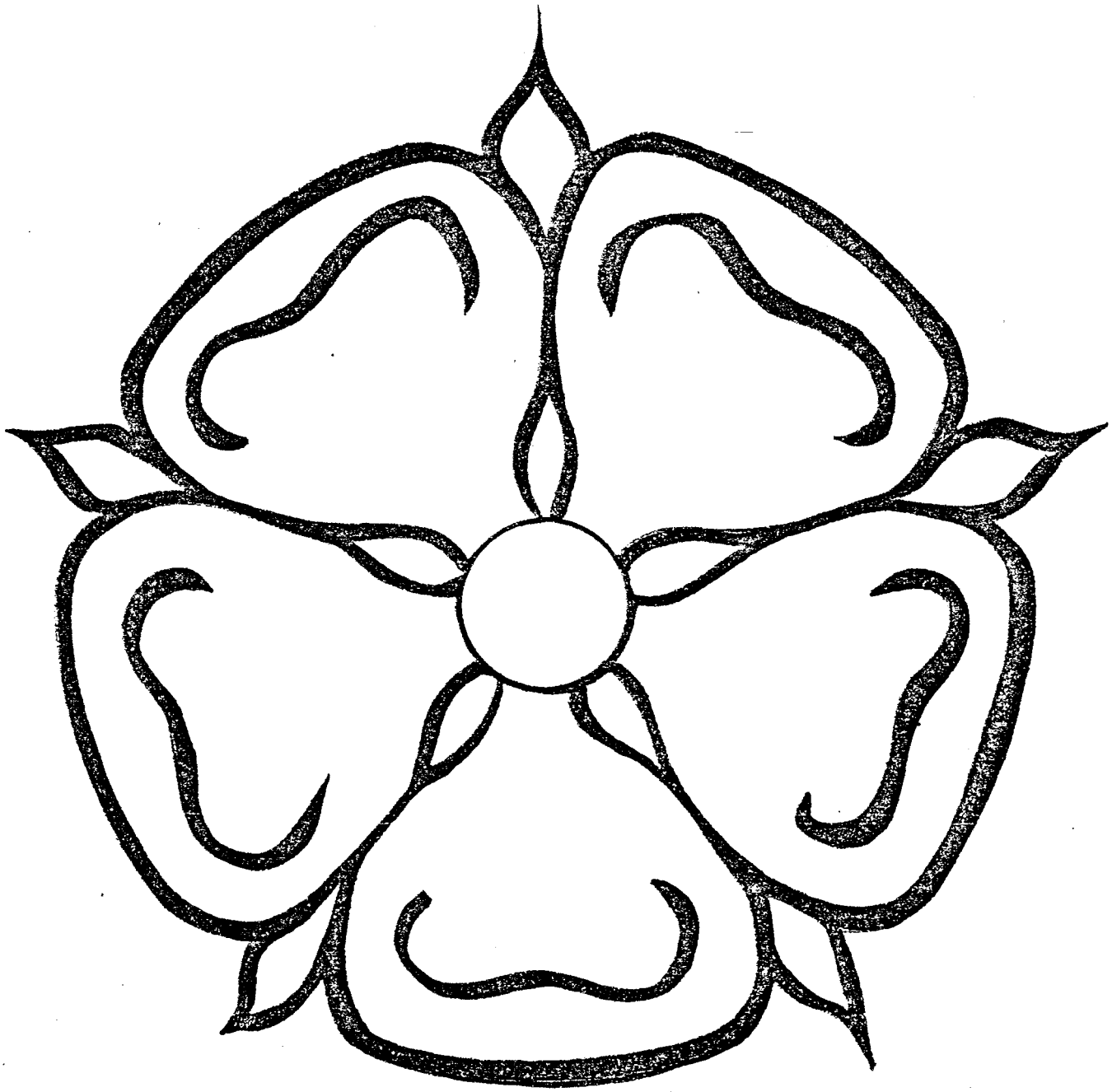
BCG

Newsletter No 9 June '78



EDITORS NOTE

This issue is devoted to the collections of, and activities in, certain museums in the counties of Yorkshire. The range of articles - from notes on a specific collection to general notes on a whole collection through to biological recording (whether by fair means or foul) give an indication of the energy and expertise in the natural sciences in this area. Promises of other 'Yorkshire' articles will probably result in a continuation of this regional theme into the next newsletter. However, potential authors of articles for the newsletter should not be dissuaded from putting pen to paper - the more items received the greater the opportunity to develop other themes for future issues.

Peter Davis

BIOLOGY CURATORS GROUP JUNE 1978 NEWSLETTER No. 9

C O N T E N T S

LETTERS TO THE EDITOR:-

Dear Sir,

With all the activity at present taking place in Museums and elsewhere regarding Biological Recording I find it rather odd that most people while content to use 10km grid squares or tetrads seem to be carrying on oblivious to the recent, often drastic, changes in many County boundaries. This is especially so in Scotland as we now have no administrative Counties at all!

While at the present time recorders may well realise that (for example) West Sussex used to be a Watsonian vice-county but is now a full administrative county in its own right, with part of the old "west Sussex" now in Surrey, I wonder how recorders of the future will cope ?

To me this question of what County boundary is retained for recording purposes should be settled and the results published - ideally with a map of each boundary suitably marked or grid referenced so as to make things crystal clear. Could not the BCG set up such a scheme - perhaps a Museum from each county (or pre Local Government Reorganisation county) could work in cooperation with their neighbours and publish a mutually agreed boundary map. Local Authority Museums will presumably have access to the Council Planning Department or what ever body holds boundary records.

Perhaps many biological recorders will say that there is nowadays no need for the County or Vice-County unit, the 10km square having taken its place. That may be so in certain cases or for certain Orders. However I think most people will agree a set of basic Counties should be decided upon now before the dust of time fogs up our memories of the old County system.

Yours sincerely,

John Cooter
Glasgow

Stephen Flood (St. Albans Museum) replies .....

In answering this letter I wish to quote extensively from a chapter by Frank Perring of the Biological Records Centre in the Handbook for Local Records Centres, jointly produced by B. C. G. and B. R. C. which is due out very soon.

"Since 1870 Biological Recording in Britain has been much influenced by the Vice-county system invented by H. C. Watson. These vice-counties were based on the political counties of the time, but the larger counties were sub-divided (e.g. Norfolk into East and West) and some of the smaller ones amalgamated with neighbours (e.g. Rutland into Leicestershire) in an attempt to make the recording units less variable in size.

Until the extensive reorganisation of local government in 1974 and 1975 the vice-county boundaries still remained close enough in area to political counties, despite numerous small boundary changes in the intervening century, for naturalists to continue to use Watson's boundaries whilst collaborating with Conservationists and planners working on the boundaries of the day.

The 1974/75 changes have abolished some counties and produced several new ones out of 2 or more old ones. Yet in terms of Britain as a whole the total area affected is small whilst many of the 'lost' counties, which were almost identical with vice-counties, remain at the district level (e.g. Huntingdonshire, and most of the Welsh and Scottish counties).

The National Biological Societies like the Botanical Society of the British Isles and the Conchological Society are unlikely to give up the Watsonian system. This has been the basis of their recording for over 100 years, a modern map showing the boundaries clearly is readily available (Dandy, J. E., 1969, Watsonian Vice-counties of Great Britain. Ray Society), and they argue, with some truth, that experience suggests that the new boundaries will soon be altered by yet another local government reorganisation. The production of County Floras and Faunas has been a traditional activity of a number of national societies whilst the membership of many local natural history societies is on a county basis.

Many of the Local Biological Records Centres which have been in existence for several years cover an area which can be defined in terms of vice-counties. The literature and collections which they uniquely hold are related strongly to the boundaries they used to serve, officially or unofficially.

For most naturalists, it should be noted, the major boundary changes (excluding amalgamations, which are not relevant) have taken place in heavily built-up areas where their recording activities are small, whereas in rural areas in which most recording

takes place, the boundaries are little altered. Thus for most of the time, even using the latest maps, the naturalist has no difficulty in thinking he knows which vice-county he is in and will record accordingly.

If local records centres are to collect efficiently all the biological data for their area and yet serve the needs of, amongst others, local authorities, it may be easier for neighbouring records centres to arrange amongst themselves to duplicate data for areas where the old boundaries are no longer politically convenient, rather than try to alter traditional boundaries of local voluntary organisations.

Ultimately the establishment of a single records centre for each vice-county or county or even a group of counties will create a national data gathering network with enormous scientific potential."

Although most local records centres will have information on where the vice-county and local government boundaries differ, Dr. Perring informs me that the Biological Records Centre at Monks Wood holds a set of transparencies of boundaries which can be borrowed and used for tracing etc.

The point which perhaps needs re-emphasising is that it will always be better to adopt an agreed and traditional base-line for survey, where necessary coming to some mutually acceptable arrangements about duplication of records.

Better a traditional system than one which changes with the vagaries of local government - at least until we are all governed within grid squares!

Dear Sir,

If Mr. Walley's intention was, by making a lunatic suggestion to provoke discussion, then I'm sure he has achieved his objective. I refer to his third proposal (B. C. G. Newsletter No. 8., page 30) "That the BCG encourages a policy of placing in public museums all type material at present in private collections, and that the status type should be officially questioned if they are not so placed".

This very arrogantly presupposes public museums look after their

collections in a way vastly superior to the private museum and individual. Further, I would say that anyone suggesting that, for example the Hope Department, hand over their vast amount of type insect material to a public Museum is in need of psychiatric help. The second part of the proposal three (status type should be officially questioned), to me shows a fundamental lack of understanding of what a type specimen is, how it was established, and the International Rules of Zoological Nomenclature governing its establishment, not least a total lack of forethought on the nomenclatural chaos that would result, if overnight a percentage of established type material was to have its status questioned even when those species in question were erected under strict I. C. Z. N. rules. The chaos existing at present is surely enough ?

However the sad fact remains that there are many neglected collections, including some in public ownership that contain type material that is decaying or not labelled as such.

The Walley proposal two covers the point adequately, and can be extended to help the less well looked after collection whether it be in private hands, a Government research establishment, Trustee Museum or Natural History Society collection. If proposal one were modified to include all collections, including those outside Council or National Museums, the revised proposal two could be implemented.

This seems a monumental task and one that will probably never be completed. Nonetheless it is a duty that a Group such as ours should undertake.

