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## Biology Curators Group Newsletter

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## NATIONAL MUSEUM OF WALES: DEPARTMENT OF ZOOLOGY

The zoological collections are housed in the National Museum of Wales main building at Cathays Park, Cardiff, and combined with the collections of the Departments of Botany and Geology contain natural history material of regional, national and international importance. Relevant displays are confined to Cathays Park but a new venture is the development of the Oriel Eryri at Llanberis in North Wales. This is essentially a branch museum of natural history under the control of a Principal Officer and is intended as a major interpretive centre examining the interaction of man and the environment in the Snowdonia area.

In this introduction to the Department of Zoology, however, I wish to take the opportunity of examining the current and projected problems facing the Department, details of the history of the collections being contained in later sections. Many curators will be familiar with the problems posed by possessing historical collections of importance which have never been fully curated, but at present any priority consideration must include a study of the development of ecology as a science and its potential impact on collecting and collecting policies. Large scale collecting programmes have significantly altered the amount and type of material to be accepted by museums and plans have had to be adjusted to cope with this type of material. This material necessitates radical changes in the scale of storage and documentation for efficient retrieval. The problems and plans for their solution may interest members of the Biology Curator's Group, however, success in dealing with these problems will have to be examined in years to come.

Current problems to be resolved include:-

- 1 The possession of collections containing over  $2\frac{1}{4}$  million specimens covering all zoological classes. These are stored by a wide variety of methods - fluid, dry, slides etc and require constant conservation and curation.
- 2 Cramped and inadequate macro-storage with poor environmental conditions primarily created by limitations enforced by the structure of the building and by alternative demands for space.
- 3 Inadequate cabinet storage creating retrieval difficulties both for conservation and documentation purposes.
- 4 Disparate manual documentation systems (one specimen may have data stored in five different places) which need to be correlated for a complete analysis of data.
- 5 Pressure of alternative commitments preventing consistent and rapid work on the collections such as:-
  - a Display commitments.
  - b Enquiries and identifications.
  - c Staff commitments to previous studies and surveys.
  - d Administrative work related to national and international organisations and issues concerned with zoological collections.
  - e Pressure and demands from current workers in research institutions such as the Nature Conservancy Council and universities for the Museum to accept material currently being collected during the course of their studies.

- f Data retrieval for planning, management and conservation purposes requested by outside bodies.
- g The requirements of new legislation and an appraisal of its effects on museums.

The primary objective of the Department during the next five years will be to restore and document those collections of major importance. This does not mean that day to day administration, enquiries and identifications are to be ignored, the major moratorium being in the area of display which has been suspended for a period of five to seven years when the major collections should be in a reasonable condition in terms of conservation and documentation. It is realised that many other museums would have difficulty in suspending display, but it is essential that people accept the great importance that must be attached to collections of taxonomic and historical significance and of the recommendations contained in the International Code of Zoological Nomenclature.

Supportive factors to enable the achievement of this primary objective within the Department of Zoology are as follows:-

- 1 Excellent library and reprint facilities to assist in the systematic storage of the collections.
- 2 The compact nature of the Department which encompasses curatorial, technical, secretarial and clerical staff enabling a planned programme of work to be executed within the Department. The staff totals 11 persons plus two Honorary Research Associates.
- 3 Central Government finance which permits:-
  - i A phased programme of restorage over several years.
  - ii Equipment facilities and purchases to assist in restorage.
- 4 Work undertaken by previous staff on collections and display provides a firm base for future work. The completion of several galleries has meant that the Museum and Department possesses a large interpretive display on environments in Wales and a display illustrating the whole of the animal kingdom which is used widely by university students and the general public.
- 5 The freedom of the Department to initiate and follow through policy decisions. This is of major importance and illustrates the prime difference between larger provincial museums and national museums. The Department of Zoology is fairly autonomous and has a wide ranging policy decision capability which greatly increases the speed at which the work can be initiated and undertaken on both a day to day and a month to month basis under the control of the Keeper. It is precisely this freedom of action which was implied in the Drew Report by the establishment of centres of excellence for provincial museums with large important collections. As long as freedom of action and policy decisions are guaranteed a great deal can be achieved even with limited finance.

