revision of the British Willows". Also contains material from Wm. Barclay (Rosa sp.) E. S. Marshall (Juncus sp.) A. Sturrock (water plants) and many others.
3. Col. H. M. Drummond-Hay 13 boxes mainly British
4. A. W. Brown A small collection mainly Perthshire. There are also several small collections including an interesting pocket book containing specimens collected by Dr. MacLaren, Assistant Surgeon on board H. M. S. Hecla during Capt. Parry's Second Arctic voyage 1821-3.

Insects

A very large collection with most orders represented.
The largest collections are:

Hemiptera

6,900 specimens F. B. White - containing material from Alfred Russell Wallace. A further 3,000 non types and 124 types were transferred to the BM (NH) in 1954.

Lepidoptera

48 drawers	F. B. White
16 drawers	Anderson
56 drawers	S. T. Ellisson
24 drawers	Sir T. Moncrieffe

	Coleoptera	38 drawers	F. B. White
Mollusca	20,000 + specimens. A catalogue was published in 1925 by Henry Coates. The collection includes material collected by Loftus St. George Byrne, A. Coates, J. Coates, Rev. Chalmers, H.M.S. Challenger, Rev. R. N. Dixon, Dundee (University College), J. G. Gordon, W. Gyngell, C. Masterson, Miss Mackinlay, Dr. W. C. MacIntosh, W. M. Macandrew, R. H. Moses, W. Mudge, Dr. J. Ogilvie, Mrs. Paull, Mrs. Paterson, C. P. Richards, Dr. D. Robertson, T. Reid, Mrs. Roberts, Rev. F. Smith, L. Soderstrom, Viscountess Strathallan, F. B. White		
Fish	Casts and Skins by P. D. Malloch		
Birds	(Mounted) 1,181 specimens including donations by H. M. Drummond-Hay, W. S. Home-Drummond, J. G. Millais, Sir D. N. Reid, P. D. Malloch		
	skins	1,366 specimens	J. G. Millais (Britain)
		600 specimens	L. Soderstrom (Equador)
		100 specimens	William Fowler (Paraguay)
		43 specimens	Sir D. N. Reid (Britain)
	eggs	Cabinets from C. S. Ferrand, H. R. Jackson, A. M. Crabbie, Sir D. N. Reid, PSNS	
Osteological material	Mainly carnivores especially pinnipeds.		
Game Trophies	J. S. Meikle		

This year the entire storage area has been re-floored and new storage units installed for the osteological, mounted bird, molluscan and geological collections. Certain areas are now well documented and indexed (using IRGMA), in particular the bird, osteological, lichen and spirit collections. White's Hemiptera collection has also been sorted and possible type specimens identified.

All the collections will shortly be satisfactorily housed and indexed.

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Michael A. Taylor
Keeper of Natural Sciences

PAST, PRESENT AND FUTURE OF ABERDEEN UNIVERSITY
NATURAL HISTORY MUSEUM

THE PAST

The Natural History Museum was founded in 1841 when William MacGillivray took up the post of Professor of Natural History at Marischal College. The museum was fortunate to have had such an eminent curator in its infancy (MacGillivray is the author of "The History of British Birds"), for he brought to the post a formidable reputation and considerable experience, which he had acquired as conservator of the Museum of the Edinburgh College of Surgeons.

MacGillivray and his successors, like Prof. J. W. H. Trail and Prof. J. A. Thomson, through their own collecting efforts helped to build up the museum's collections. As it was a teaching museum the collections were not restricted to any particular taxonomic group or geographical area.

THE PRESENT

Museum Policy

Since 1971, when the Zoology Department and its museum moved from

Marischal College to its present new, purpose built accommodation in Tillydrone Avenue, the current policy has been to reduce the number of specimens on display and increase the amount of explanatory and interpretive material. While the policy of the museum is still mainly to provide a service for the teaching side of the university it has been broadened to include visits from primary and secondary schools and other educational institutions. This has not been easy as the nature of the displays is strongly slanted towards undergraduate use. To help overcome this problem the museum has developed some work sheets for "O" and "H" Grade classes.

The Staff

The staff at present consists of:-

The Curator	Prof. Dunnet
A Lecturer in charge of the museum	Dr. Thorpe
A taxidermist/cabinet maker	Mr. Bisset
A receptionist/typist/printer and a technician in charge of invertebrates	Mrs. Rebecca Mr. Watt

The Displays

The displays, which are located in one hall (ca. 900 sq. m.) with a gallery above, cover all the major groups of the animal kingdom with most emphasis on the mammals and British birds. It has taken about seven years to complete the existing displays since moving into the present building. We have now started to redisplay some of the older exhibits to make them more relevant to the students needs. In addition, around the gallery, we exhibit some of the collections made by the honours students.

For the past one and a half years, four graduates and two school leavers have been employed under the Job Creation Programme in redisplaying the exhibits. In particular they have developed an audio/visual package covering the reptiles on display. This unit is simple to operate by the students and consists of a Kodak S-AV 2000 Carousel slide projector linked to an 8 track continuous loop tape deck, containing the commentary and the coded pulses to automatically change the slides and switch itself off. A second unit has been bought and the programme being developed will cover the amphibians. Eventually we hope to have most of the displays linked to an A/V programme.

Recently we experimented by putting on a temporary exhibition about Linnaeus, which is currently touring Britain. As this has been quite successful we hope to acquire further temporary exhibitions.

In addition the museum also exhibits some live animals; mainly reptiles and amphibians, which prove a great attraction with visiting schools, since there is no zoo in Aberdeen.

Storage

The museum is fortunate in having air conditioned storage for the bird and mammal skins as well as the insect and egg collections. However, as with most museums we are now running out of space, with the result that the large mammal skeletons and the wet collections do not have suitable storage.

The Collections

Unfortunately many of the original collections presented by Professors MacGillivray, Trail and Thomson can not now be traced, since many of the older specimens in the collections have lost their labels or been poorly curated at some time. No doubt some of the collections have been broken up and used for teaching purposes. The following are some of our existing good collections.

The Hay Fenton Collection of bird eggs

This is a very valuable collection as it consists of 10,478 specimens, all in clutches, belonging to 389 species of birds from all over the world. In particular there is a Great Auk egg, purchased in 1908 for 190 guineas with the inscription "Pingouin" - believed to be the handwriting of Dufresne, the keeper of the King's cabinet in Paris. Also present is an egg of Wilson's Petrel, obtained by Dr. Bruce while leader of the Scottish National Antarctic Expedition of 1902-04, from Laurie Is., S. Orkneys. The collection is extremely rich in the eggs of birds of prey as well as there being an exceptional series of cuckoo eggs with their foster clutches.

The MacGillivray Collection of British birds and their eggs.

The MacGillivray Collection of foreign bird skins from Upper Canada, N.S. Wales, S. America, India & Europe.

M. A. Murray Collection of Indian bird skins

H. O. Forbes Collection of bird skins from New Guinea, 1882-85

Forbes-Leith Collection of foreign bird skins

Dr. John Flux Collection (1960) of mammal skins and osteological material - mainly hares (about 190 specimens)

A Collection of Wild Cat skins by various collectors from 1958 onwards (60 specimens)

James Duncan Collection of British Lepidoptera and their larvae.

James Duncan was a well known northern naturalist, resident in Aberdeen from 1900-1930. His collection consists of about 10,000 specimens representing some 750 species.

Robert Dawson Collection of molluscs from the north east of Scotland (date 1870).
The Dove Salt Collection of British Mollusca made about 1880
containing over 1800 shells of 290 species.

We also have a collection of the first Bird Ringing Records ever made in Britain, Aberdeen University being one of the centres where the practice of ringing birds first started.