J. Cooter
(Natural History Department)
Glasgow.

** A reply to the above letter by Graham Walley will appear in the next edition of the BCG newsletter. Ed.

A NOTE ON THE NATURAL HISTORY COLLECTION, LEEDS CITY MUSEUM

HISTORICAL

The Museum was founded in 1821 by the Leeds Philosophical and Literary Society when the Society's private collections were opened to the public. From the 1821 Annual Report it can be seen that amongst the early exhibits there was a collection of British Birds and Quadrupeds - a gift of Mr. John Atkinson. During the century the collection grew and developed in relation to the members' interests and their generosity in making donations or raising money in subscription funds to purchase specimens or collections. In 1921, by legal agreement, the management of the Society's Museum was transferred to the Corporation of Leeds and it became the Leeds City Museum.

In 1941, the Museum building in Park Row was badly damaged by a German bomb which fell through the Natural History Galleries and the storage area. Besides the destruction of part of the collections, many of the detailed Natural History records were lost. Considerable damage was caused to the foundations of the building, which eventually led to its closure and the removal of the collections and displays to their present home in Municipal Buildings. Since Local Government reorganisation in 1974, the Museum has been a division of the Leisure Services Department.

NATURAL HISTORY COLLECTIONS

In 1825 the Council of the Philosophical and Literary Society decided to appoint a sub-curator on a salary of £80 per annum, and his duties were specified as 'to arrange the Museum under the direction of the Curator, to accumulate, preserve and label subjects in Natural History in order to render the collections not a resort for the gratification of curiosity but a valuable school of instruction'. Mr. Henry Denny was appointed and served the Scoiety for 45 years. Under Denny the Natural History collections were increased and developed to include not only local and British material, but also foreign specimens, e.g. a large collection of marine animals from the Zoological Station in Naples. Unfortunately, much of the pre-second World War material was destroyed by the bomb in 1941. To protect some of the more valuable scientific material from further damage, such collections as the W. D. Hinks' Amazonian Dragonflies and various other type and figured specimens were donated to the British Museum (Natural History). Some material was also passed to other museums, notably Manchester Museum.

In 1952, Mr. John Armitage was appointed Keeper of Natural History and had the task of examining and sorting the war-damaged collections. Much of these collections proved to be in very bad condition,

being either smashed, or infested so that many items had to be destroyed. However, parts of the collection were salvaged, e.g. most of the insects from the Dibb and Hinks Collection, various mammals, parts of the bone collection, and most of the bird skins and mounts. The latter included the collection of Sir William Milner which contains many rare birds taken in Yorkshire, Britain and throughout Europe. The main collections of the Leeds City Museum have been acquired since 1945.

In 1946, G. R. Dent presented the Museum with a cabinet of eggs from the W. Schluter Collection of Halle, which was combined with the T. G. Roper collection in 1947. Various other egg collections, including those of Geo. C. Cayley and F. H. Woodhouse, were acquired in the early fifties as a result of the Bird Protection Act.

With the assistance of local entomologists and, in particular, John F. Flint, a comprehensive collection of British Beetles was accumulated. This, together with some Dibb and Hink material, and the Curculionides from the C. D. Day collection (acquired in 1960), now forms the basis of the beetle collections.

To build up the collections, the Museum made various appeals which resulted in the donation or purchase of specimens ranging from single items to large collections such as the Wilding Collection of British Butterflies and the Thornton collection of British Moths. In recent years the acquisitions have been orientated towards smaller collections of items such as Fish Otoliths and Woodlice. However, the following large collections have also been acquired - the L. W. Stratton Shell Collections, 263 mounted birds from Swindon Museum, and the Herbaria of James Abbott, F. W. Barnett, C. W. Horrell and Dr. George Nelson.

At present the department is investigating the historical collections and transferring these and other records onto the MDA system. In addition to this work, the collections are being enlarged as and when material is available, through purchase or donation, and by limited fieldwork.

COLLECTIONS

As the collections are still under investigation, the following information is provided to identify the major collections held at Leeds. This is in a general form and it is proposed that a definitive list, with collector information, will be published when this work has been completed.

SYNOPSIS OF THE COLLECTIONS OF LEEDS CITY MUSEUM (NATURAL HISTORY)

Botany — The oldest herbarium is that of the Rev. William Wood

(1745-1808) presented to the Museum by the Linnean Society in September 1949. Most of the collections are of more recent origins and include those of James Abbott, F. Barnett, C. W. Horrell, K. G. Payne and George Nelson.

The Collection also includes marine algae collected by R. Hudson-Pope, as well as seeds and a series of freeze-dried fungi.

Zoology - Mammals

The only specific collection of mammals is the Whittaker Collection of Yorkshire Bats, but the mammal collections are represented by material from all parts of the world.

Birds

The main skin collections were assembled by Sir William Milner in the latter part of the 19th century and these have been increased by gifts and purchases up to the present time. Two large collections of mounted birds were acquired in the early 1960's which contain many rare and some extinct species and extending the importance of the collection to cover material from all over the world.

Skins, Mounts and Eggs

Sir William Milner
W. B. Arundel
J. C. Hirst
J. Todd
G. R. Dent
G. C. Cayley
C. E. Rhodes
J. G. Roper

Fish and Lower Vertebrates

The collections contain small numbers of fish, amphibia and reptiles, both as models and mounts, but in recent years attempts have been made to build up these collections in a spirit form.

Invertebrates

Lepidoptera

The most important collections are those of

Benson-Jowett who collected material from all over the world. Also of importance is the Wilding Collection of butterflies which must rate as one of the finest preserved collections available.

R. Benson-Jowett
R. Thornton
Dr. J. L. Wigan
Peter Stocks
H. Shann

R. Wilding
Sir W. Garforth
Fredk Buckton
Wing-Cdr. J. M. Mauc

Coleoptera

Most of the beetles in the Museum Collections were collected by the staff of the Museum with the aid of local entomologists, but they also include the collections of D. Day, Dibb and Hinks.

Other Insects

Most groups of insects are represented in the Museum collections. Some, however, are only poorly represented. The collections of Odonata and Diptera are fairly strong in sections, particularly the Tipulids and the Syrphids in the Diptera collections.

T. R. Dibb (Part) W. D. Hinks (Part) D. Day

Note The collections of Dibb and Hinks and D. Day contain specimens from more than one group of insects.

Mollusca

The Mollusca Collections are built up from a large number of individual collections covering most groups from all parts of the world. By far the most important of these collections is that of Sylvanus Charles Thorpe Hanley an expert taxonomist and author of many books on Conchology. This collection contains many types and important figured specimens. A present study of the freshwater bivalves has produced a number of important discoveries which are at present in the process of being published.

Sylvanus Charles Thorpe Hanley
Atkinson Memorial Collection

A. G. Stubbs
William Nelson
Charles Ashford
Hugh Brooksbank
L. W. Stratton (Part)

Other Invertebrates

Over the past few years an attempt has been made to build up collections of invertebrates, in particular the woodlice, centipedes and millipedes, and examples of most of the common and some of the rare species are now in the collection. The Museum also has small collections of brachiopods and corals, as well as some of the smaller lesser known groups of invertebrates.

A. J. Rundle

J. H. Nunney
A. Norris

THE HERBARIUM AT AMPLEFORTH COLLEGE, YORK

This collection was passed on to me when I took over the Department a few years ago but apart from immediate first aid (removing a nest of mice) it is only recently that I have been able to put in some elementary curating. All specimens have been catalogued using Clapham et al. and arranged accordingly. Many of the older specimens have deteriorated considerably but they have been retained together with their data. Unfortunately there are a number of specimens lacking any data.

The main collection consists of 1,570 specimens of Pteridophyta, Gymnospermae, and Angiospermae. This collection can be divided into three main groups:

Collection made in 1835/36 probably by two collectors as yet unidentified (I may be able to trace one in time). Most of these have localities and in some cases more ecological data. It is going to be some time however before detailed localities can be traced since often local names of areas are used.

Collection made by Rev. Fr. Damian Webb, OSB from Oxford (mainly field trips) and from North Yorks. 1942

Collection made by Rev. Fr. Aidan Gilman OSB from Oxford, Suffolk, North Yorks, and Scotland. 1952

The remainder of the main collection is either local to Ampleforth or the results of various field trips from the College. In addition some material collected by myself. There are also some specimens collected in the Hereford area about 1870. These may have been collected by the same as the 1836 specimens. If this is so it should be possible to trace him. At that time the English Benedictine Congregation had a common noviciate at Belmont, and some of the senior priests from Ampleforth spent time down there.

In addition to the main collection there is a collection of 384 Alpine plants, collector unknown; a few species of plants from Gulmarg, Kashmir collected by myself in 1944; and a collection of about 100 specimens of Bryophyta as yet very roughly sorted.

There are certainly some interesting specimens such as Cypripedium calceolus from Eden Dene 1884- and one Gramineae labelled Stipa pennata 1835 from Garrow Hill. The latter I believe recorded about that time in the North of England, although as yet it has not proved possible to trace Garrow Hill.

The collection is obviously worth retaining and curating to the best of my ability. (I am a zoologist and not a systemic botanist so cannot claim to be able to check much of the taxonomy). We are not a public museum, but I have the College authority to show the collection to anyone seriously interested and would be delighted to do so for anyone who made an appointment. Moreover in time we hope to be able to relate the localities more accurately and eventually duplicate the catalogue with this information so that some records could be more easily consulted.

J. B. Davies
Senior Biology Master.

JOB CREATION AND BIOLOGICAL RECORDS AT CLIFTON PARK MUSEUM, ROTHERHAM

The collection of information concerning the wildlife of the

Rotherham Metropolitan Borough has been regarded as an important part of the work of the Keeper of Natural Sciences since the post was created at Clifton Park Museum at the beginning of 1975. This information has been collected in a variety of ways, including the extraction of published records, the collection of records from local naturalists and active fieldwork. The last of these has also resulted in many specimens being added to the Museum's collections.

During 1976 an application was submitted to the Manpower Services Commission for a team of survey technicians to assist with this work. The application was eventually accepted and three honours graduates were selected from a list of nearly 100 applicants and they began work in November 1976.