In an attempt to improve administrative procedures and to ensure continuing expertise in academic and curatorial areas a new structure for the Department was initiated in 1979. The formation of sections, each with defined responsibilities has permitted the identification of major gaps in expertise essential for current work and future development. This new structure holds the vital key in turning statements of priorities and

objectives into reality. These sections are described below:-

The three curatorial sections include

- 1 Entomology Section where the main effort is concentrated upon restorage and curation of the large collections. Areas of research in this section are  
Adrian F. Amsden - Hymenoptera  
John C. Deeming - Acalypterate Diptera  
(Cynthia M. Merrett - Arachnid distribution in sand dunes with reference to microhabitat preferences - Vertebrate Section, S.M.A.)
- 2 Invertebrate Zoology Section where the major priority lies with conchology due to the possession of internationally important collections especially the Melvill-Tomlin collection. Areas of research in this section are  
Dr. P. Graham Oliver - Functional morphology and taxonomy in marine Mollusca;  
Microhabitat distribution of Mollusca.  
Alison Trew - Isopod distribution related to microhabitat preferences.  
Dr. H. Harford Williams - Parasitology - Functional morphology and taxonomy of fish helminths.
- 3 Vertebrate Zoology Section where the main concentration of effort is upon the obtaining of new storage cabinets and subsequent transfer of material therein and their systematic storage. This is assisted by the separation of the scientific and display material into different storage areas. Areas of research in this section are  
Peter J Morgan - Oil pollution and seabirds, their collection and storage  
(Piers Langhelt - completion and publication of the Welsh Fish Survey - Technical Section)

The formation of these curatorial sections has enabled planned programmes of work and research to be initiated. Each section consists of a Keeper/Assistant Keeper and a Research Assistant or Museum Assistant working on the collections within that section full-time. This compliment of two permanent staff in each section ensures continuity of the work on the collections in each section.

Members of the curatorial sections are as follows:-

Keeper - Peter J. Morgan (Vertebrate Zoology Section).  
Senior Museum Assistant - Miss Cynthia M. Merrett (Vertebrate Zoology Section) (retaining research project in British Spiders under Entomology - see above)  
Assistant Keeper - Adrian F. Amsden (Entomology)  
Research Assistant - John C. Deeming (Entomology)  
Assistant Keeper - Dr. P. Graham Oliver (Invertebrate Zoology)  
Museum Assistant - Miss Alison Trew (Invertebrate Zoology)  
Honorary Research Associate - Dr. H. Harford Williams (Invertebrate Zoology)  
Honorary Research Associate - Mr. D. H. Heddwyn Richards (Invertebrate Zoology)

The three curatorial sections are all attempting to achieve the same objectives of:-

- 1 The restorage, curation, conservation and documentation of the important taxonomic and historical collections with the standardisation of storage cabinets taking a high priority in terms of financial expenditure.
- 2 Concentration in developing the museum as a centre for the receipt of collections from universities, NCC etc which is connected with the use of honours students for projects which will involve training in taxonomic, curatorial and data preparation.
- 3 The examination of all current documentation procedures and their reorganisation and subsequent computerisation of data which is essential as a base to all curatorial work and collection use.
- 4 The initiation of departmental publications with a wide circulation giving details of collections.
- 5 An increase in staff's scientific research and publication.
- 6 Improved use of all technical laboratories and facilities.
- 7 Fieldwork:- Specific ecological studies of one group or one habitat rather than on general Biological Recording at the 10 km or 1 Km level.
- 8 The concentration of display on temporary travelling exhibitions rather than on major gallery re-displays.
- 9 The encouragement of enquirers to use for themselves the library facilities for the identification of their specimens as well as the collections.

These objectives form the basis of detailed plans on the Department's future staffing, spatial and financial requirements.