THE FUTURE

Recataloguing of the museums collections will shortly begin using the M. D. A. record cards. Extra staff we hope will be recruited for this task through the Manpower Services Commission.

The Displays will continue to be changed and brought up to date.

Storage

A start has been made to the reorganisation of the old insect collections and new cabinets have been acquired which will house the growing Coleoptera, Hymenoptera and Diptera collections. A similar reorganisation of the wet stores is also being undertaken.

Biological Recording

An effort is being made to make the museum a Biological Records Centre for the region. The university museum would be a suitable place to set up such a centre as there is no natural history museum in the city to take on this task. In addition the museum is building up extensive local collections with records coming in from the university field centre at Culterty and from the honours students who each year donate between 20 and 30 collections of mainly local fauna.

Kenneth R. Watt
Natural History Museum
Aberdeen University
Tillydrone Ave.
Aberdeen, AB9 2TN

PRAWNS IN THE GAME?

A History of Montrose Museum

At a meeting of the Montrose Chess Club on 15th August, 1836, several members decided to form the Montrose Natural History and Antiquarian Society.

One of the main aims of the M. N. H. A. S. was to institute a museum in the town, and since donations were admitted almost immediately the M. N. H. A. S. applied to the Magistrates and Town Council for accommodation in one of the vacant rooms in the Old English Schools. This was granted, and the museum officially opened on Monday, 2nd January, 1837.

The first Curator was one James Molison, whose natural history collection had been purchased by the society for £10. His duties consisted of attending three days a week (three hours at a time) and stuffing and mounting any skins that might be handed in. For these duties he was to receive 'Four guineas or a copy of Wilson's Ornithology and whatever amount of eyes and materials he required'!

At the time, Montrose was a booming port with many of its sons sea-faring men. Donations of natural history specimens came in thick and fast from all corners of the globe so that after only a few months the committee was expressing concern over the lack of space. On 3rd October, 1838, Lord Panmure became the second President and immediately launched a buildings fund with a donation of £200. By now the temporary museum contained more than 150 birds, British and foreign, 2,200 specimens of entomology, several hundred shells, about 1000 dried plants in the herbarium and many geological specimens.

In 1840 a site was procured and a building of some 40' x 70' square, with a lower and upper gallery complete with balcony was erected. The frontage was of the Grecian order 'as best fitted for a building with few windows, and as combining Elegance with Economy'! The foundation stone was laid on 5th May, 1841 and the building was opened to the public on 27th October, 1843 at a total cost of £847.9s.4d. Nearly 4,000 visitors a year were recorded, and the society flourished.

Most of the members of the M. N. H. A. S. were professional men, including doctors, solicitors, ministers (Scottish equivalent of vicars) all of whom seemed to have ample time to devote to their particular natural history field. These men included the Rev. Dr. Hugh Mitchell of Craig Parish - fossil collector and discoverer of Mesacanthus mitchelli (Egerton) a small spiny fish from the Lower Old Red Sandstone. It is said that he arrived early at a house in order to perform a

christening ceremony. Since the father of the household had not appeared he borrowed a hammer and set off to explore a nearby quarry at Farnell. Here he found this fish new to science and promptly set off home clutching his discovery, forgetting completely about the christening.

Of the botanists, although Robert Brown (Associate of the Linnean Society) was a member, Alexander Croall stands out. On Sir William Hooker's request Croall prepared a set of plants of Braemar for Queen Victoria and Prince Albert, 'which he did to their entire satisfaction'. Croall began his career teaching in Montrose, and during this time prepared a 'Flora of Angus and Mearns' as a reference collection for the museum. This included a fair number of local discoveries. Croall added to this collection and others in the museum throughout his lifetime, although he eventually left to take up the post of librarian at Derby Museum. From there he moved to Stirling, where he became the first Curator of the newly erected Smith Institute.

Perhaps the greatest collector of them all was Dr. James Howden, who was Physician Superintendent of the Montrose Lunatic Asylum. Howden was an avid collector of neolithic axeheads and fossil shells from the clays which were used by the local pottery, set up a local bird skin reference collection, and contributed a wide range of specimens, both natural and historical. He was also one of the few members of the M. N. H. A. S. who had definite views on what a local museum should be doing. His speech on the subject, in 1873, is as relevant today as it was then.

His speech is too lengthy and verbose to reproduce here, but is sufficient to say that Howden believed passionately in the museum producing complete collections of the local fauna and flora, was a great supporter of active fieldwork and put education high up on his priority list. Perhaps his views on displays are somewhat extreme, but are nevertheless interesting.

"Though I admit that as a mere show much might be said in favour of a museum, I cannot but think that this is its very lowest and only accidental function local museums are in this respect invariably commercial failures . . . we need not expect that our museum will successfully compete in this line with the itinerant penny shows, with their fat ladies, Norfolk giants, and six-legged pigs!"

Howden's comments were paid heed to, at least to some extent, and although foreign material continued to be added to the collections, a much more concerted effort was made by some of the members and successive curators.

The era of the Howdens and others came to an end at the turn of the century, and after the first World War very few members were as active as their predecessors. The building had gained an extension in 1889 and the Montrose Library (instituted in 1785) in 1907, but nevertheless the society ceased to be the active organisation that it once was.

After the Second World War the M. N. H. A. S. began to encounter financial difficulties, which resulted in a number of sales to help funds. A good many interesting specimens and collections disappeared during the 1950's and few records were kept of the transactions.

In 1958 the museum was totally redisplayed and this resulted in a large number of the natural history specimens being removed, stored away, sold and destroyed. With increasing heating problems, damp, parasites and woodworm a fair proportion of the stored collections were allowed to deteriorate.

The financial situation of the M. N. H. A. S. went from bad to worse, and at the A. G. M. on 17th May, 1972, the 16 members who attended agreed to have the museum and its contents taken over by the local authority. This eventually took place in 1974, when Montrose Town Council became the owners of the museum and its collections. With local government reorganisation coming into effect on the 16th May, 1975, the museums in the hands of all the Angus Town Councils came under the new Libraries, Museums and Art Galleries Department of Angus District Council.

During the last days of the M. N. H. A. S., discussions had taken place with the trustees of the A. N. Balfour Bequest, who agreed to provide funds for the total renovation of the museum. This has now formally been agreed, and work on the fabric of the building is to begin early in 1979.

Since I arrived in April, 1977 one of the main tasks has been to catalogue the District's collections. Although the M. N. H. A. S. did have a catalogue of sorts, and also a fair number of day-books, no comprehensive catalogue was available. A good deal of information was also available in the form of old labels, letters accompanying donations, M. N. H. A. S. annual reports and minute books, and work is still in progress extracting this data and attempting to match it to the remaining collections.

Montrose Museum was closed in September, 1977, to enable work to proceed on both the collections and the fabric of the building. The damp environment of the museum forced us to seek alternative accommodation for the collections and eventually they were moved to rooms in the Town House. The enormity of the task to some extent has been reduced by enlisting the aid of the Manpower Services Commission, initially using

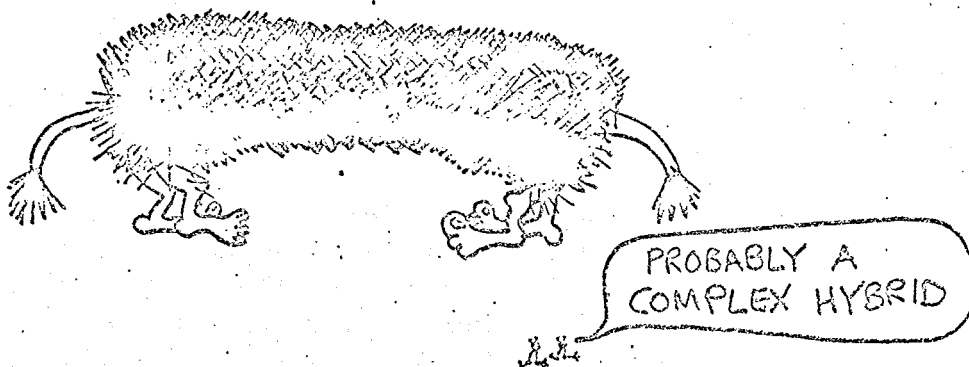
a Job Creation Team to document the collections, and currently a Project-Based Work Experience Programme to further both this work and help towards the planning of the new museum displays.