The survey consisted of a number of separate, though related, pieces of work. A far more intensive literature search was conducted, using references in the files of Sheffield City Museum as a starting point, with the result that the information for the period before 1975 is now much more comprehensive. The information already in the records of the Sheffield City Museum, the Doncaster Museum and Art Gallery and the Yorkshire Naturalists' Union were assembled on to our site records, whereas in the other organisations they were filed under taxonomic group. These two aspects of the work were mainly conducted during the 1976/77 winter, so that the information was available in time for the summer collecting season.

Fieldwork was of two types. The Museum receives a weekly summary of planning applications in the Rotherham Metropolitan Borough (averaging about 100 per week) a few of which involve some change of land use. These may be derelict urban sites or farmers' fields (euphemistically called "green field sites") to be used for housing developments or factories, disused quarries required for tipping or larger areas needed for opencast coalmining. The survey technicians checked through each list and identified the ones which involved such a land use change, obtained more detailed information from the Rotherham Planning Department and went out to each site to survey it. In a small number of cases during the year the sites were considered to be of sufficient natural history value for us to submit an objection to the proposed development or to suggest modifications to it. In all cases our specimen collections and site records were improved by the additional information which was collected.

The second aspect of the survey developed largely as a result of the interests of the team, and became a systematic survey of the Borough's woodlands. Approximately 70% of the woodlands were surveyed and the resulting information is being examined and assessed.

The survey team consisted of one botanist (Jon Watson) and two

zoologists (Jane Addey and Pam Stenton). Jon was trained in phyto-sociology at Cambridge and assessed each woodland from that point of view, in addition to compiling a plant species list. He is also interested in bryophytes and birds, and so added to our collections of the former and our records of both groups. Jane took up the study of centipedes and woodlice while Pam concentrated on the spiders and harvestmen, in addition to them both collecting other groups such as earthworms, insects and molluscs. Approximately half the summer months were taken up with collecting and surveying, and the other half in identifying specimens and adding information to the records.

As a result of this 12 month project the amount of information in the Museums site records increased considerably, more than doubling the information collected in the previous two years. Species lists and local distribution maps (on 1 km squares) were started for a number of groups, and papers on the millipede and centipede fauna of South Yorkshire were prepared for publication in a local journal. There is still a great deal of unidentified material awaiting identification, but this backlog is slowly diminishing with help from a few outside experts. Adrian Norris of Leeds City Museum has kindly identified many of the molluscs which were collected, and local experts on lepidoptera and tachinid flies have helped willingly.

Following the success of this project a further application was made to the M. S. C. to survey disused and unused sites, and eventually this application was also approved. Two zoologists (Margaret Crittenden and David Twigg) and a geologist (Malcolm Wignell) have recently been appointed, and a botanist is being sought. Margaret is an expert in the identification of water mites, and has also taken on the spiders, harvestmen and pseudoscorpions while David is an angler and interested in freshwater life. He is now dealing with nymphs of insects such as the mayflies, caddisflies and dragon flies and the project is concentrating on those pieces of disused land which happen to be under water. The selection and checking of planning applications continues as before.

The Job Creation Projects have been a great benefit to this Museum. In return for a reasonable input of time on my part at the beginning of each one, in order to explain what is wanted and why, the survey teams have been collecting a large number of specimens and records. The members of the teams have contributed their ideas on the collection and storage of the information and the system has benefitted from these ideas. Their expertise in the identification of specimens has resulted in many additional records being added and this expertise has occasionally been made available to Doncaster and Sheffield Museums as well. A number of local and rare animals have been found and a few of them are new vice-county and county records and the important ones have been forwarded to the relevant recorders in the Yorkshire Naturalists' Union. As a result,

the advantages of the project have been felt by the wider natural history movement as well as by this Museum.

Bill Ely,
Keeper of Natural Sciences
Clifton Park Museum, Rotherham.

THE WILLIAM BEAN SHELL COLLECTION - WOOD END MUSEUM OF NATURAL HISTORY, SCARBOROUGH

William Bean (1787-1866) inherited land known as Bean's Gardens (a mixture of market garden and pleasure garden situated between Huntriss Row and Pavilion Square, Scarborough) from his father but took little interest in their maintenance. By 1816 the gardens no longer existed, having been sold for building purposes, and Bean presumably became financially secure as a result of their sale. There is no evidence that he had any other occupation - in 1814 on joining the Old Globe Lodge he was described as 'Gardener' but shortly after that date he was described as 'Gentleman' or 'Naturalist' - and after 1816 he seems to have devoted himself to the study of natural history and public service as a long serving member of the Town Council, Alderman and leader of the local Liberal party for many years.

In his early years he seems to have been particularly interested in entomology and botany. No entomological collections seem to have survived but his botanical specimens were donated to the Yorkshire Museum, York by his son Eugene in 1923. In 1824 Bean started his geological collection which was sold to the British Museum in 1859 for £500. However his collection of shells remained in the family until Bean's last surviving son Eugene died in 1926 when they were bought by the Scarborough Philosophical and Archaeological Society. Because of lack of space in an already crowded museum, the contents of four of the seven cabinets purchased were merged into the others.

The collection is made up of Land, Freshwater and Marine species of mollusca collected on a world wide basis. It is again housed in seven cabinets as well as a large number of storage boxes and has at some time been amalgamated with the collections of J. Linton, Old Mill House, Normanby, Northallerton; William Gyngell of Scarborough and Mr. Laverack of Malton, North Yorkshire. There are also numbers of specimens presented by such collectors as Charles Oldham, John W. Tayler, Sir R. Nawson, Ferrussac, Dr.Turton and Captain and Mrs. Hartley.

The Britsh Land and Freshwater specimens are typical of most British collections of the day, and contain a number of interesting specimens. The most important is, perhaps, the specimen of sinistral Lymnaea peregra collected from a pond at Hackness, Scarborough. Other interesting specimens are the Psidium moitessierianum collected by Charles Oldham from Cheddington, Bucks; the decollated Lymnaea glabra from Lady Ediths Drive, Scarborough; Myxas glutinosa collected by M. C. Peck of Scarborough; the Vertigo pusilla from the wall near Ayton Castle, West Ayton North Yorkshire and a very interesting Anodonta cygnaea from the Deighton Grove fish pond at York collected by A. Smith of York. The collection does, however, have a large number of gaps and judging by the old records a number of the more controversial records have been removed sometime in the past years.

The Placostylus, a group of land mollusca from the Phillipines, are perhaps the most interesting group in the Tropical Land and Freshwater series. A number of specimens have printed labels with them suggesting that they were bought from a dealer, probably Sowerby and Fulton. Other interesting groups are the Cochlostyla and the collection of land mollusca from North America.

The bulk of the Tropical Marine Bivalves are of little interest being in general the larger and more common species found in most collections. There is however a large collection of specimens from Mazatlan on the west coast of Mexico. This is part of a very famous collection held at the British Museum. The collection was brought from Mazatlan by P. P. Carpenter and sold in sets to several museums and he acknowledged Bean's assistance in his preparation of the Reigen Catalogue of Mazatlan mollusca.

The Tropical Marine Gastropods are the typical collections of Cones, Cowries, Murex, Olives etc. The most interesting is a specimen of Cypraea aurantia, a fairly valuable shell.

The Freshwater Bivalves of North America may be of special interest as they have more information with regard to the rivers in which they were found than is usual. Also some of the original collecting grounds have long since been lost due to river pollution.

The British Marine Molluscs are perhaps the most important part of the collection. Almost all the British species are represented although there are some obvious gaps. A list of figured specimens is given below and other interesting species are Adula simpsoni from Shetland; a large number of sinistral and distorted specimens of Buccinum undatum from Blackpool and a sinistral Nucella lapillus

from Scarborough that was exhibited by W. Gyngell at the Jubilee Meeting of the British Conchological Society in 1926.

The collection was completely reorganised and brought up to date by Adrian Norris of Leeds City Museums in 1969 and is (quote) "perhaps the most interesting collection in Yorkshire".

Figured Specimens

1. Hanleya hanleyi (Bean 1844) Holotype

   A single specimen stuck on a card slip and labelled in Bean's hand "Chiton Hanleyi Bean. Scarboro. This specimen figd. in Hanley's Marine Conchology".

   Note: the reference is to British Marine Conchology by Charles Thorpe, 1844. The Systematic Index of pp. XVII-IX is stated to be by S. Hanley. Chiton Hanleyi is figure No. 57.

2. Chiton pictus Bean 1844 ?Syntypes

   In a circular glass-topped box (labelled Callochiton achatinus (Brown) is a small disk of thin blue card labelled 34641. 4. 5. 6 and bearing three chitons. Two are small, the central one about $\frac{1}{2}$" long. This agrees with Bean's statement (Thorpe's British Marine Conchology p. 264) that he had only taken three specimens and the dimensions quoted length $\frac{1}{2}$" breadth $\frac{1}{4}$" agree with those of the largest (central) specimen on the card.

   A synonym of Tonicella marmorea (Fab), Fide Jeffreys, British Conchology Vol. III, p. 227.

3. Beringius turtoni (Bean 1834) Holotype

   A fine live-taken specimen labelled Beringius, Dall (-Fusus) turtoni W. Bean, Scarborough. The label is not in Bean's hand as he always seems to have used Scarboro not Scarborough as on present label.

   Full reference is Bean W., 1834 Magazine of Natural History Vol 7 p. 493, fig. 61. Forbes and Hanley comment (History of British Mollusca, Vol. 3, p. 433) 'added to our fauna by Mr. Bean, who obtained it from deep water on the Doggerbank, off the Yorkshire coast'.

4. Nucella lapillus (L)

The famous sinistral specimen. A bandless white shell numbered on the lip 546. 41.1 with an old label in Bean's hand 'Purpura lagillus Sinistral Var. Found by Jessy Bean Scarboro'.

5. Cantharidus clelandi (Wood 1828)

Box of specimens and more in plastic bag with an old label in Bean's hand "Trochus millegranus, Ireland, Philippi. The large specimen Figd. in Hanley's Marine Conchology".

The shell figured probably came from J. D. Rose-Cleland of Bangor, County Down, Northern Ireland who first found the species in Britain but it is not now possible to identify the actual shell figured. The box of specimens has an old label (whose ?) with it "Trochus millegranus Oban Bay 25F."