Supportive sections to the curatorial sections include the technical, display and documentation and publications sections.

The Technical Section which covers laboratories (except the taxidermy laboratory) adequately supports all curatorial sections but is historically more closely linked to conservation and curation in the Vertebrate Zoology Section since the curatorial staff in the Entomology and Invertebrate Zoology Sections undertake a higher proportion of routine conservation work on the collections whilst preparing material and curating collections. Good equipment should assist in planning a programme of preparation and incorporation of new specimens i.e. the use of the macerator and degreaser. Members of the Technical Section are as follows:-

Scientific Officer - Piers Langhelt (retaining curatorial work on fish collections in the Vertebrate Zoology Section).

Technician III - Kevin J Rual (assisting in taxidermy, running the aquarium and documentation of parasitology collections).

The Display Section is again primarily vertebrate zoology orientated, but the other curatorial sections have a direct input from the curators and it is hoped that many habitat displays can be broad-based. It is planned that displays explaining the work on collections will be made by curatorial staff especially in entomology and invertebrate zoology. At present the Display Section consists of:-

Research Assistant - Khalid Ghani (primarily vertebrate).

The Documentation and Publications Section sees the biggest change in planned structure and operation and this is the most difficult to achieve without additional staff. This section effectively determines the speed of operation in all other sections. This section will co-ordinate all secretarial and clerical work, accessioning, existing documentation, computerisation of data on a Westrex 43 terminal linked to the M.D.A.U. (purchased but not yet operational) and publication procedures from type-writing to distribution. It is also responsible for the departmental library, registers and photographs. It can be seen as equivalent to the curatorial sections for it attempts to deal with the back-log of work whilst trying to meet new demands on procedures, documentation and storage. Members of this section are:-

Departmental Secretary - Miss Sheryl Ann Jones (also PS to Keeper)  
Clerical Assistant - Miss Carol A. Davies

A staff of 11 may seem large to people in other museums but it is the members of the supporting sections which give rise to the apparently large number. Many of the larger provincial museums have similar numbers when the centralised technical, display and secretarial staff are taken into account, but there is a distinct administrative advantage in planning future work in having all staff in one department. Changes in priority have to take into account staff's previous interests and commitments, but each section can realign and concentrate on specific tasks.

The major gap existing at present is readily identifiable - the Department of Zoology is responsible for pleistocene faunal remains, but there is no one member of staff with the expertise to deal with the storage, conservation and documentation of the large and important collections. Liaison with the Department of Archaeology of the National Museum of Wales, other museums and universities is essential and this area will have high priority if ever a new post is created. The caves and peat bogs of Wales still contain large amounts of material and a member of staff could be active in the field and of assistance to other institutions. It is estimated that at a minimum another four curatorial staff, one technician, one display person and two clerical staff are required to ensure successful future development.

Concentration on collection work and the attempt to develop and integrate policies with universities and the Nature Conservancy Council in Wales has affected other areas of work previously occupying a great deal of time. The major area affected has been biological recording and field work. In 1971 the Department of Zoology became the Regional Biological Data-bank for Welsh zoological information but a survey under Job Creation initiated by J. A. Bateman, the previous Keeper, revealed many problems and as a result priorities were altered. It was obvious that the manual system could not cope with the amount of data and more importantly that it was far from comprehensive failing to reflect the majority of data obtained during research projects by other organisations from throughout the United Kingdom conducted in Wales.

A report has, therefore, been prepared on the need for a sub-department which will give a co-ordinated approach and joint investigations with NCC are being undertaken with a view to computerisation and efficient management of data.

The second area directly involved concerned the amount of staff time and finance involved in data acquisition and sometimes specimens. This had

received a high priority and the obtaining of distributional data was regarded as being of major importance. The limited number of staff, however, severely restricted the amount of data obtained and the number of sites visited and the work was not always undertaken systematically. Consequently, all distributional recording work has been curtailed and any fieldwork undertaken now is done so as a specific ecological study analysing in detail the distribution of a small group and its microhabitat preferences. This has already proved beneficial for the data is more systematic and permits extrapolation on distribution for examination.