Some idea of the size and scope of the natural history collections is given in the list below. Please note that these figures are estimates only.

Mammals - 200, mostly foreign
Birds - Mounts 900; skins 200; eggs 2, 200; Mostly British
Reptiles)
Amphibians) 300 - Mostly foreign
Fishes)
Insects - 3,000, British and Foreign
Molluscs - 3,000 mostly British
Other invertebrates - 500 British and Foreign
Plants - 7,000 Mostly British flowering, with some lichens,
mosses and seaweeds.
Seeds, fruits - 300, mostly foreign
Rocks and Minerals - 3,700, British and foreign
Fossils - 2,400, British and foreign

Hopefully at the end of another year the collections will be in a reasonably well-documented state, while the museum itself, complete with a new natural history gallery illustrating Angus wildlife, will re-open sometime in 1980.

Norman K. Atkinson, Curator,
Angus District Museums



G. Bredbin

THE MOLLUSCA COLLECTIONS OF THE ROYAL SCOTTISH MUSEUM

The Mollusca collections of the Royal Scottish Museum are, after those of the B. M. (N. H.), the most extensive in Britain, being estimated at well over half a million lots. They, like the other zoological collections in the Museum, had their origins in the seventeenth-century Repository of Natural Curiosities in the University of Edinburgh. This was established as the Museum of Natural History in 1812, under the supervision of Robert Jameson, Professor of Natural History from 1804 to 1854, and Regius Keeper of the Museum. After his death the collections were transferred to the Crown, under whose control they have since remained. The foundation stone of the Museum of Science and Art (later to become the Royal Scottish Museum) was laid in 1861, on the south side of Chambers Street next door to the old University buildings. The shell collections (apart from some specimens retained for teaching purposes) were moved into the Department of Natural History after the first phase of building of the new museum was completed, and were displayed on the gallery from which the skeleton of the Blue Whale, probably the only specimen in the museum still in its original position, is suspended.

Unfortunately, not much of this early material is recognisable as such, not having been accompanied with sufficient data to tie it to the corresponding register entries. The earliest collection which remains recognisable is that of Louis Dufresne, acquired in 1819 and containing about 4000 shells. Among the most important of the historical collections dating from before the opening of the Museum of Science and Art are the William Traill collection (1854) of shells from the East Indian Archipelago (550 species), the Edward Chitty collection (1855) of Jamaican terrestrial shells (400 specimens, including material associated with C. B. Adams), and a series of dredged British marine molluscs which, with a collection of Mediterranean and Lusitanian non-marine shells, was the first (1854) of many extensive donations from Robert McAndrew. In 1856 the museum acquired a large amount of material from the collection of Edward Forbes who, aged only 39, had died within a year of succeeding Jameson as Professor of Natural History. The Forbes collection includes types from the HMS 'Rattlesnake' expedition to Australia and from his Aegean investigations.

During the next hundred years the collections continued to grow sporadically with the acquisition of numerous specimens of local and exotic molluscs of which only a selection of the most important can be listed here. The collection of R. K. Greville, author of the 'Flora Edinensis', acquired in 1866, contained 4600 species of exotic non-marine shells, many of which were received from the authors of the species. It is thus a source of possible syntypic material and types of one of Forbes' species have already been identified. The Greville collection also contains about 400 lots of British shells, including marine specimens received from Bean and Laskey. Until a

few years ago these specimens, mounted in glass-topped boxes of uniform height, formed the basis of the Mollusca exhibit in the old British Animal Hall. With the recent modernization of this hall the shells have been returned to the study collections.

In 1870 and 1873 nearly 1000 lots of foreign shells were obtained from Robert McAndrew, including numerous specimens from the Gulf of Suez, and in 1872 the museum acquired a collection of about 600 species, both British and foreign, from H. E. Strickland, one of the pioneers of zoological nomenclature. A collection of 5000 species of exotic marine shells, presented in 1905 by General and Mrs. Blair, containing many attractive specimens but without much locality data, was extensively used for the systematic display of foreign shells. The following year the museum received 5627 specimens, chiefly British, from the collection of Richard Rimmer, author of 'Land and freshwater Shells of the British Isles', including many of the specimens figured in that work. The remainder of the extant Rimmer material which had been exhibited in the Burgh Museum, Dumfries, was obtained by the Royal Scottish Museum in 1959. Also in 1906 164 shells were purchased for the type (i. e. reference) collection from Messrs. Sowerby and Fulton. Several subsequent purchases were made from the same source in later years, and in the 1930s the public display of foreign shells was rearranged by that firm in accordance with contemporary classification, many of the specimens being reidentified at the same time. Probably from this period can be dated the loss of numerous original labels when the specimens were remounted on uniform wooden tablets, and the addition of printed labels giving the distribution of the species (usually according to one of the standard monographs such as the 'Conchologia Iconica' and not frequently incorrect) instead of the locality of the particular specimens. Fortunately the number of exhibited specimens 'improved' in this way is small compared with the total in the study collections. This display was eventually dismantled a few years ago.

The most scientifically important collection of molluscs, from the number of types it contains, is the W. S. Bruce collection of Antarctic Mollusca, registered in 1921, comprising more than 250 species from the Scottish National Antarctic Expedition 1902-1904, described by Melvill & Standen in the 'Scotia' Reports, 1907 and 1912. In the same year were received the Bruce Arctic collection (103 species) which includes the material from the Jackson-Harmsworth Expedition to Franz-Josef Land 1896-1897, reported by Melvill and Standen in 1900.

For a long time the shell collections remained fairly static with much of the Department's resources being put into birds and insects, despite the interest of two Keepers, James Ritchie and subsequently A. C. Stephen, in Scottish cephalopods (234 lots of which were registered in 1958, from the Scottish Fisheries Board). In 1959, however, a

number of large collections were received, including those of Waterston, Fleming, Nicol and Bell-Pettigrew. The collection of A. R. Waterston, who succeeded Stephen as Keeper of Natural History, contains over 36,000 specimens of non-marine molluscs, chiefly Scottish, mostly in good series with precise locality data. Although comprising 14,500 specimens, the collection of Prof. John Fleming, author of the 'History of British Animals' obtained from the Arbroath Museum, is disappointing as much of the material is either in poor condition or poorly localized, and none of the specimens referred to in the 'History' seems to be present. The William Nicol collection of some 4000 specimens is still largely unexplored; it does contain, apart from the type of *Conus nicolii* Wilson, 1831, a few specimens from Parry's second (1820) expedition in search of the NW Passage, and specimens figured by Capt. Thomas Brown in his 'Illustrations of British Conchology'. The Bell-Pettigrew collection is the name by which the collection formerly in the Zoology Department of the University of St. Andrews is known; its nucleus was the cabinet of Dr. William Traill, added to by Thomas Bell-Pettigrew and latterly substantially augmented by the efforts of Prof. Sir D'Arcy Thompson. It is a comprehensive world-wide collection of land, freshwater and marine shells totalling about 66,000 specimens. It was presented to the Royal Scottish Museum when it was no longer required by the University for teaching purposes. Other important material registered in 1959 were samples of the Scottish marine bivalve populations studied for many consecutive years by Stephen and reported on by him in 1931 and 1933; molluscs from a Petersen Grab survey of Scottish and northern waters, published by Stephen in 1933; and molluscs from Alister Hardy's investigation of the food of cod and haddock, published by Brown & Cheng in 1946.