Ian Massey
Museum of Natural History
Wood End
Scarborough

VERTEBRATE RECORDING SCHEMES AT SHEFFIELD MUSEUM

A common problem shared by a number of local biological records centres involves the accumulation and dissemination of information on vertebrates other than birds. Whilst many districts or counties are well endowed with enthusiastic botanists, ornithologists, and to some extent entomologists actively involved in fieldwork and recording projects, the number of field mammalogists, herpetologists and ichthylogists tends to be relatively low. Such a situation existed in the Sheffield area less than a decade ago, when any attempt to assess the status of our local mammals, reptiles, amphibians and fishes was based on scant and sometimes misguided information. However, owing to determined efforts by the staff at Sheffield City Museum, and members of the Sorby Natural History Society (S. N. H. S.) and their close working relationship, this situation has now been reversed.

In the hope that other B. C. G. members who are at the same stage now as we were ten years ago, may be encouraged to tackle these groups, I have outlined the methods used to gather and publish data, with particular reference to the relationship between the museum

and local naturalists. An account of the survey of the local avifauna has also been included as it differs slightly from the other schemes. Taking these in chronological order.

Birds

Initiated by a former member of the museum staff, David Spalding, acting as tutor for a course of studies on Birds of the Sheffield area, sponsored by the University of Sheffield Department of Extramural Studies, in co-operation with the Workers Educational Association. The main objective of the course which began in 1966, was to prepare an account of the local avifauna which might serve both as a guide to those who know a little of Sheffield's birds and a work of reference for the more experienced observer. Members of the course were enrolled from both the general public and the Sorby N. H. S.

Information was largely extracted from published and unpublished literature, and supplemented by field work undertaken by course members and local naturalists.

Publication of the project (Smith ed. 1974) was financed jointly by the museum and the Sorby N. H. S., each taking a proportionate share of the books relative to the financial input.

An additional bonus for the museum's record centre was the incorporation of the raw data sheets used to prepare the manuscript.

Fishes

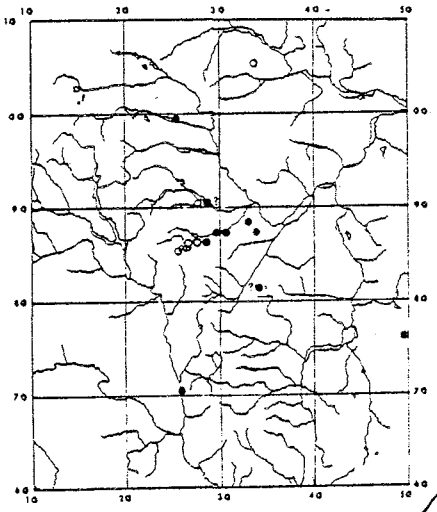
To gain further information on local freshwater fishes the City Museum undertook a survey during 1972 and 1973. A display publicising the survey was constructed in the galleries, and returnable record forms were available from the museum. Record forms were also distributed to angling clubs and tackle shops. Requests for information were published in the angling press and personal contact was made with several local reliable anglers. The most useful way of obtaining records, however, was found to be talking to anglers and filling in record forms on the spot. This occupied the weekends of P. B. Mander, the survey's principal organiser.

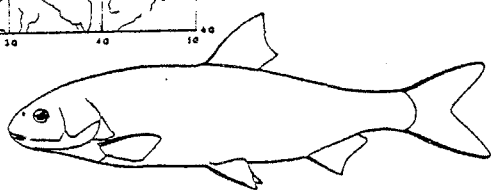
Results were published in the journal of the S. N. H. S., the Sorby Record (Mander 1973).

Further records obtained during the period 1973-5 prompted the publication of 1km^2 distribution maps with a condensed text and outline illustrations for each species. The 'popularisation' of this report in the

Museum's own 'Information Sheet" series enabled it to be easily digested by the local public. At 10p it still rates as one of the best-sellers at the Museum bookstall.

Additional 'spin-off' from this publication included further records and even specimens from anglers and naturalists, who are keen to "fill in the gaps" on the distribution maps. Thus, weight is added to the argument supporting the publication of "provisional" distribution maps.





Dace

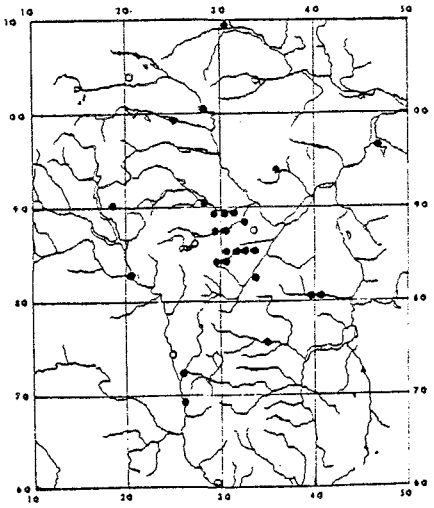
Leuciscus leuciscus (L.)

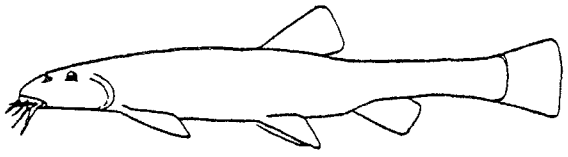
Indigenous. Limited local distribution.

Habitat. Prefers small rivers and streams.

Adult length 15-25 cms.

Food. Invertebrates.





Stone Loach

Noemacheilus barbatulus (L.)

Indigenous. Used to be common and widespread. Now found only in cleaner rivers and dams.

Habitat. Clear stony streams and rivers.

Adult length 8-12 cms.

Food. Bottom-living invertebrates.

Amphibians

The survey of local amphibians probably involved a greater degree of co-operation between the museum and the natural history society, than the aforementioned surveys. Whilst the scheme was museum initiated, local naturalists were actively involved checking observations, searching for new ponds, and entering details on data cards.

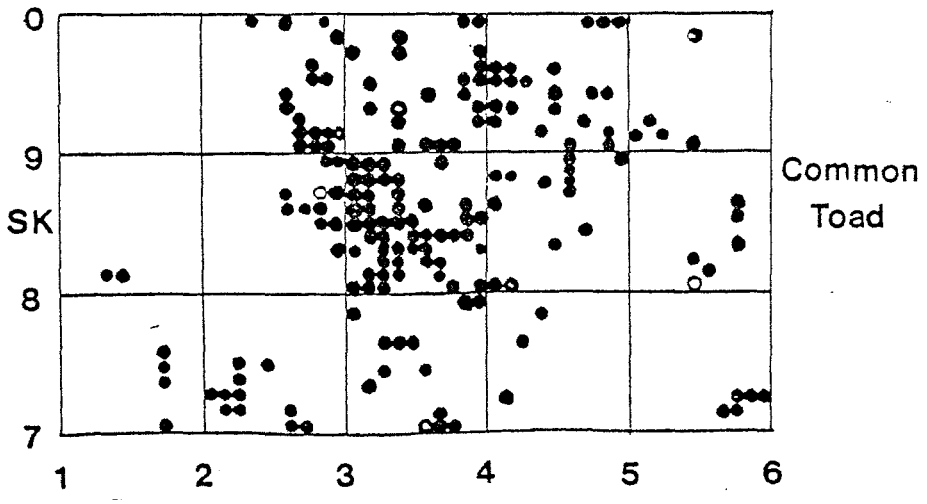
A public participation project known as "Spot the Frog" was initiated by the museum in 1975, for which the general public were invited to contribute records. A gallery display comprising photographs and specimens together with a base map to which coloured sticky circles could be added helped to publicise the survey. The public were able to watch the coloured dots increase as their own sightings or 'spots' were added to the map. Back-up publicity was also gained from the local press and B. B. C. local radio.

A returnable record slip was made available,for which attendant staff were trained to enter species and provenance details, while interviewing the public, in the absence of curatorial staff.

Regular appeals were also made for records in the monthly newsletter of the S. N. H. S. A concurrent "Reptile and Amphibian Survey" was launched by the society in March 1975, and a key to local species combined with a returnable recording form was issued to all members providing a stimulus to record observations.

Results obtained in 1975 were encouraging, and both surveys were continued during 1976 and 1977, by which time some 1300 individual records had been received.

A paper analysing the distributional and habitat data, and the relationship between amphibians and man, together with distribution maps on a $1km^2$ basis was published in the Sorby Record (Whiteley 1977).



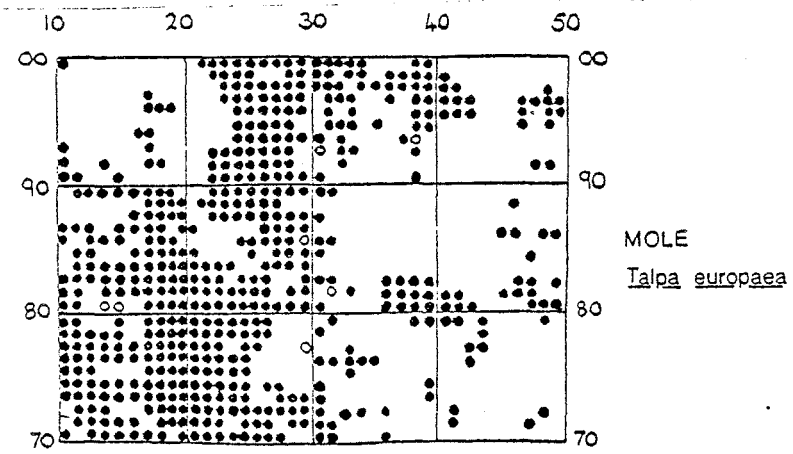
Mammals

By way of contrast, the Sheffield mammal mapping scheme was initiated by myself in 1974 in the role of 'Mammal Recorder' for the S.N.H.S. Recording techniques included regular appeals for information via the society's newsletter, returnable recording sheets, and illustrated lectures on the identification of mammals.

On joining the museum's permanent staff in 1975 further opportunities arose to expand and accelerate the survey. Not the least of these was the use of the museum's recording 'software'. The B.R.C. 80 column 'pink' card had been adopted as a standard for individual records some years ago. Although relatively tedious to fill in, they had distinct advantages when the final analysis was made. Thus, habitat, grid reference, date, sex etc. for each species could be extracted simply by manually arranging and re-arranging the file. This may sound tedious, but in practice was as easy as extracting aces from a deck of cards. Further interest in mammals was created by holding regulat seminars and workshops at the museum, using specimens to demonstrate identification characters and field techniques. Topics such as the identification of small mammal skulls and teeth found in owl pellets and discarded bottles always proved to be popular with local naturalists, particularly youngsters. Regular tuition ensured a reasonable degree of accuracy in reporting observations.