A study of supralittoral terrestrial isopods has been initiated and five hundred lots have been collected or sent from all parts of Britain. This collection made over fifteen months contains all but 6 of the British species of non-marine isopods. As a result of the research in Wales, several "scarce" species (from broader based recording) have been found to be common in specific microhabitats and numerous new distributional records obtained. An unexpected result of this detailed work has been the discovery of a completely new species, the description of which is in press. A study of arachnid microhabitat distribution in the Kenfig Sand Dunes in Mid Glamorgan is in progress providing material for ancilliary research.

The commencement of this type of field work (more related to that of universities) and correlated research increases the collections and permits staff to undertake detailed ecological studies suitable for publication. Previous recording work, such as the Welsh Fish Survey financed by a Natural Environmental Research Council grant is being written up for publication.

By co-ordinating specific academic expertise and museum procedures, larger scale projects can be attempted and this is exemplified by the collection and curation of 2,000 auks killed by oil pollution during the *Christos Bitas* incident. The pilot scheme to preserve and form a permanent reference collection was undertaken by museum staff and many volunteers and was partly financed by the NCC whose staff and then a temporary Research Assistant measured the specimens for scientific analysis and publication. This work involving liaison with many other interested organisations plays a crucial role in the future of the Department - the storage of collections being an adjunct to many studies undertaken by staff in universities, field centres and specialist teams of M.A.F.F.

These links are referred to in the Advisory Board for the Research Councils "Taxonomy in Britain" and the NERC Working Party on the "Role of Taxonomy in Ecological Research". The Department is now pursuing an active policy in accepting this type of material in case it should be lost as with past collections, but it does present many problems. They are for the most part well documented but not always preserved for long term storage in a museum. A great effort will, therefore, be required from both the technical and curatorial staff when collections arrive. The majority of projected collections will arrive either as fluid preserved or frozen material and thousands of jars of insects and fluid preserved invertebrates from one survey alone illustrates the scale of the problem facing us.

It is felt that this approach is essential to our academic survival and to enforce our relevance to society and conservation. The collections now being amassed will be essential for any retrospective analysis of the Welsh fauna from the 1970's onwards. It is also felt that we have already lost too many systematically sampled collections from the last two decades and that a conscious effort should be made to halt it. By concentrating initially on past collections it should be possible to cope with future material.

The politics surrounding museums and their collections cannot be escaped from for if the Department's collections remain as they are now few people will wish to entrust their material to us in the future and consequently we must urgently attempt to improve our image. Since the Department of Zoology of the National Museum of Wales is not alone in this thinking and most natural history museums throughout the world face similar problems, staff must also take an active part in organisations and conferences which attempt to determine and improve upon existing policies and national plans. This can be extremely time consuming and thus reducing the time spent on the collections, but it could short circuit the difficulties involved and provide long term benefits. An examination of the past priority given to conservation and museum natural history collections, however, suggests a bleak and hard future.

It is hoped that the current work structure and programme will attract assistance in the form of honours student projects, volunteers and research workers to the Department. This is to be aided by advertising our collections through a publication programme.

PETER J. MORGAN  
KEEPER OF ZOOLOGY

#### THE ENTOMOLOGY SECTION

The National Museum of Wales had its origins in the Cardiff Museum and Free Library which first took definite shape in 1861 with the appointment of a librarian at a salary of £20 a year accommodated in a room in the Royal Arcade. By 1864 it had been taken over by the Corporation and was housed in the Y.M.C.A. building in St. Mary Street. In 1882, it moved again to the newly completed Central Library in Trinity Street where the main Cardiff City Library is still housed and in 1893 became the Cardiff Public Museum and Art Gallery when the Corporation adopted the Museums and Gymnasiums Act of 1891. The name changed to the Welsh Museum of Natural History, Arts and Antiquities in 1901, by which time the movement for the creation of a National Museum of Wales was already gathering momentum. In 1907 a Royal Charter for the establishment of such a museum was signed and Dr. W. E. Hoyle was appointed Director. The collections and staff of the Welsh Museum of Natural History, Arts and Antiquities were transferred to the National Museum of Wales in 1912 with G. R. Brook, F.Z.S., first appointed in 1903, becoming the Zoologist.