Until 1959 the Mollusca in the Royal Scottish Museum were of small enough compass to be housed in a series of cabinets under the wall desk cases on the Insect Gallery, those on public display having been left relatively unchanged since their arrangement by Sowerby & Fulton, although a fine series of wax models by Guy Wilkins, purchased in the 1950s, had been incorporated, and a number of casts of large squid had been made for the British Animal Hall. The Waterston collection was kept in spare drawers in the Insect Study Room, but the Bell-Pettigrew collection had to remain in the series of miscellaneous cabinets in which it had arrived, in a poorly lit cellar.

The crunch finally came in 1961 with the acquisition of the A. E. Salisbury collection, the largest shell collection in private ownership in Britain. Conservatively estimated in the registers as containing 341,800 specimens, it was more than five times the size of the Bell-Pettigrew collection and probably more than twice the size of the entire museum shell collections up to that time. Not only was it extensive, but also comprehensive, Salisbury having been more interested in the number of species represented than in the rarity or condition of the material. It was a collection built up by exchange and by purchase of

other collections at auctions, and thus contains original (though in most cases not type) material from British and foreign authors too numerous to mention here. It is particularly rich in exotic non-marine species, partly due to Salisbury having purchased the remaining stock of H. C. Fulton, the surviving member of the Sowerby & Fulton partnership, after his death in 1942. Fortunately the RSM was also able to acquire the superb library of malacological books, periodicals and separates accumulated by Salisbury over more than 50 years, without which the proper study and curation of his collection would have been impossible.

At this time the Mollusca collections were in the charge of A. R. Waterston who, although having an extensive knowledge of non-marine molluscs, was primarily an entomologist. Nevertheless a start was made on the curation of the Bell-Pettigrew and Salisbury collections, and certain groups popular with collectors, such as cowries, cones and volutes, were transferred from the cellars to the Insect Study Room. Plans were put forward, however, for both a full-time Curator and a separate Study Room for the shell collections. The first of these aims was realised in 1966 with my appointment to the museum, initially in a temporary research capacity but from 1970 as a permanent member of the Department, with an assistant transferred from Entomology. The new Study Room took physical shape in 1972 with the completion of a Dexion mezzanine floor occupying the upper half of the former Beasts of Prey Hall. At first this supported two work rooms for the curator and assistant with a third room to house the malacological library, and a large open space in which the multifarious structures ranging from cardboard stationery cabinets to converted wardrobes, containing the Salisbury, Bell-Pettigrew and Waterston collections, were piled up in rows. Little rearrangement of the specimens was possible under these conditions, and a number of the cabinets were in a state of near collapse. New storage cabinets were planned and finally installed in 1976. These consist of rows of uniform, custom-built, wooden cupboards fitted with interchangeable fibre trays, each tray holding from 8 to 64 white cardboard modular boxes. These boxes, in four sizes from 5 x 7 cm up to 14 x 20 cm, allow easy arrangement of the contained specimens in systematic or alphabetical order. Between the rows of full height cupboards are rows of half height cupboards constructed on the same plan but fitted with bench tops, allowing curatorial work and documentation of the specimens to be carried out in close proximity to the storage cupboards. Also in 1976 new storage for alcohol preserved material was completed in the basement of the museum, the specimen jars being arranged on open adjustable shelving.

The British material is kept separate from the main collection in both the preserved and dry collections, partly to facilitate reference to it and partly because it is the most rapidly growing portion of the collection. In 1966 the amount of British material in the preserved collection was very small, consisting mostly of land slugs from the

Waterston collection, nudibranchs from W. McIntosh, and the Scottish cephalopods acquired by Ritchie and Stephen. Since then it has grown in size to surpass the exotic collection, mostly due to the efforts of Shelagh Smith in the Firth of Forth and the Outer Hebrides, and field work by museum staff not only in many parts of Scotland but also in the Isle of Man and the west of Ireland. No other museum is building up such a representative collection of British Mollusca and this material is, accordingly, an important reference for geographical variability within the species. To supplement it, specimens of 'British' species from elsewhere in NW Europe will be added, and to this end three weeks of field work were undertaken this autumn on the north coast of Spain. A series of 'Handbooks for the Identification of British Mollusca' is planned, based largely on the RSM collections, to illustrate this intraspecific variation, an important aspect of taxonomy not stressed in the available works where the descriptions and illustrations are frequently based on material from the south of England.

Most of the current research in the Mollusca Section is British or European oriented, with taxonomic studies in progress on Nuculidae, Acanthochitona and large squid, but the larger Indo-Pacific Melanellidae (= Eulimidae) are also being revised - a study precipitated by the discovery of the type of Melanella dufresnii in the Defresne collection. A catalogue is in preparation of the collections of Cephalopoda, in the same 'RSM Information Series' as the 'Key to British marine Gastropods' by Shelagh Smith, 1974, and the 'Catalogue of Type-specimens of Invertebrates (excluding Insects)' by Smalton, Heppell & Watt, 1976. These publications and others in the series are available on application to the Librarian.

Apart from the collections themselves, which are available for study to all serious enquirers, and publications relating to the specimens, the scientific output of the Section has included the organisation of highly successful symposia on Littorina and on sea-slugs and land-slugs. There are plans for a symposium on Cephalopoda to be held in 1980. A scanning electron microscope is planned for the Department in the near future which will enable taxonomically important details of radulae, larval shells and microsculpture to be studied. Much work remains to be done both on the existing collections (most of the pre-1959 material still awaits incorporation into the new storage) and in maintaining the input of new material, particularly from fieldwork. The full-time staff of the Section has recently been temporarily reduced to one, but despite this it is hoped that the pre-eminence of the RSM collections of British Mollusca can be maintained.

David Heppell
Royal Scottish Museum
Edinburgh

THE LAW FOR BIOLOGISTS

If one were to ask a lawyer about the law relating to biology he would probably appear vague and dredge up a few memories from his student days. A practising lawyer will consider a case involving animals or plants as something out of the ordinary; usually when a biologist visits his lawyer it is to obtain advice on personal or business affairs.

This is not to suggest that there are no laws relating to living organisms indeed there is extensive legislation covering a wide variety of circumstances involving animals and plants.

The purpose of this article is to indicate the aspects of English law which are most relevant to the biologist and his work. It is designed as an introduction to the law and a quick survey of the topics to be covered in a series of subsequent articles which will investigate them in greater depth.

It is necessary at the outset to point out that the law to be discussed is the law of England and Wales; Scottish law can often differ substantially and not all English law extends to Northern Ireland. Although legislation relating to animals does not change particularly frequently and every attempt will be made to present the latest law, information provided in this type of article can become out of date. Furthermore, legal subjects written to interest the non-lawyer have to be somewhat generalized and no person with a specific legal problem should rely entirely on what they read, but should consult a solicitor (perhaps with literature in his hand if it is an obscure subject), who can more fully assess all the facts relevant to the problem.