Contact with neighbouring museums, university departments, health authorities, and other local recorders was useful. Records were exchanged on an annual basis to facilitate clerical work.

The project was very successful, and by December 1976 some 7,000 records had been collected and added to the museum's files. Once again, use was made of the Sorby Society's journal, and a set of provisional 1km^2 distribution maps with status notes on each species was published (Whiteley and Whiteley 1976).



Reptiles

A survey of the area's reptiles has been operating for two years, on similar lines to the mammal survey and results will be published in 1979, thus completing the present phase of vertebrate recording in Sheffield.

To conclude, both the museum and the local natural history society have gained a great deal from an almost symbiotic relationship. It is safe to say that either party could not have achieved so much, without the help of the other. The Natural Sciences section at the museum have only limited manpower (2 non-specialist curatorial staff) whilst the local society has an army of observers in the field each weekend, but limited financial resources for major publications. If museum staff are prepared to spend some time organising, tutoring and training local naturalists to identify, observe and record unworked groups of plants and animals, the results can be highly rewarding, as I hope our experiences at Sheffield have demonstrated. In return the local society benefits from the use of museum funds and facilities. Use of the museum's collections for identification sessions have led to a greater understanding and awareness of the resources that the museum holds for naturalists. This in turn prompted an increased supply of specimens to expand the collections. For example, in the year following the publication of the mammal survey, our reference collection of Mountain Hares grew from 1 to 6, simply because local naturalists realised that the specimens could be put to good use.

The importance of the role of the regular society publications cannot be underestimated. The local newsletter was used to publicise surveys, issue returnable recording sheets and identification keys, and report on interim results. Thus the right people were reached at no extra cost to the museum. Likewise the Society's journal provided a vehicle for disseminating results (an important function of any records centre) and provided interesting reading material for subscribers.

Above all, by integrating the museum into the activities of local societies and similar institutions, the probability of greater co-operation is higher. Although I have only mentioned local recording schemes for vertebrate animals, similar activities involving invertebrate animals, plants and sites of natural history interest, involving co-operation with several societies in South Yorkshire and Derbyshire are having the same degree of success.

References

Mander P. B. 1973 Fishes of the Sheffield Region. Sorby Record Vol. 3 No. 4 p. 35-54.

Mander P. B., Riley T. H., 1975 Whiteley D. — Freshwater Fishes of the Sheffield Area Sheffield City Museums Information Sheet No. 14. 6pp folded

Smith A. H. V. (ed) 1974 — Birds of the Sheffield Area Sheffield City Museums and Sorby Natural History Society 167 pp.

Whiteley D. 1977 — Amphibian Fauna of Sheffield Sorby Record Vol 15 p. 36-48

Whiteley D. and Whiteley S. S. 1976 — Mammal Fauna of Sheffield. Part 1 Distribution and Status. Sorby Record Vol. 14 p. 4-31

(all are available via the author)

Derek Whiteley
Sheffield Museum

REMINISCENCES OF A PUNK NATURALIST!

1962 saw the opening of Doncaster's new glass and concrete supermarket-style museum, the old affectionately remembered establishment, with its bee hive and none too healthy zoo, having been demolished to make way for a new supermarket-style technical college. Just months before the civic opening the staff, fewer in those days, panic-striken by the shortness of time, slaved at 'E' type pace and burnt oceans of midnight oil to fill endless runs of huge display cases. Initially, displays were installed with care and dedication and consultants were engaged to advise on finer points of design and lighting - later, cases got the 6" nail and evo-stick treatment! Considering the incredibly short time the exhibition programme took to complete, the displays were of a high standard, effective and ingenious. The aim however, was to re-display at a more composed pace, incorporating a greater element of interpretation and local relevance. When a leisurely 13 years later, the present staff got round to assembling information for a new series of mammal displays; it came as something of a shock to discover that almost nothing worth knowing was available on local mammals! Distribution surveys and investigations into the history, ecology, diet, breeding biology etc of local species were launched, little realising what work would be involved

and what discoveries made. After finding that the key to the intimate subtleties of a mammal's life lay amongst the 'big bits' of its excrement or in the regurgitations or excrement of its predators, the race was on, apparently to corner the world market in faeces, stomach contents and pellets. With offices and store rooms becoming clogged with steaming heaps of dung, the weak stomached manfully suppressed vomiting spasms, unsympathetic attendants flung wide windows for super efficient ventilation, and those not familiar with the activities of the natural history section even accused each other of neglecting underarm or other forms of personal hygiene. Enthusiasts, however, intoxicated by a lust for scientific discovery, demanded that excrement from the rare rectums or from the more exotic corners of Yorkshire be incubated to see what hatched out.

Hundreds of fox droppings, thousands of owl pellets and many bat parasites later it was clear that this grotesquely foul though highly fertile exercise had provided enough facts, discoveries and ideas for display themes, publications and lectures for years to come. Interminable owl pellet dissections coughed up many new localities for under recorded mammals and showed that barn owls eat gastropods and grass snakes! Also, by establishing the existence of harvest mouse in Yorkshire, it proved generations of sceptics wrong and sparked off detailed studies of distribution, habitat preference and breeding biology. It seems that Yorkshire harvest mice are lowland specialists, mainly occurring below the 50' contour- though one would-be alpinist near Sheffield occurred at 750'. They have a shorter and later breeding period and have small litters than do their south of England cousins. Their favourite nesting plant, Phalaris, was not universally accepted, Montbretia attracted the 'gay' element and what must have been a 'punk' mouse was reported nesting in a bag of nails!

Wafer thin or partially burst hedgehog road casualties showed a strong suburban orientation and served to monitor the main events in the hedgehog calendar. The mysteries of diet were unravelled by the analysis of droppings. Gleaming fresh feaces, obligingly deposited on the lawn at home were brought in with the milk each morning during the drought year of 1976. The scarcity of soft bodied prey drove starving urchins to taste the toxic juices of Coccinellid beetles. Ants were consumed by the hundred and earwigs provided a handy gastronomic stand-by. After the first autumn rains succulent earthworms surfaced from sub-soil entombment to be eagerly devoured along with lepidopteran larvae.

Studies of bat roosts provided many revelations, not least for the onlooking public, though the biggest surprises came from the analysis of the smallest droppings. Picking the big bits out of noctule dung requires the eye and skill of an expert seamstress. Fragments of well masticated invertebrate exoskeleton, still bearing tell-tale

sculpturing, bristles and hairs, showed that these supposedly high-flying bats took a fair proportion of terrestrial prey including a wingless weevil and a tube-dwelling spider. Fragments of the bark beetle Rhizophagus politus (Hell) constituted only the third Yorkshire record and the bat's capture of a small chafer must have been like catching a machinegun bullet between its teeth!

Studying the unbelievably catholic diets of foxes, the original gastronomic opportunists, provided hours of bizarre entertainment - reports on the contents of some 'urban' droppings being unpublishable even in this permissive era! Sand spangled droppings from coastal fox populations showed that winter storms and oil spills provided harvests of corpses on which to scavenge. Similarly spring and autumn migrants, enfeebled by their ordeals, fell easy prey, and the contents of choc-ice wrappers, fish and chip papers and scraps from picnic lunches left by holiday makers supplement the summer diet. Foxes in arable areas feast on rodents attracted to field-side root crop stores - dental remains showing that inexperienced debutante and geriatric rats were most frequently taken. Wefts of overhead cables around South Yorkshire power stations provide a constant 'rain' of mutilated bird strike victims, racing pigeons being the staple fare though whooper swans form a seasonal treat. Pennine foxes dine on red grouse and mountain hare whereas their urban counterparts in down town Doncaster make do on a diet of Kentucky fired chicken and used rubber goods!

Colin Howes
Doncaster

NB. No wonder this character isn't recognised by the Museums Association or even by Doncaster Museum - See Museums Year Book 1978 ? ?

TAPPING THE THIRD SOURCE

Whilst some museums have traditionally gathered information on the flora and fauna of their districts in a systematic way, it is only recently that this aspect of the biological curator's work has received a major stimulus following consultations with the Biological Records Centre. Fearfull of being sunk without trace beneath a plethora of records being sent to them, this body initiated discussions with the Museums Association and other interested parties directed at the establishment of Regional Biological Data Banks. Many of these banks have now been established and most though not all, are based on the natural history departments of museums so that many biological curators find that work on the data bank now adds to their

workload. Whilst few museum officers known to me sit around waiting for work to come their way, neither is it a common sight to see them pleading for additional duties to compound an already severe strain on available time resources. Nevertheless, as one charged with the upkeep of a data bank in addition to more traditional duties, I feel that the museum is the ideal location for a data bank, backed up by voucher collections. Hopefully in the future the old view - that the last people to know anything about local natural history are the guys doing natural history at the local museum - will become less true in the future.

In collecting data for the regional data bank, three main sources are available. Fieldwork taps an obvious source, and to my mind a vital one if the bank is to be aware of current conditions and trends. Many elements of the local scene are continually changing and these changes should where possible be monitored. Literature searches tap the second major source, the printed word. Again this data is essential in monitoring changes to the local scene. But what of the third source, namely the vast amount of material standing in museum collections? This remains a largely uptapped source, save that fraction of the collection which relates to the district wherein the museum is situated (assuming that the data is being used by that museum or by members of the public there). But at present there is no way, for instance, of knowing which museums in the country possess material from any given county. Whilst lists of collections in a given museum may be extant, these often give little or no indication of where the material in those collections comes from. In fact biological curators are often unaware of the provenance of the bulk of material in their collections and are consequently unable to assist the often distant fledgling data bank craving for the riches locked away therein.

What is the answer to this problem? On the one hand a mass of data; on the other a body of people eager to obtain that data. And in the middle is the biological curator.

Clearly few who read this newsletter have the time to list all of the specimens under their care, arranging them under county or vice county, let alone to send all of the records to the appropriate data bank. The bank requiring data from a know source must place their request and, unless reciprocal arrangements are made, should arrange to extract that data themselves. But until the banks know which museums hold material from their regions the process of using the records where they are likely to be most useful cannot begin. The biological curator has to attempt to publicize information on the provenance of his material in order that this third data source can be tapped.