The transfer of staff and collections was not just a paper transfer since the exhibits were moved to rooms in the newly completed City Hall in Cathays Park. At the same time numbers 12 and 13 Trinity Street were rented as work-rooms and the collections were stored in 35 Park Place where Brook and his assistant worked. Brook resigned in 1915 and J. Davy Dean, who had been helping with the Molluscan collections, was appointed Acting Zoologist until 1919 when J. J. Simpson, M.A., D.Sc., who had worked as an entomologist in British West Africa, was appointed Keeper. In August 1921 the zoological collections and staff moved from 35 Park Place into the completed part of the National Museum of Wales building in Cathays Park where they have remained ever since. The following year, Colin Matheson, M.A., B.Sc., was appointed as an additional Assistant Keeper, becoming Keeper in 1926 when Simpson resigned to go to Liverpool Museum as Curator. With the appointment of Lionel F. Cowley, M.Sc., to fill the vacant Assistant Keeper post, the Department reached its zenith with a Keeper, two Assistant Keepers, a Taxidermist, a Technician and a Typist. One Assistant Keeper post and the post of Taxidermist were lost by 1940 and it was not until 1971 that the staffing level again reached that which had existed 44 years earlier. It is a curious fact that no-one has ever been appointed as the Entomologist to curate the insect collections in the National Museum of Wales, although Dean and Matheson wrote the odd note on insects from time to time. When the writer was appointed to replace Cowley, it was still as a general zoologist sharing the work of the Department with Matheson. It was only in 1967 when



the second Assistant Keeper post was recreated that it was possible to specialise on the Arthropoda.

The Entomology Section per se was created in 1978 when a second entomologist, P. Mark Heath, B.Sc., was appointed to assist specifically with the insect collections which now contain well over 500,000 specimens. When Mr. Heath resigned to pursue studies elsewhere the post was upgraded to Research Assistant and John C. Deeming who had experience in the B.M.(N.H.) and at the Institute for Agricultural Research at Samaru in Nigeria was appointed.

Nearly half the species on the British list are represented in the collections by some 385,000 pinned specimens. The collections are notably poor in Parasitica and Apterygota whilst a fluid collection of soft bodied insects and developmental stages is virtually non-existent. Fewer than 50,000 specimens originate from Wales but there is a useful foreign collection of some 150,000 specimens. The major collections are summarised below in alphabetical order.

Reginald L. BARROW, B.A., F.R.E.S. (1879-1967)

A small collection of c. 1,000 specimens of Diptera and Hymenoptera from Worcestershire. A friend of H. M. Hallett (see below) from whom he received much encouragement. Hallett and Barrow were co-authors of the "Hymenoptera Aculeata of Worcestershire" *Trans. Worcestershire Naturalists' Club* 1955 XI: 75-80.

Thomas Richard BILLUPS, F.E.S. (1841-1919)

A collection of 1,900 British Diptera and 3,300 British Hymenoptera. Billups lived in Peckham where he was a fruit and vegetable salesman and was later associated with the South London Society. The specimens, unfortunately, carry little data.

The Viscount BOLINGBROKE (1896-1974)

A collection of 3,100 Macrolepidoptera mostly from the New Forest area. The 6th Viscount Bolingbroke and 7th Viscount St. John (Sir Vernon Henry St. John) lived at Ringwood in the New Forest. Most of the specimens were collected by himself, but there are some specimens given to him by F. W. Frohawk, whose daughter Valezina he married in 1950. The collection includes an interesting series of vars. and aberrations, some of which appeared in Frohawk's *Varieties of British Butterflies* 1938 which was dedicated to Valezina. Viscount Bolingbroke published a number of notes in *Entomologists' Record*.