It is also necessary to draw a distinction between two bodies of law, criminal and civil law. The former is comprised in Acts of Parliament and orders and regulations made under them; it is imposed upon people by the state and is sanctioned by punishment in the form of a fine or imprisonment. It regulates all manner of deeds from murder down to technical traffic offences, and most legislation likely to affect the biologist at work will fall within the criminal law. On the other hand, the civil law regulates the rights and duties which arise between individuals, the breach of which may lead the courts to award damages to compensate for some injury suffered, or an injunction (or court order) to cease an offending activity. The biologist who trespasses in search of specimens or who negligently injures someone may find himself sued under the civil law. The civil law appears both in Acts of Parliament and as principles distilled from the decisions of the courts over the years.

The law is fickle in its definition of an animal. It varies with every Act of Parliament and does not always appreciate the subtleties of

taxonomy. For example, this series of articles was prompted by a news story of a battle to persuade an insurance company that an owl was an animal in law as well as in real life. It is an essential precaution to elicit the relevant definition on making one's first acquaintance with a piece of legislation. Despite this advice, the problem will be postponed for detailed treatment as it arises in subsequent articles in the series.

Having dealt with some necessary technicalities it is now possible to proceed to an outline of the law as it affects biologists which will be presented under a series of headings.

Animal Welfare

Biologists working with experimental animals are probably acutely aware of the Cruelty to Animals Act 1876 and the need to comply with the requirements of the Home Office in its administration of that Act.

The Protection of Animals Acts 1911-64 deal with cruelty caused to animals outside the experimental context. They make illegal a wide range of unnecessary suffering which can be caused to animals.

A number of other Acts, such as the Dangerous Wild Animals Act 1976, which deal with the keeping and transport of animals, combine an element of welfare, by regulating the living conditions provided for an animal, with licensing or other control provisions.

Ministry control

The biologist who works with domestic, especially farm, animals will be aware of the legal restrictions upon his freedom to obtain or move his animals, particularly when there are disease outbreaks in his area. The import and export of most species are controlled through licensing systems and health examinations; and animals have to be transported with proper attention to their welfare. This is mainly the province of the Diseases of Animals Acts 1950 and 1975 and orders made under them. There is a wealth of legislation in this area and it is largely administered by the Ministry of Agriculture, Fisheries and Food. The import and export of non-domestic species are the province of the Department of the Environment, exercising its powers under the Exotic Animals (Import and Export) Act 1976.

Wildlife conservation

English law affords protection to a number of indigenous species of insects, mammals, and birds, the most recent being the addition of the otter to the Schedule of protected species in the Conservation of

Wild Creatures and Wild Plants Act 1975.

The same Act protects a number of rare plants growing in this country. Valuable trees can be protected from the woodcutter by a tree preservation order. In the interests of preventing disease in plants there are restrictions on importing species into Britain except under licence in accordance with the Plant Health Act 1967.

In order to protect land, water, and the air, the law also provides controls (through the government departments or local authorities) upon pollution, pests, the use of poisonous substances, and excessive noise (Control of Pollution Act 1974, Pests Act 1954, and Agriculture Act 1947). These may affect the biologist either by protecting the subject of his study or by restricting him in the materials used in, and extent of, his work.

The biologist working in the field must be conservant with the civil law not only regarding trespass but also, if he keeps animals, as to his responsibility for injury or damage which they cause, his liability arising either under the Animals Act 1971 or because of his negligence. Activities of either the biologist, his plants, or his animals which interfere unreasonably with his neighbours will entitle the latter to seek an injunction to restrict or stop altogether the offending activities.

Biomedical law

The biologist who deals with animals will have to cope with illness and injury in them. He must be aware of the law regarding veterinary treatment, which is laid down in the Veterinary Surgeons Act 1966, and the use of drugs and medicinal poisons (Medicines Act 1968, Misuse of Drugs Act 1971). He is able to take otherwise protected species from the wild to care for them when they are sick or injured where this is permitted, for instance, by the Protection of Birds Act 1954.

In the laboratory the biologist may be responsible for poisons and chemicals in accordance with the Poisons Act 1972. Waste products from the laboratory must be disposed of in accordance with the Control of Pollution Act 1974. Deposit of Poisonous Waste Act 1972, and Radioactive Substances Act 1960. Safe waste can usually be disposed of in conjunction with the local authority and safe fluids can be discharged into the public sewer (Public Health Acts 1936 and 1961).

The Health and Safety at Work etc. Act 1974 required that the health, safety, and welfare of all workers is ensured - a duty imposed upon employer and employees alike.

It is not intended to deal with the law affecting the laboratory in any detail since the Health and Safety at Work etc. Act is to be dealt with

by another author and other aspects are extensively covered by A Guide to Laboratory Law (Cooke, 1976).

Conclusion

This introductory article has no more than skimmed over the surface of those laws which may affect the world of the biologist at work. Clearly there is other legislation which can affect him, such as the general law of trade or the traffic regulations, but these would seem to be of such widespread application that the space is better devoted to more detailed consideration of the law most relevant to biology.

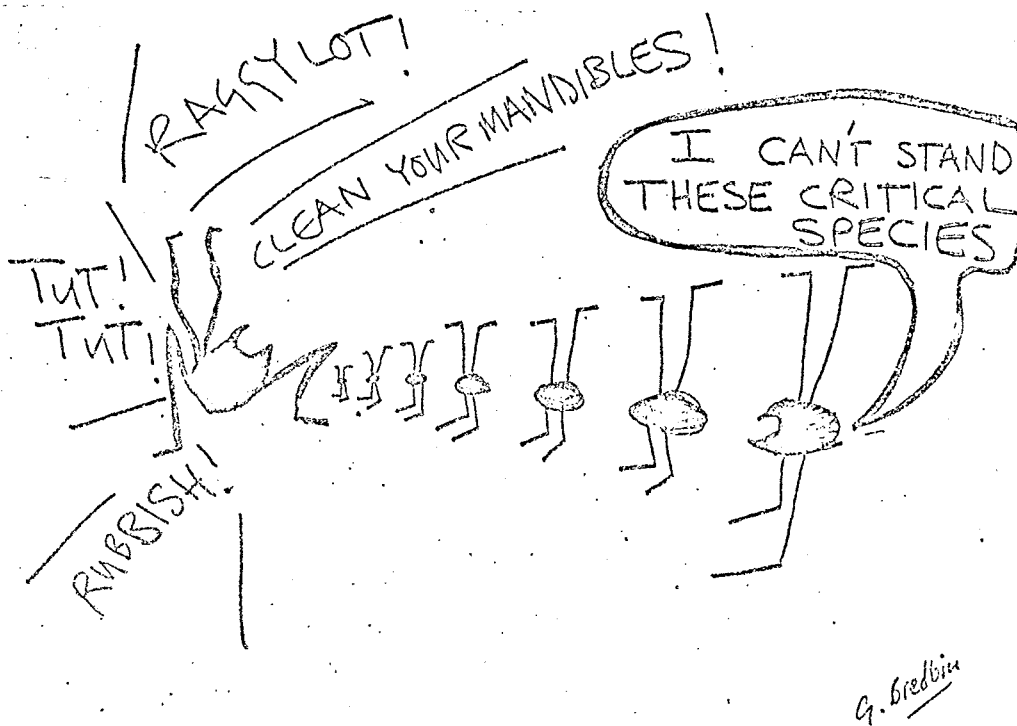
It is hoped that this article has at least whetted the appetite for a closer study of the law for biologists in the ensuing series.

Reference

Cooke, A. J. D. (1976) A Guide to Laboratory Law, London: Butterworth

Margaret E. Cooper

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BATS, BATS, BATS!

In paging through seemingly endless runs of scientific and sometimes not so scientific journals whilst gathering data for a forthcoming tome on the mammals of Yorkshire, the grinding tedium was periodically relieved by the discovery of the odd anecdote which enabled bats to live to their collective name.