Mindful of this problem, and aware that a great amount of

material in the Doncaster Museum collections hails from other parts of the country, I have made an attempt to assess the quantities of records from different parts of the British Isles based on specimens in these collections. For this purpose I selected at random 9 areas of the collections as follows:-

1) Donc. Mus. Herbarium (Cruciferae complete);
2) Verhees Oological Colln. (complete);
3) Mollusca Colln. (Helicidae Helix aspersa, Cepea hortensis, nemoralis)
4) Araneae (Tetragnatha - Linyphia incl.)
5) Macrolepidoptera, Waddington colln. (complete):
6) Brit. Coleoptera colln. (Carabidae - Cicindela - Loricera incl.);
7) Brady-Wyer colln. Brit. Microlepidoptera (Dichrorhampha - Epiblema incarnatana incl.);
8) Diptera colln. (Syrphidae, Eristalis tenax, Helophilus pendulus), (Sciomyzidae, Pherbellia-Trypetoptera incl.);
9) Hymenoptera colln. (Symphyta, Selandriinae compl.)

(NB. Classificatory systems acc. to most recent lists)

The total number of records included in the above sample was exactly 4000 (by remarkable quirk of fate, not by design). The unit used (i.e. record) consists of the specimen or series taken at one site on one date and referred to species, race, variety or aberration. Thus where a long series of butterflies or molluscs have the same data but have not been identified to race, variety or abberation, this counts as a single record. On the other hand if ten specimens have identical data but are referred to 10 different taxa (even if only abberrations), these count as 10 records. A series of bred specimens from one parent obviously constitutes one record.

The total population (i.e. total number of records in the Museum collections) has not been ascertained but a very rough estimation would be in the order of at least 40,000. Consequently, for the purposes of this article it is suggested that the sample represents about 10% of the total "population".

The procedure adopted here is only a very provisional one and it is hoped that more reliable ones can be designed. However the percentage representations of the counties etc. given below are probably approximately correct across the entire collections at Doncaster, although I suspect that the Welsh and Highland* components will prove to be rather low in the sample. The following list gives the percentage representation in the sample of the pre-Reorganisation counties of England and Scotland and the main regions of Ireland and Wales,

*In the sample the Highland percentage is 5.6%, the Lowland 1.6%, and the Welsh total (i.e. South plus North) is 6%.

arranged in order of diminishing frequency. It is inferred that these percentages should be very approximately correct for the whole collections at Doncaster. Thus there should be about 400 records from each of the following areas - Perthshire, Lancashire, S. Wales (South or R. Dovey), Suffolk and Wiltshire.

Yorkshire (mainly vc 62, 63, fewer 61) (50%)
N. Wales (North of R. Dovey) (mainly Merioneth & Caernarvon) (5%)
Nottinghamshire; Hampshire; (3%) (i.e. each 3 percent of total)
Derbyshire; Kent; Somerset, Devon & Cornwall (counted together); (2.5%)
Lincolnshire; Co. Durham; Inverness-shire; Eire; (2%)
Aberdeenshire; Surrey; (1.5%)
Perthshire; Lancashire; S. Wales; Suffolk; Wiltshire; (1%)
Cheshire; Norfolk; (0.8%)
Huntingdonshire; (0.7%)
Sussex; Dorset; Essex; Westmorland; Ross & Cromarty; Cumberland; Middlesex; Isle of Wight; (0.5%)
Argyll; Kirkcudbright; Oxon; Gloucs; Northants; Beds; (0.3%)
Wigtown; Dunfries; Orkney; Sutherland; Bute (Arran); Ulster; Cambs; Warwicks; (0.2%)
Renfrew; Herefords; Herts; (0.15%)
Shetland; Fife; Northumberland; I.o.M; Bucks; Worcs; London; (0.1%)
Ross; Moray; Westmorland; Monmouth; Essex; Channel Isles; (0.05%)
Angus; Lanark; Kinross; Leicester; Salop; Berkshire; (0.025%)

(NB Other counties known to be represented in the collections (i.e. Staffs.) did not occur in the sample and probably constitute less than 0.025%).

If all museums possessing natural history departments could produce lists of this type it would be possible to obtain some very rough assessment of the total amount of records locked away in the 'third source', for any given county. It took about 4 hours to gather the information given in this article, but as an operator of a biological data bank I would find it exceedingly valuable to have a similar list from other museums.

Can we start now to tap the third source?

Peter Skidmore
(Museum and Art Gallery, Doncaster)

THE TYPE METHOD AND THE 'SPECIES'

Historical Introduction

Types are of such fundamental importance in both taxonomy and systematics that one would expect both clear expositions of type theory in the literature and a well-defined code of practice to which most, if not all, zoologists would adhere. The fact that this is not so seems to derive from the history of zoology. Most early zoologists were trained first and foremost as classical scholars, thoroughly familiar with the philosophical concepts of Aristotle and Plato enabling them to interpret the divine order of the Cosmos. The 'universals' of Greek philosophy and the metaphysical notion of a driving force were very readily applied in Zoology. The animal kingdom presents an obvious natural order and in the works of Plato, Aristotle and God's Creation a metaphysical construct of order was equally obvious. A marriage of the two was inevitable.

The type concept of the zoologists of the 18th century is termed 'typology' or 'typological thinking'. The precepts of typology follow from the intellectual background of its proponents. The natural world was clearly divisible into discrete sets of recognisably similar individuals (species - species level taxon). Each taxon in accord with philosophic concepts had a perfect form or essence. To achieve the classical ideal of an ordered world required categorisation, an essential prerequisite of which was to give species names. Not, of course a new idea but hitherto somewhat random. Carl von Linne, the tireless Swedish doctor, presented the 18th century world with just what it wanted - an ordered system of names. 'Linnaeus' and his immediate followers set about naming and ordering. Following their classical mentors they saw each taxon in terms of a perfect form. Those individuals which most closely approached this abstraction were considered typical or type and descriptions of the species were based upon them, or, alternatively an abstract ideal was based on typical forms which were the 'natural' basis of the description. Of course not all members of a taxon accorded with this ideal form, but then the purity of the Greek philosophic ideal was frequently thwarted by reality - the Scholastic "accidents". Any individuals which failed to accord with the perfect form were considered the equivalents of the Scholastic "accidents" and excluded from the description and tacitly from the ideal species.

Given these 'a priori' precepts it followed that early authors felt at liberty or even under an obligation, to replace material in their collection on which they had based descriptions. The reason for such replacements was usually that the types had been damaged in some way but sometimes because more perfect 'types' had become available. This practice was continued in some museums well into the 19th century. Another

hangover of early type-concept in todays museums are collections labelled "Type-Collection of X-shire Lepidoptera or Type Collection of Ordovician Brachiopoda".

Not only did the Scholastic perfect forms and related meta-physical ideas relate to species descriptions but such pre-Darwinian theories of evolution as were proposed hinged on a pervasive striving towards perfection. The acceptance of the Darwin-Wallace model of natural selection as a convincing mechanism for evolution threw into doubt not only Biblical Truths but also provided an objectively based counter-argument to such philosphical abstractions. Not much later Karl Marx was to have exactly the same impact on the Hegelian theories of social organisation - an astonishingly similar parallel!

One of the bases for the new explanation of evolution was the demonstrable variation within species. The emphasis on variation in the new evolutionary species concept was of course the antithesis of the 'perfect form' of the classical species concept,but the full realisation of this significance was slow to emerge. Only gradually through the 19th century and early part of the present century was the deeply rooted static concept of species replaced by the modern idea of species as variable, genetically isolated, populations.

Contemporary taxonomists consider that descriptions should take account of the known variation of the species or, in some cases, be based on studies of variation (see Neville-George). This is not always possible, of course; some descriptions are based on only one specimen because only one specimen was available but even here there is tacit acceptance of the potential for variation. In this 'schema' types clearly cannot have representational function; they serve only as name-bearers.

It is essential that names should be unequivocally applied: every-one must call a cat a cat and a kettle a kettle otherwise chaos would result. Unequivocal name application is the essence of modern type-theory. Simpson (1967) has pointed out that in order to achieve this types must be unique and, in view of the confusion caused by historic usages of the term type, as well as by vernacular usages, proposes a new term 'onomatophore' (literally-name-bearer) to replace the term "type". Unfortunately this excellent suggestion has never been widely accepted and we are still left with an amalgam of old and new concepts.

Modern Type Method

Both Mayr and Simpson propose a type-doctrine in which only unique types are allowed and in which the only allowed function of the type is to bear a name. An author conceives a species as a genetically isolated

variable unit which is described in terms of its variation. A single specimen from within the limits of variation of the authors species is designated type. The type does not in any way 'represent' the species, neither is it, to employ a 'common' usage 'typical' nor is it the basis of the description. To emphasise this many taxonomists now refer to the 'type of a name' and not the type of a (nominal) species.

The practice of designating a holotype or selecting a lectotype from a series of syntypes is almost universal and is in perfect accord with the 'unique type doctrine'. However many authors still base descriptions on single specimens or small groups of selected specimens when a large hypodigm is available, still use types as standards of reference or representatives, still regard types as amplifying descriptions and some even regard them as 'defining' the species. Even the most rigorous anti-typologists seem to shrink from designating 'atypical' specimens as type. Tacit witness to the lingering survival of 'typology' are the surviving subsidiary types - paratypes, paralectotypes and allotypes.

This synthesis of old and new type-concepts is not only apparent in current taxonomic practice but is, in some measure enshrined in the International Code of Zoological Nomenclature.

Categories of types - simple definitions

Most zoologists accept the definitions of types given in the International Code of Zoological Nomenclature (1961 revised 1964) and the following account is based largely on these definitions. The Code sometimes appears ambiguous or even contradictory. This unfortunate state of affairs arises from the history of type concept. Whereas the Code frequently stresses the need for unique types in accord with modern theory it also recognises the type-series. What is more typological than the phrase defining type-series "The type series of a species consists of all the specimens on which its author bases the species except any that he refers to as variant or doubtfully associates with the nominal species or expressly excludes from it". It might at first sight appear that the authors of the Code are old-fashioned or confused but this is most certainly not the case. The majority of animal species were named and described when 'typological thinking' still held sway and since we choose to use the oldest name given to a species (priority) we are forced back to old types and old type concepts.

Simple definitions of the 'true' type categories

TYPE-SERIES

At the time of writing the original description of a species an

author had before him either

1. A series of specimens
2. A single specimen

on which he prepared the species description. These specimens on which the description was based are called the type-series for that species.