Charles Adolphus BRIGGS, F.E.S. (1849-1916)

The Briggs' collection of about 5,500 British Dragonflies, Ephemeroptera, Orthoptera (s.l.), Neuroptera and Trichoptera was purchased by Earnest Heath and donated to the National Museum of Wales. The collection is strong in material from Lynmouth where he lived and includes the British Trichoptera collection formed by P. Wormald. He was a frequent contributor to entomological journals. His Lepidoptera were sold at Stevens in 1896 when he moved to Lynmouth.

George William CHASTER, M.R.C.S., L.R.C.P. (1863-1910)

The first entomological collection purchased by the National Museum of Wales, these 11,000 specimens of Coleoptera and the Mollusca were purchased from his sister. Chaster lived in Southport and many of the localities are Lancashire. He contributed to the *Ent. mon. mag.* and was editor of the *Proceedings of the Southport Natural Science Society* in which he also published "The Coleoptera of Southport and District" in 1899.

W. Edney COX, F.R.E.S., (1869-1948)

A collection of about 4,300 British Lepidoptera including micros of which Cox added some 60 species to the Glamorgan list. The collection includes a number of bred hymenopterous parasites which are as yet unidentified. He co-operated with Hallett in publishing the Entomological Notes in the *Transactions of the Cardiff Naturalists' Society*.

George FLEMING, M.A., (1856-1927)

Fleming's earlier collections were destroyed when his house was burnt down in 1904. However, by the time of his death he had accumulated over 20,000 specimens, mostly from Merthyr Tydfil where he lived. The collection is rich in Micros and, like Cox above, he was responsible for valuable additions to the Glamorgan list publishing in the *Transactions of the Cardiff Naturalists' Society* and in *The Entomologist*.

A. Eric GARDNER F.R.E.S. (1913-1976)

The large collection of insects bequeathed to the National Museum of Wales by Eric Gardner is one of its most important collections. Containing over 93,000 specimens the collection is rich in British Coleoptera (c. 76,000) and includes the F. J. Coulson collection and a large number of specimens from F. D. Buck and other Coleopterists. The British Macrolepidoptera collection (c. 9,000) is, like the Coleoptera, superbly set, labelled and identified. Amongst the foreign collection the Orthoptera (c. 3,000) includes many rarities. His important Odonata collection went to the B.M. (N.H.) and his British Orthoptera to the British Entomological and Natural History Society.

Willoughby GARDNER, D.Sc., F.R.E.S., F.L.S., F.S.A. (1860-1953)

Dr. Gardner's interests included, amongst other things, the Aculeate Hymenoptera and the history of entomology. He bequeathed his collection of about 2,300 aculeates from North Wales and his library of 330 volumes illustrating the history of natural history and especially entomology to the National Museum of Wales. He published a list of the Aculeate Hymenoptera of Lancashire and Cheshire in 1901 and was a past President of the Lancashire and Cheshire Entomological Society. The notebooks referring to the numbers on Gardner's specimens accompanied the collection.

Rawdon GOODIER (?- ...)

On leaving North Wales in 1968, Rawdon Goodier donated his collection of about 1,000 specimens of Diptera and Coleoptera to the National Museum of Wales. Many of these specimens are those quoted in his papers on the "Welsh Mountain Beetles" *Nature in Wales* 1968, 11: 57-67; "Records of Welsh Diptera" *Nature in Wales* 1965, 9: 191-5 etc. At the same time his collection of about 150 spiders from North Wales was deposited at the Museum.

Arthur Foster GRIFFITH, M.A. (1856-1933)

Of Welsh descent Griffith gave his large British Lepidoptera collection of 60,000 specimens to the Museum and personally arranged the two cabinets in which they are housed. This task was achieved over a period of 10 years during which time he also donated a fine collection of bird's eggs, nests and skins. The collection is rich in micros and blown larvae and includes many specimens bought at sales and auctions in London. Whilst many specimens came from Sussex (Griffith lived at Brighton), there are also many from Scotland and elsewhere in Britain. Griffith obtained the remains of the collection made by Henry Cooke between 1840 and 1870. He also acquired the collection formed by J. L. English (1820-1888) who worked at Henry Doubleday's shop in Epping. Still later he purchased the collection made by William Borrer of Hurstpierpoint, Sussex.