For instance, the first record of a whiskered bat in York was unfortunate enough to tangle with the law - receiving fatal injuries from crashing into a policeman's helmet! This, no doubt, constituted a case of assault and bat-ery. It also proved that policemen's helmets are adequate protection against a bat on the head!

A pasture at Masham, North Yorkshire, evidently stocked with bat-hunting cows, was the scene of the next crime. In 1899 a noctule was found 'dung' to death beneath a cow pat - perhaps cows can fly! (what the finder was doing under the same cow-pat still remains a mystery). No doubt due to the unusual circumstances of its demise the bat was acquired by none other than the Royal Scottish Museum, though whether the cow pat was similarly saved for posterity wasn't stated!

With bats being notoriously difficult to study in the field, thwarted and frustrated bat enthusiasts are delighted when the odd publicity seeking bat obligingly gives itself up for examination. After a field meeting at Grassington, held one searing June day in 1891, the 'supreme soviet' of the Yorkshire Naturalist's Union gathered in the shade of a large tree in the grounds of Grassington House for the time honoured ritual of hearing the reports of the days work. It being such a hot day and members feeling correspondingly lethargic, there was precious little of note to report until fortuitously a whiskered bat, which no doubt had swooned from the heat, fell from the trees amongst the thankful experts gathered below.

Discoveries of new county records are important landmarks. The first 'daubenton's bat recorded in Yorkshire was a real fame-craving show off, flying straight into the hands of a startled bunch of Wakefield naturalists on an excursion to Fountains Abby in 1866. The specimen duly made scientific history and was later immortalised in the literature of the Yorkshire Naturalist's Union.

Colin Howes
Doncaster Museum

CURATOR IDENTIFICATION CO-OPERATION - AN IDEA

At an early meeting of B. C. G., it was suggested that the newsletter be used to notify fellow curators of recent taxonomic changes and advances in particular groups. This suggestion was re-iterated by Graham Walley at the recent Manchester meeting where he called for a register of experts. The bibliography of British Lichens in newsletter number 3 was an example of the proposed assistance.

Curators build up a library of books and reprints for identification purposes. Most of us, particularly those concerned with invertebrates, specialise in one or two groups and can become very expert. The library of reprints, many of which take months to obtain via inter-library loan, becomes increasingly useful.

My idea for co-operation revolves around the easy access many of us have to photocopying facilities. It involves us assembling our most useful reprints on a particular subject into a package which could be loaned to a fellow curator. He/she would photocopy the package and return it promptly, preferably by return post. The donor would only be without the use of his reprints for a few days at a time, which is unlikely to be a serious inconvenience. The scheme could save us all much time and effort.

The B. C. G. newsletter would become the organ to advertise available packages. A brief list of the contents would enable curators to decide which packages to choose.

It could be argued that certain individuals and institutions will be put to a lot of expense sending out packages, but those individuals will normally be perfectly happy to identify specimens coming in, and consider it part of their duty. Supplying an enquirer with literature may prevent an identifier being swamped with large amounts of easily identified material, and thus prove a time, and therefore money, saver. Most of the items of literature in a package will be reprints from periodicals and thus less likely to breach copyright regulations, another possible argument against this idea.

As an opener to this scheme, I offer the following items for identification of caddis larvae. They are designed to bring Hickin's 1967 book on Caddis Larvae, which many people have access to, up to date.

BARNARD, P. C. (1971) 'The larva of Agraylea sexmaculata Curtis (Trichoptera, Hydroptilidae)' Entomologist's Gaz. 22 pp 253 - 258.

BOON, P. J. (1978) 'The use of ventral sclerites in the taxonomy of larval hydroptychids' Proc. of the 2nd. Int. Symp. on Trichoptera, 1977, Junk, The Hague pp 165 - 173

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- EDINGTON, J. M. and ALDERSON, R. (1973) 'The taxonomy of British psychomyid larvae (Trichoptera)' Freshwat. Biol. 3 pp 463 - 478.
- HILDREW, A. G. and MORGAN, J. C., (1974) 'The taxonomy of British Hydropsychidae (Trichoptera)' J. Ent. (B) 43 pp 217-229
- HILEY, P. D. (1972) 'The taxonomy of larvae of the British Sericostomatidae (Trichoptera)' Entomologist's Gaz. 23 pp 105 - 119.
- HILEY, P. D. (1976) 'The identification of British limnephilid larvae (Trichoptera)' Systematic Ent. 1 pp 111-120
- LEADER, J. P. (1968) 'The larva of Molanna palpata MacLachlan, and some further characters of the larva of Molanna angustata Curtis (Trichoptera, Molannidae)' Entomologist's Gaz. 19 pp 21-29
- ROSS, H. H. (1944) 'The caddisflies or Trichoptera of Illinois' (the family key to larvae only) Bull. Ill. St. nat. Hist. Surv. 23 pp 1 - 311 (whole work).
- WALLACE, I. D. (1977) 'A key to larvae and pupae of Sericostoma personatum (Spence) and Notidobia ciliaris (Linne) (Serico-stomatidae: Trichoptera) in Britain's Freshwat. Biol. 3 pp 463-478.
- WALLACE, I. D. (1978) 'The larva of Limnephilus elegans Curtis in Britain (Trichoptera: Limnephilidae). Entomologist's Gaz. 29 pp 177-178.
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Ian Wallace

Merseyside County Museums

SOUNDS FAMILIAR!

There was a real corkindrill hanging from the rafters, very lifelike and horrible with glass eyes and scaly tail stretched out behind it. When its master came into the room it winked one eye in salutation, although it was stuffed. There were thousands of brown books in leather bindings, some chained to the bookshelves and other propped against each other as if they had had too much to drink and they did not really trust themselves. These gave out a smell of must and solid brown-ness which was most secure. Then there were stuffed birds, popinjays, and maggot-pies and kingfishers, and peacocks with all their feathers but two, and tiny birds like beetles, and a reputed pheonix which smelt of incence and cinnamon. It could not have been a real phoenix, because there is only one of these at a time. Over by the mantelpiece there was a fox's mask, with GRAFTON, BUCKINGHAM TO DAVENTRY, 2 HRS 20 MINS written under it, and also a forty-pound salmon with AWE, 43 MIN., BULLDOG written under it, and a very life-like basilisk with CROWHURST OTTER HOUNDS in Roman print. There were several bore's tusks and the claws of tigers and libbards mounted in symmetrical patterns, and a bighead of Ovis Poli, six live grass snakes in a kind of aquarium, some nests of the solitary wasp nicely set up in a glass cylinder, an ordinary beehive whose inhabitants went in and out of the window unmolested, two young hedgehogs in cotton wool, a pair of badgers which immediately began to cry Yik-Yik-Yik-Yik in loud voices as soon as the magician appeared, twenty boxes which contained stick caterpillars and six of the puss-moth, and even an oleander that was worth sixpence - all feeding on the appropriate leaves - a guncase with all sorts of weapons which would not be invented for half a thousand years, a rod-box ditto, a chest of drawers full of salmon flies which had been tied by Merlyn himself, another chest whose drawers were labelled Mandragora, Mandrake, Old Man's Beard, etc., a bunch of turkey feathers and goose-quills for making pens, an astrolabe, twelve pairs of boots, a dozen purse-nets, three dozen rabbit wires, twelve cork-screws, some ants' nests between two glass plates, ink-bottles of every possible colour from red to violet, darning-needles, a gold medal for being the best scholar at Winchester, four or five recorders, a nest of field mice all alive-o, two skulls, plenty of cut glass, Venetian glass, Bristol glass and a bottle of Mastic varnish, some satsuma china and some cloisonné, the fourteenth edition of the Encyclopaedia Britannica (marred as it was by the sensationalism of the popular plates), two paint-boxes (one oil, one water-colour), three globes of the known geographical world, a few fossils, the stuffed head of a cameleopard, six pismires, some glass retorts with cauldrons, bunsen burners, etc., and a complete set of cigarette cards depicting wild fowl by Peter Scott.