HOLOTYPE

If the type-series consisted of one specimen that specimen is called the holotype. If the type-series consisted of several specimens but one of these was referred to in the description as 'the type' or some expression indicates that one specimen of the series is equivalent to the type then that specimen is called holotype. Modern authors designate either the single specimen or one of a series as the holotype.

PARATYPE

After a holotype has been selected from a type-series the remainder of the specimens from the series are called paratypes.

In the Mayr-Simpson 'unique-type' doctrine paratypes are redundant. However many zoologists continue to designate them often for rather obscure reasons.

SYNTYPE

If the author has based his original description of a species on a 'type-series' of more than one specimen and has not designated or indicated a holotype then the series of equivalent specimens is referred to as syntypic and its individual components are called syntypes.

Zoologists are now disallowed from basing a species description on a series of syntypes. However this was a frequent practice of older authors - generated, at least in part by the intellectual acceptance of variation within species. Some syntypic series have, on subsequent examination turned out to be mixtures of two or even three taxa- a potent argument in favour of the unique type doctrine. In the interests of nomenclatural stability lectotypes (see below) should be designated for all species names based on such series. However lectotype designations should not be made individually but only in the course of revisionary work.

LECTOTYPE

It is usual nowadays to employ only the terms holotype and paratypes when describing a species. When a specialist studies a syntypic series

for revisionary purposes it is recommended that he selects one of these to serve as the type. This specimen is called a lectotype and on its designation the remainder of the series become paralectotypes. Functionally holotypes and lectotypes are precisely equivalent, the only difference between the two being that the lectotype was chosen from the original authors type-series by a subsequent author or by the original author in a subsequent work.

PARALECTOTYPE

After a lectotype has been chosen the remaining specimens from a syntypic series are called paralectotypes. Paralectotypes are the functional equivalents of paratypes but are 'chosen' (by being remaindered) by a subsequent author from the original authors syntypic series.

NEOTYPE

When all the original type material is believed to be lost or destroyed a neotype may be designated usually from more modern material of the species taken in the type-locality. This category is used only in exceptional cases.

Pseudotypes, typoids and type terms no longer in use

The six 'true' type terms have been discussed above. This number would, however be reduced to three by some authors who would accept only the unique type, i.e. holotype, lectotype and neotype. These authors would view paratypes and paralectotypes as being redundant and would seek the replacement of the syntypic series by the single lectotype.

However the term 'type' has been prefixed in a multiplicity of other ways. Frizzel (1933) lists 233 usages, Fernald (1939) lists 108 but only includes terms applicable to single specimens, and Sadbrosky (1942) gives a further 7 (these compendia apply to botany as well as zoology). The specimens to which these additional terms refer may have special significance or attributes such as, being figured, originating from the type-locality, being of opposite sex to the holotype or whatever but none are types in the modern sense and, in this context are best wholly ignored.

Further reading and references

The present paper has been concerned with the history of type-concept and with giving some simple definitions of type terms. (one of us (R.N.) is in process of preparing a much fuller account of both type-theory and practice). The works listed below are essential reading for those wishing to follow up this short introductory paper.

Anon. 1961 (revised 1964) International Code of Zoological Nomenclature adopted by the XV International Congress of Zoology, London, July 1958. London; International Trust for Zoological Nomenclature (the 'rule book').

Blackwelder, R. E., 1967. Taxonomy. John Wiley and Sons, New York 698pp. (A very sound and unrepentant work on the principles of neotypology).

Fernald, H. T., 1939. On type nomenclature. Ann. Ent. Soc. America 32: 689-702. (A compendium).

Frizzell, D. L., 1933. Terminology of types. American Midl. Nat. 14: 637-638. (A compendium).

Jeffrey, C., 1973. Biological Nomenclature. Systematics Association (Arnold) (An excellent short introduction for both zoologists and botanists).

Mayr, E., 1969. Principles of Systematic Zoology. McGraw Hill. New York (All zoologists should have a copy of this masterly treatise. It includes an annotated transcription of the Code).

Simpson, G. G., 1940. Types in modern taxonomy. American Journal Sci. 238: 413-431.

Simpson, G. G., 1961. Principals of animal taxonomy. Colombia University Press, New York. (A very lucid logical account of modern methodology).

Robert Nash and Helena Ross
Dept. of Botany and Zoology, Ulster Museum,
Stranmillis, Belfast, Ireland, BT9 5AB.

Reproduced from 'Porcupine' Newsletter Vol. 1 No. 5, April 1978, by permission.

TYPE-LOCALITIES

I would like to draw attention to the following summary (in English) of a Dutch publication by Mr. L. J. M. Butot (dated 1977). The summary appeared in the duplicated newsletter of the Dutch Malacological Society (no. 181) - it runs as follows:

> 'Nature Conservation and type localities. An attentive nature conservation officer, although not a malocologist,

happened to have a vague knowledge of the scientific importance of the Kaaskenswater near Zierikzee. When this brackish water lake was threatened by town expansion, he notified his provincial officer. This latter official, not being aware of type-localities and their scientific importance, requested further information. It soon became clear that taxonomists are usually not represented in conservation bodies and that the first line authorities as a rule do not know about the existence and importance of type localities; neither do they know about the presence of type localities in their regions. Nature conservation officers cannot be blamed for ignorance as regards type localities which is a purely systematic topic. It is the scientific responsibility of museum directors to inform conservation bodies about the location of type localities in the county. Their staffs can know in particular about those localities where the urgency of conservation surpasses the general importance of type localities. This is the case when types have been lost, or when only syntypes of allopatric origin are present.

Non-taxonomists should not try to solve problems in this respect, because of nomenclatorial and taxonomic consequences; non-taxonomists should not designate type localities by selecting lecto and neotypes".

Conservationists (environmentalists) as a rule do not realise the importance of type-localities and it is up to taxonomists to ensure that such sites are made known to the appropriate authorities.

Nora F. McMillan
Merseyside County Museums, Liverpool.

INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE

The draft third edition of the International Code of Zoological Nomenclature is now available for comment by zoologists. Copies may be obtained (price £2.50 surface mail, £5.00 air mail) together with copies of the paper explaining the major changes proposed (price 50p) from the Publications Officer, International Trust for Zoological Nomenclature, c/o British Museum (Natural History), Cromwell Road, London, SW7 5BD.

REQUESTS FOR INFORMATION

Specimens Collected by H. M. S. "Challenger"

I am currently, with Dr. I. D. Wallace of Merseyside County Museums, investigating the fate of specimens collected by H. M. S. "Challenger (1872-1876). This pioneer circumnavigating expedition collected numerous marine organisms, sediment samples as well as occasional terrestrial biological and ethnographical specimens. Most material was eventually deposited at the British Museum where some 'duplicates' were later (1899-1900) redistributed to other institutions including the following:

Aberdeen, University

Aberystwyth, University College

Birmingham, Mason College

Bristol, University

Cambridge, University Museum

Cardiff, University College

Dundee, University College

Dublin, Museum of Science and Art

Edinburgh, Museum of Science and Art

Leeds, University College

Liverpool, Museums

London, Royal College of Surgeons

Manchester, Owens College Museum

Newcastle, Museum

Newcastle, Durham College of Science

Perth, Perthshire Natural History Museum

Sheffield, University College

Sheffield, Public Museums

Toronto, University

Warrington, Museum

Woking, Gordon Boys' Home

Worcester, Hastings Museum

Worcester, Victoria University

However these were not the only institutions to receive "Challenger" material as some items were obtained from experts identifying the specimens, members of the expedition crew or through subsequent re-dispersal from the original recipient institutions.

It is difficult to trace the movements of these specimens because of the number of individuals and institutions involved but I would be most grateful for any information on the present or past location of "Challenger" material if possible detailing the amount and type of material and how it was acquired.

Dr. P. F. Lingwood,
c/o Merseyside County Museums,
William Brown Street,
Liverpool.

Stauromedusae specimens

I would much appreciate the loan of any specimens for examination of any species of Stauromedusae (Haliclystus, Lucernaria etc) from U.K. or any other area, in connection with a revision of the world species of the Order and their distributions. I will of course return all specimens after examination and identification.

P. G. Corbin,
Marine Biological Association,
The Laboratory,
Citadel Hill,
Plymouth, PL1 2PB.

GOLDEN EAGLES AT BOLTON MUSEUM

The following extracts are from correspondence between the Museum and Betteridge, taxidermists of Birmingham, and show the unfortunate situation in which museums found themselves when wishing to acquire such specimens before bird protection legislation.

Betteridge to Museum, Feb 14 1924

I am pleased to tell you I have just received from a keeper at Aultbea one of the finest Golden Eagles I have seen, it is a shot specimen, perfect in every way, with a fine golden head, its throat is nearly black, chest is deep chestnut, and has not a white rump which indicates a good old specimen, and I am going to set it up for you in a manner which I feel sure you will be more than proud of. I have also heard by the same post from that keeper at Strathglass that he has killed a female Golden Eagle. He has written to me asking what price I am prepared to pay for same.....I feel sure this man from Aultbea will be of some use to us.

Museum to Betteridge, Feb 15 1924

.....I am pleased to hear of the Golden Eagles. They should make a fine group, but we shall be hard put to find suitable space for them.

Betteridge to Museum, Feb 23 1924

.....at last have been successful in getting that female Golden Eagle. I have had a lot of trouble with the man as he wants the money first. I have set them up and to my mind they are about the best pair of birds I have done. I am going to get Mr. Chase to come in next week as he is a very good judge, to get his opinion about them.

March 1 1924

I had Mr. Chase in yesterday and he congratulated me on the way I have set them up. He considers they are a grand pair of birds and would take a lot of beating.

Betteridge to Museum, March 21 1925

In reference to that Golden Eagle's job, I am sorry I omitted to give you the locality of the nest and female. It was taken at Achnevie, Dundonnell (by Garve) and as I promised the man who secured it for me that I would never mention his name in conjunction with it, I am duty bound to keep that promise. Mr. Chase has tried to tempt me for the benefit of a friend, but I have had to refrain from doing so, and as previously explained, to get these nests is a risky job, and I should not like to get this man in trouble.

Bill to Museum, Feb 10 1925

Setting up two Golden Eagles, supplying eggs and nest £38.10.0.