George Charles GRIFFITHS, F.Z.S., F.E.S. (1852-1924)

A collection of about 1,000 specimens of Diptera from the Bristol area which was purchased from Janson in 1930. His Lepidoptera were sold at Stevens in 1925. Griffiths was a prominent member of the Bristol Naturalists' Society and better known for his contributions on Lepidoptera in Tutt's *British Lepidoptera* and elsewhere.

Howard Mountjoy HALLETT, F.R.E.S. (1878-1958)

Hallett's contribution to the National Museum of Wales was much more extensive than the number of specimens (11,500) in his collection would suggest. He was responsible for much of the entomological part of the Faunistic Survey of Glamorgan publishing his results in the *Transactions of the Cardiff Naturalists' Society* and editing the same section of the *County History of Glamorgan* Vol. 1. He carried out a considerable amount of curatorial work arranging three of the six main reference cabinets (A. F. Griffith above prepared the two Lepidoptera cabinets). His main interest was Aculeate Hymenoptera of which he made a collection of 5,000 specimens from Herefordshire and Glamorgan. He also collected Coleoptera (4,800) and Hemiptera (1,500) extensively. Apart from virtually being the Museum's honorary entomologist from 1912 to 1935 when he moved to Herefordshire, he also prepared indices to the collections and Published Welsh Records. Hallett had a full-time job in a shipping office in Cardiff and lived in the coastal town of Penarth about 5 miles away.

James B. HODGKINSON, F.E.S. (1823-1897)

A collection of 1,750 named British Hemiptera/Heteroptera mostly from the North-west of England, but with little data. The collection was purchased from Janson in 1929. Hodgkinson was better known as a Lepidopterist and these collections were sold by Stevens in 1897.

Arthur LOVERIDGE (?- ...)

A small collection of about 800 specimens of East African Butterflies with good data. Loveridge had been the assistant in charge of the Temporary Exhibition in the City Hall from 1912-1914 during the transfer of the collections from the Cardiff Museum to the National Museum of Wales. The butterflies were collected after he took up the post of Curator of the Museum of the Natural History Society of British East Africa at Nairobi.

Philip Brookes MASON, M.R.C.S., F.L.S., F.E.S. (1842-1903)

About 3,500 Hymenoptera and 2,500 Diptera were purchased from Mason's widow in 1914. Some of these specimens were incorporated in the cabinets but others remained in store boxes. Few of the specimens carry any data but several are from the collections of Frederick Smith and Hamlet Clark.

Dr. James Cosmo MELVILL, F.E.S., F.Z.S., F.L.S. (1845-1929)

A collection of 2,400 Hemiptera and Symphyta purchased at Stevens when his Lepidoptera collections were sold. The locality information when present on the carded specimens is often on a pink label glued onto the card. Melvill apparently devoted more time to entomology in later life. He was better known as a Conchologist and his large collection came into the possession of J. R. le B. Tomlin who finally bequeathed his whole collection to the National Museum of Wales (see Oliver and Trew elsewhere in this issue).

Frank NORTON ( ? - c. 1949)

A collection of 3,000 Coleoptera and some Hymenoptera Parasitica from Glamorgan. The parasitica had been named by Claude Morley but were not bred specimens. Norton lived in Cardiff and supported the entomological group which developed around Hallett's enthusiasm.

Colonel Charles George NURSE, F.E.S. (1862-1933)

This Diptera collection containing some 15,000 specimens from the South-east of England was purchased for £70 in 1934 from Janson. The collection of 3,500 Aculeata and Symphyta were purchased at the same time for £15. Both were important acquisitions, the Diptera especially as they form the foundation of the collection of this group at the National Museum of Wales. Nurse spent most of his military career in India where he collected extensively, these specimens going to the B.M. (N.H.). On his return to Britain he lived first near Bury St. Edmunds and later at Tunbridge Wells.