A description of Merlyn's room,
from T. H. White, 'The Once and Future King'
published by William Collins.

BIOLOGY CURATORS GROUP, MEMBERSHIP LIST, DECEMBER 1978.

1) Personal Members

- Adams, CVA, RAM Mus, Queen Street, Exeter.
- Allen, Elizabeth, Hunterian Mus, Royal College of Surgeons of England,
Lincoln's Inn Fields, London, WC2A 3PN.
- Amsden, A. F. Zoology Dept., National Mus. of Wales, Cardiff.
- Atkinson, NK, Angus District Mus, Montrose Mus, Panmure Place,
Montrose, Angus, Scotland.
- Bateman, J. A., Director, O. C. C. Mus. Service, Fletcher's House,
Woodstock, Oxford.
- Bates, P. Senior Techn., Mus. of Athology, Royal Free Hospital, Pond
St., Hampstead, London, NW3 2QG.
- Berry, K. Miss, Ass. Keeper Field Nat. Hist., Bolton Mus and Art Gallery,
Le Mans Cresc., Bolton, BL1 1SA.
- Betteridge, C. c/o Dept of Museum Studies, 152 Upper New Walk, Leicester,
LE1 7QA.
- Blair, JA, Museum and Art Gallery, Perth, Scotland.
- Boot, KJ, RAM Mus, Queen Street, Exeter.
- Brendell, M, Dept. of Entomology, British Museum (NH), London, SW7 5BD.
- Brinklow, R. Ass. Keep. of Nat. Hist. Dundee Museums and Art Gallery, Albert
Square, Dundee, DD1 1DA.
- Burkel, Dr. DL, Art Gallery and Mus, Kelvingrove, Glasgow, G3 8AG.
- Campbell, B. A. Deputy Curator, Mus and Art Gallery, John Frost Sq.,
Newport, Gwent.
- Campbell, JM, OCC Dept., of Museum Studies, Fletchers House, Woodstock,
Oxford.
- Chamberlain, JE, Ass. Director, City Museums and Art Gallery,
Museum Road, Portsmouth, PO1 2LL.
- Chambers, J, Fish Section, Dept. of Zoology, BM (NH) London, SW7 5BD.
- Chapman, Miss S, Palaeo Laboratory, BM (NH) London, SW7 5BD.
- Charter, J, 8 Abney Close, Brockwell, Chesterfield, Derbyshire, S40 4PE.
- Clarke, D. J., Carlisle Museum and Art Gallery, Tullie House, Castle St.,
Carlisle, CA3 8TP.
- Claugher, D, Electron Microscope Unit, BM (NH), Cromwell Road, London.
- Clegg, T. M., Yorkshire Mus, Museum Gardens, York.
- Cleevely, R. J. Dept. Palaeo, BM (NH), Cromwell Rd., London, SW7 5BD.
- Crane, Dr. MD, City Museum, Queens Rd., Bristol, BS8 1RL.

Crittenden, M. 6, Oakburn Court, Broomhill Rd., Sheffield, S10 2DR.

Cooter, J. Tech. Asst., Dept. Nat. Hist. Glasgow Art Gallery and Musm,
Kelvingrove, Glasgow.

Copp, C., City Museum and Art Gallery, Queens Road., Bristol, BS8 1RL.

Copson, P., The County Museum, Market Place, Warwick.

Cornelius, PFS, Zoological Dept., BM (NH), Cromwell Road, London, SW7 5BD.

Curry, DA, Dept. of Nat. History, City Museum, Drake Circus, Plymouth.

Davey, S., Hampshire County Museums Service, Chilcomb Lane, Bar End,
Winchester.

Davis, P. S., Tyne and Wear County Council Museums Service, Sunderland
Mus, Borough Road, Sunderland.

Daws, J., Gordon Mus, Guy's Hospital Medical School, London, SE1 9RT.

Dawson, J. Miss, Keeper of Biology, Mus and Art Gallery, New Walk, Leis^{te}.

Dony, J. D. Dr., 9 Stanton Rd., Luton, LU4 0BH.

Down, RM, Curator, Mus. Zoology and Comparative Anatomy, University
College, Gower St., London, WC1E 6BT.

Ely, W. A., Clifton Park Mus, Clifton Lane, Rotherham, South Yorks.

Erwin, D. G., Ulster Mus, Botanic Gdns, Belfast, BT9 5AB.

Evans, I. M., Leicestershire Mus. Service, 96 New Walk, Leics.

Field, Miss V, Newbury Mus, Warf St., Newbury, Berks, RG14 5AN.

Fisher, Miss C, Merseyside County Museums, William Brown St.,
Liverpool, L3 8EN.

Flood, SW, City Museum, Hatfield Road, St. Albans, Herts.

Frankish, A, Mrs. Dept. of Nat. Hist., Scunthorpe Mus, Oswald Rd.,
Scunthorpe, South Humberside, DN15 7BD.

Galbraith, H, Glasgow Mus and Art Gallery, Kelvingrove, Glasgow.

Garner, RC, N.H. Laboratory, Manchester Mus, Oxford Rd., Manchester.

Garside, A, City Museum and Art Gallery, Albert Sq., Dundee, DD1 1DA.

Ghani, Khalid, Zoological Dept., National Mus of Wales, Cathays Park, Cardiff.

Goodhew, ED, 7 Scotside Close, Petts Wood, Orpington, Kent, BR5 1NN.

Goude Jean, Bradford Industrial Mus, Moorside Mills, Moorside Rd.,
Bradford, West Yorks, BD2 3DP.

Grange, WM, Kendal Mus, Station Rd., Kendal, Cumbria.

Gray Dr JRA, Bolton Mus and Art Gallery, Civic Centre, Lemans Cres,
Bolton.

Greenwood, Mrs. BD., Dept. Botany, Merseyside County Mus, William
Brown Street, Liverpool, L3 8EN.

Greenwood, E. F., Merseyside County Museums " "

Greenwood, JG, 42 Vyner Rd., Wallasey.

Grist, C, Poole Aquarium, Blue Boar Mill, The Quay, Poole, Dorset.

Halfpenny, G, City Mus. Dept., Unity House, Hanley, Stoke-on-Trent.

Hancock, EG, Natural History Dept., Bolton Museum and Art Gallery,
Civic Centre, Bolton, BL1 1SE.

Harris, J.I., Merseyside County Museums, William Brown Street, Liverpool.

Harris, R.H., Dept. of Zoology, BM (NH), Cromwell Rd., London, SW7 5BD.

Harrison, S.J., Merseyside County Museums, William Brown St., Liverpool.

Hartley, MM, Cliffe Castle, Keighley, West Yorks, BD20 6LH.

Harvey, AP, Ragstones Broad Oak, Hatfield, Sussex, TN21 8UD.

Hayman, RA Miss, 63 Island Road, Garston, Liverpool, 19.

Heath, JJ, Natural History Mus, High St., Colchester, Essex.

Hendry, R, Art Gallery and Mus, Senior Conservation Officer, Kelvingrove,
Glasgow, G3 8AG.

Heppell, D. Dr., Royal Scottish Mus, Edinburgh.

Hider, Miss M, Biology Department, Leicestershire Mus, 96 New Walk,
Leicester.

Hollowell, Mrs. A., 81 Cranbrook Road, Redland, Bristol, BS6 7B2.

Holmes, J, Natural History Division, National Museum, Dublin, 2.