G. Hancock
Bolton Museum

ENTOMOLOGICAL EQUIPMENT

Members may be interested to know the address of a French entomological equipment supplier:-

Sciences Nat,
2 rue Andre Mellenne,
Venette,
60200 Compiegne,
France.

They offer a range of items not available in this county, for example die stamped mounting cards of standard sizes, continental height setting boards and spherical glass anti-spill fumigant cups on pins for store boxes etc.

Hildergard Winkler,
A-1180 WIEN,
Dittesgasse 11,
Vienna,

Also offer many items not available in Britain including die stamped cards and the full range of continental length pins (apparently the sole maker of these without forged heads).

J. Cooter
Natural History Dept.
Glasgow.

THE INSIDE STORY

This exhibition opened at Sunderland Museum at the end of April 1978, and provided an insight into the techniques used by taxidermists and featured some of the best examples of the art of taxidermy. The

'techniques' side of the exhibition was designed to be a travelling exhibition in its own right and is available for hire to museums and galleries in Scotland from August 1978 until July 1979, thereafter in the rest of Great Britain.

The exhibition consists of two upright cases (2000 x 1400 x 700mm), three desk cases (1000 x 1400 x 700 mm) and five free standing graphic panels (2000 x 900 mm). They are free standing and constructed from Click components in extruded aluminium and glazed with 6 mm plate glass.

Bird Mounting

An upright case containing a series of five Magpie skins demonstrating how a bird is skinned and mounted. One is a mount sectioned from bill to tail exposing the false body and wires. The final mount is represented by two Magpies robbing a nest, and there is a cabinet skin.

Small Mammal Mounting

An upright case using Grey Squirrels as examples showing a series of four skins in various stages of preparation, one being sectioned through. There are two cabinet skins, in winter and summer pelage and a final mount. In addition there are two record photographs of a specimen prior to mounting.

Freeze Drying

A desk case with a diagram and explanation of the freeze drying unit and the process together with the following examples : Wood Mouse, House Mouse, Willow Warbler, 3 Great Crested Newts, Adder, Weasel.

Casting Reptiles and Amphibia

A desk case containing a series of moulds and casts showing the various stages of producing a resin cast of a Common Toad. There are also two examples of cast Adders and a painted and an unpainted Slow Worm.

Fish Casting

A desk case containing a series of examples showing the stages in the preparation of a fibreglass cast of a Herring.

Graphic panels

Panel 1 Title panel and
Side A : Introduction based on design of poster
Side B : Historical background I

Panel 2

Side A : Taxidermy and You
Techniques General. Cartoon

Side B : Historical Background II

Panel 3

Side A : Large Mammal Mounting

Side B : The Guild of Taxidermists
British Taxidermists, A Historical Directory

Panel 4

Side A : Large Mammal Mounting (Indirect Method)

Side B : Modern Commercial techniques illustrated by prepared polyurethane foam manikins from Jonas Brothers, USA.

Panel 5

Side A : Large Mammal Mounting with photo of Leopard manikin in preparation

Side B : (in preparation)

The exhibition is designed to stand as a display in its own right, occupying approximately 60m^2 but may also form a nucleus of a larger exhibition prepared by the host venue. The organisers are willing to give advice on suitable material for a larger exhibition and where it may be obtained.

Posters and information sheets

Twenty posters are supplied free with the exhibition, additional copies are available at £7.00 per hundred plus postage. The format is A3 printed in 3 colours with space for overprinting. Information sheets are printed on the reverse of the poster design and are available at £8.00 per 100 plus postage.

Slides

For the large exhibitions at Sunderland Museum and the Collins Exhibition Hall, Glasgow, a slide pack of 80 slides was prepared for presentation in a back projection booth. The slides 1 to 48 show in detail the preparation of a leopard mount by Roy Hale of the British Museum (Natural History). The remaining 32 are of extremely fine dioramas in European and American museums. The slide pack can be made available for venues wishing to make their own arrangements for projecting them. It may be possible by special arrangement to borrow the back projection booth, although this is not offered as part of the exhibition package. Museums must provide their own Kodak Carousel 2000 S-AV equipped with 35 mm wide angle lens and interval timer.

Booking

The hire fee is £50 per four week period, and enquiries should be made to Martin Warren, Curator, Collins Exhibition Hall, University of Strathclyde, 22 Richmond Street, Glasgow, G1 1XQ. Telephone 041-552-4400.

MAG/NATIONAL MUSEUM OF WALES, TRANSACTIONS NUMBER 13. SEMINAR ON HEALTH AND SAFETY IN MUSEUMS

The contents of this special issue of MAG Transations cover the proceedings of a seminar on 'Health and Safety in Museums' held at the National Museum of Wales on 14th and 15th April 1977. The Health and Safety at Work Act 1974 imposes reponsibility not only in respect of staff employed in a museum, but also when the general public is admitted to the galleries, and the papers in this issue indicate some of the problem areas and possibly some solutions.

Of particular interest to BCG members are the chapters on 'Design of Conservation and General Laboratories' (Colin Meredith, Dept. Zoology, Imperial College) 'Working with toxic hazards' (John R. Glover, Welsh National School of Medicine) and 'Diseases communicable from animals to man' (Bernard Williams, MAFF, Tolworth).

A wealth of information can be found throughout the publication, and it must feature as essential reading for all museum staff. Copies can be obtained (£3 each) from either MAG or the National Museum of Wales.

SUBSCRIPTIONS were due in January - have you paid yours yet???

David Addison, BA, Dip Ed, AMA.
Director,
Cheltenham Art Gallery and Museum Service,
Clarence Street,
Gloucestershire. GL50 3JT.

26th May, 1978

Dear Mr Morgan,

Museums Association : Working Party on Museums in Education

The above Working Party is charged with producing, for the Museum profession, a document that will provide statements of policy with guidance and recommendations on the way in which institutions and museums, large and small, might tackle the problems of a comprehensive educational service, in both formal and informal activities and with both young and old.

I am concerned to make sure that the views of specialist institutions and groups are adequately heard and I would be grateful if you could give some thought to the needs and problems of your specialist concern in the field of Museums Education. May I suggest that, rather than a forbidding questionnaire, you consider the problems under three basic headings:-

1) The educational possibilities and potential of your service.
2) The present provision of educational facilities and activities.
3) The problems preventing the provision of comprehensive educational activities within your institution or in connection with your specialist concern.

The Working Party is hoping to have some appreciation of views by the annual conference and submission of evidence on the above points to me at Cheltenham by the middle of June would be helpful.

I would be most grateful for any contribution you could make as I am sure we all feel that a Museums Association policy document should be based upon as wide a spread of information as possible.

Yours sincerely,

Director.

Mr P. Morgan,
Secretary,
Biology Curators Group,
c/o Merseyside County Museums,
William Brown Street,
Liverpool. L3 8EN.

Dear Mr. Addison,

It is extremely difficult, at thisnotice, to give detailed comments on your letter, and you must appreciate that the views I express can in no way reflect the feelings of the Biology Curators Group. I am sure, in any case, that you will already have written to a number of individuals and museums with particular experience of biological education.

There is, of course, a fairly extensive literature on the efforts of biologists in the educational field, particularly with regard to conservation of the environment. Geoff Stansfield, a member of BCG committee, has compiled a comprehensive bibliography on this subject, which I am sure will be available to your Working Party.

The BCG is well aware of the problems of improving educational activities in museums, and I would draw your attention to the article by Stephen Horne of Merseyside Museums in the last BCG Newsletter. However I think it would not be unfair to say that the priority for most biology curators is to care for their collections, and that they will only be made available for education purposes if and when money and staff allow. (This may explain the trend in some museums to move away from education based on objects, which I believe is to be regretted). Until these additional resources are made available I am afraid that education services will continue to receive second class material from biology departments and help only 'on demand' from biology curators.

If you require any further information, or feel that the Group could usefully hold a meeting on this topic to provide you with a wider spectrum of views, please contact me so the subject can be discussed at our next committee meeting.

Stephen Flood,
Chairman,
Biology Curators Group

Biology Curators Group Officers Committee 1978.

Chairman
Stephen Flood,
Keeper of Natural History,
St. Albans Museum,
Hatfield Road,
St. Albans, A21 3RR.
0727 56679

Editor
Peter Davis,
Keeper of Natural Sciences,
Sunderland Museum,
Borough Road,
Sunderland, SR1 1PP.
0783 41235

Assistant Editor
Geoff Hancock,
Senior Keeper, Natural History,
Bolton Museum,
Le Mans Crescent,
Bolton, BL1 1SE.
0204 22311 Ex 361

Committee
Jim Bateman,
Keeper of Zoology,
National Museum of Wales,
Cathays Park,
Cardiff, CF1 3NP.
0222 26241

Martin Brendell,
Dept of Entomology,
British Museum (Natural History),
Cromwell Road,
London, SW7 5BD.
01 589 6323 Ex 462

Dave Erwin,
Keeper of Zoology and Botany,
Ulster Museum,
Botanic Gardens,
Belfast, BT9 5AB.
0232 668251

Co-opted
Peter Lambley,
Keeper of Natural History,
Norfolk Museums Service,
Castle Museum,
Norwich, NR1 3JU.
0603 22233

Ray Ingle,
Dept. of Zoology,
British Museum (Natural History)
Cromwell Road,
London, SW7 5BD
01 589 6323 Ext 435

Secretary
Peter Morgan,
Keeper of Vertebrate Zoology,
Merseyside County Museums,
William Brown Street,
Liverpool, L3 8EN.
051 207 0001 Ex 16.

Treasurer/Membership Secretary
Kelvin Boot,
Assistant Curator, Natural Sciences,
Exeter City Museums,
Royal Albert Memorial Museum,
Queen Street, EX4 3RX.
0392 56724

Museums Association Liaison Officer
Geoff Stansfield,
Dept. of Museum Studies,
University of Leicester,
152 Upper New Walk,
Leicester, LE1 7QA
(Co-opted)

Committee
Mike Hounsome,
Keeper of Zoology,
Manchester Museum,
University of Manchester,
Oxford Road,
Manchester, 061 273 3333

John Mathias,
Assistant Keeper, Natural Sciences,
Leicestershire Museums,
96, New Walk,
Leicester, LE1 6TD.
0533 539111

Adam Ritchie,
Keeper of Natural History,
Dundee City Museums,
Albert Square,
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.