Holyoak, David T., Dept. Geography, University of Reading, No. 2 Earley
Gate, Whiteknights, Reading, RG6 2AU.

Horne, S., I, Bramhall Rd., Skelmerdale, Lancashire.

Hose, T., Dept. Nat. History, Grosvenor Museum, 27 Grosvenor St.,
Chester, CH1 2DD.

Hounscome, Dr. M., Manchester Mus, Manchester Univ., Manchester, M13 9PL.

Hutson, A., Department of Entomology, BM (NH), Cromwell Rd., London.

Ingles, Miss J., Mammal Section, BM (NH), Cromwell Rd., London.

Irwin, A. G., Dr., Castle Mus, Norwich, Norfolk, NR1 3JU.

Isaac, Dr. MJ, University College of Swansea and Royal Institution of South
Wales, Swansea Mus, Victoria Rd., Swansea, SA1 1SN.

James, T. J., Hitchin Mus and Art Gallery, Payres Park, Hitchin, Herts.

Johnson, M, Ass. Keeper of Nat. Hist, City and County Mus, Greyfriars,
Broadgate, Lincoln, LN2 1EZ.

Jones, Miss G. L., Art Gallery and Mus, Kelvingrove, Glasgow, G3 8AG.

Jury, S. L., Dept. Botany, Plant Science Labs, The University of Reading,
Whiteknights, Reading, RG6 2AS.

Keefe, JA, Croydon Nat. Hist. and Scientific Society, Museum Building,
Chipstead Valley School, Chipstead Valley Road, Coulsdon, Surrey.

Kingham, Diana, 19 Albert St., Castlefields, Shrewsbury, Salop.

Lambert, J Miss, The Yorkshire Museum, Museum St., York.

Lambley, P. W., Norfolk Museum Service, Castle Museum, Norwich.

Laundon, JR, Dept. of Botany, BM (NH), Cromwell Rd., London, SW7 5BD.

Legg, Dr. Gerald, Booth Museum of Nat. Hist., 194 Dyke Rd., Brighton, Sussex.

Leigh, A., 17 Austral Ave., Woolston, Warrington, Cheshire, WAI 4ND.

Leighton, C. Zool. Dept., Imperial College, Prince Consort Rd., London.

Lingwood, Dr. PF, 3 Min y Bonig, Pentre-Llyn-Cymmer, Cerrigudrudion, Nr. Corwen, Clwyd.

Logan, BM, Dept. of Anatomy, Royal College of Surgeons, 35-43, Lincoln's Inns Fields, London, WC2A 3PN.

Long, Dr. AG, Hancock Museum, Newcastle upon Tyne, NE2 4PT.

Mahoney, R, Dept. of Zoology, U. C. L. Gower St., London. WC1E 6BT.

Martin, Mrs. ME, 204 Tower Road, Ware, Herts.

Mathias, Dr. JH, Biology Section, Leics. Museums and Records Service, 96 New Walk, Leicester.

McInnes, G, 5 Albert Grove, Crosby, Liverpool, L23 5RP.

McMillan, Mrs. N, The Nook, Uplands Rd., Bromborough, Cheshire.

Mellor, DG, Mus. & Art Gallery, Paisley, Renfrewshire, PA1 2BA.

Mendel, H, c/o The Museum, High Street, Ipswich, IP1 3QH.

Metcalf, JC, The Garden House, Noseley, Leicestershire.

Moore, Miss FR, 83 Sheil Rd., Liverpool, L6 3AD.

Moore, SJ, 36 Chelwood Gardens, Kew, Richmond, Surrey, TW9 4JQ.

Morgan, Mrs MJ, Dept. Zoology, University College of North Wales, Bangor, Gwynedd.

Morgan, PJ, Keeper of Vert. Zoology, National Mus. of Wales, Cathays Park, Cardiff.

Morrison, IO, Botanic Gardens Mus, Churchtown, Southport, PR9 7NR.

Morton, O, Dept. Botany and Zoology, Ulster Museum, Botanic Gardens, Belfast.

Murphy, MD, "The Stables", Osbourne House, Fulwood Park, Liverpool, 17.

Norton, WJ, County Museum Service, Old Street, Ludlow, Shropshire.

Nunney, JH, Leeds City Museums, Municipal Buildings, Leeds, LS1 3AA.

O'Connor, James P., National Museum of Ireland, Kildaire St., Dublin, 2.

Okeke, SE, Plant Science Labs, Dept of Botany, The University, Whiteknights, Reading, RG6 2AS.

Oliver, G, Mollusc Section, Dept. of Nat. Hist. Royal Scottish Museum, Chambers St., Edinburgh.

- Pain, T, 47 Reynolds House, Millbank, London, SW1P 4HP.
- Palmar, CE, Art Gallery and Mus, Kelvingrove, Glasgow, G3 8AG.
- Patrick, SJ, 91 Uttoxeter Rd., Mickleover, Derby.
- Pettitt, C, Manchester Museum, The University, Manchester, M13 9PL.
- Phillips, PW, Geology Dept., Merseyside County Museum, William Brown Street, Liverpool.
- Playle, BR, Nat. Hist. Mus. Wollaton Hall, Nottingham, NG8 2AE.
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- Royston, Miss J. Bucks County Museum, Church St., Aylesbury, Bucks.
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- Smith, RGV, Dept. of Entomology, BM (NH), Cromwell Rd., London, SW7 5BD.
- Stansfield, G, Dept. of Mus. Studies, 152 Upper New Walk, Leicester, LE1 7QA.
- Steedman, Dr. HF, 59 Sydney Buildings, Bath, Avon, BA2 6DB.
- Steel, C, Booth Museum of Natural Hist., Dyke Rd., Brighton.
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Taylor, MA, Perth Mus and Art Gallery, George St., Perth.
 Tebble, Dr. Norman, Royal Scottish Mus, Edinburgh.
 Trodd, SJ, 11 High Ste., Hanslope, Milton Keynes.
 Walker, B, Scunthorpe Mus and Art Gallery, Oswald Rd., Scunthorpe, South
 Humberside.
 Walker, CA, Dept. of Palaeontology, BM (NH), Cromwell Rd., London, SW7
 Wallace, ID, Dept. of Invert. Zoology, Merseyside County Museums,
 William Brown St., Liverpool, L3 8EN.
 Walley, G. P., 23, Elmsthorpe Avenue, Lenton, Nottingham.
 Walters, M. P., Tring Mus, Akeman St., Tring, Herts.
 Warren, M. Curator, Cromer Museum, Tudor St., Cromer, Norfolk.
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 Aberdeen.
 Wheatcroft, Dr. Penny, 43, Heatfield Rd., Handsworth, Birmingham, B19 1HE.
 Wheeler, A. Dept. Zoology, BM (NH), Cromwell Rd., London, SW7 5BD.
 White, I. M., 3 Uppingham Rd., Liverpool, 13.
 Whiteley, D., City Museum and Art Gallery, Weston Bank, Sheffield, S1 2TP.

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 Page, B, Editor, G. C. G. Geology Dept., University of Keele, Keele, Staffs.
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Scott, D, Deputy Librarian, Royal Botanic Gardens, Kew, Richmond, Surrey.
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Natural History Department, Birmingham Museum and Art Gallery,
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General Library, B. M. (N. H.), Cromwell Rd., London, SW7 5BD.;

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0533 539111

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Dundee, DD1 1DA.
0382 25492/3

Co-opted

Eric Greenwood,
Assistant Director (Adademic),
Merseyside County Museums,
William Brown Street,
Liverpool, L3 8EN.
051 207 0001

Dick Hendry,
Senior Conservation Officer,
Glasgow Museum,
Kelvingrove, G3 8AG.
041 334 1134.