Rev. E. James PEARCE, M.A., F.R.E.S. (? - ...)

E. J. Pearce was the author of the R.E.S. handbook on the Pselaphidae and his collection of this group together with the Scydmaenidae and Haliplidae was given to the Museum in 1958. Although the collection contains a relatively small number of specimens (6,000) it is comprehensively and fully documented, with 14 files and includes much paratype material.

Thomas William PROGER, F.Z.S. (1860-1947)

A small collection of about 1,000 insects from Costa Rica where his eldest son worked a coffee estate. Proger was associated with the National Museum of Wales from its inception and was a keen naturalist who lived in Cardiff but travelled extensively in South America.

Robert Henry Fernando RIPPON (1836-1917)

This large collection was offered for sale by Rippon in 1910 when he appears to have been in financial difficulties without a pension. The collection of 106,000 insects, shells and minerals from most parts of the world was purchased by Lord Rhondda for a sum believed to be in excess of £1,000 in 1918 from Rippon's widow and donated to the National Museum of Wales. At the time the insect collection must have contained a multitude of undescribed species from Australia and South America but as there was no-

one to curate it in Cardiff it remained almost undisturbed for the next fifty years. It presented the staff of the Department of Zoology with an insuperable problem and the cabinets and store boxes were moved from place to place but seldom opened. It is still relatively untouched but as cabinets and store boxes disintegrated much of it has been transferred to new storage in the last ten years. Half the collection consists of beetles and another 20,000 are Butterflies including his Ornithoptera which were the subject of his monograph "Icones Ornithopterorum". The remainder consists of moths, Odonata, Orthoptera, Hemiptera, Diptera and Hymenoptera.

Rippon organised a collecting expedition to South America which was advertised in the *Entomologists Weekly Intelligencer* 1861, Vol. IX: 208. No obituary of Rippon seems to have been written. He seems to have been a very religious man and an artist in his own right. One of the few completely coloured examples of the "Icones Ornithopterorum" is in the National Museum of Wales library.

Professor Theodore H. ROBINSON, D.D. ( ? - ? )

This collection of nearly 4,000 Macrolepidoptera from the New Forest, Bournemouth and other southern coastal localities had been on loan to the Department for some years prior to 1941 when Robinson who lived at Llanishen, a suburb of Cardiff, brought some friends to view it. It was finally given to the Museum in 1956 when the donor had moved to London, but it is not known over what period it was collected.

Professor J. H. SALTER, D.Sc., (c. 1862-1942)

Professor Salter was head of the Botany Department at Aberystwyth but prior to this had lived in Tenerife, South-west France and Dorset. His extensive collection of nearly 36,000 specimens of Coleoptera, Lepidoptera and other Insects was given to the Museum shortly before his death and was accompanied by detailed notebooks. In 1936 he published "Cardiganshire Coleoptera" in *N. W. Naturalist* 11: 272. His natural history diaries are in the National Library of Wales at Aberystwyth.

John Read le Brockton TOMLIN, M.A., F.R.E.S. (1864-1954)

As well as his extensive conchological collections Tomlin donated a very large collection of British beetles to the National Museum of Wales. This contained over 83,000 specimens and incorporated several other collections in it. Tomlin's own collection contained many specimens from Glamorgan obtained when he held a teaching post in the Llandaff Cathedral School from 1890-99. He was responsible for the 'Coleoptera of Glamorgan' published in the *Transactions of the Cardiff Naturalists' Society* which was later augmented by Hallett. He then moved to Darley Dale where he remained until 1902. He was able to spend more time and money on entomology and conchology after benefiting under the wills of relatives and in 1906 moved to Reading on his marriage. He knew many Coleopterists and purchased or was given several collections before finally donating them to the National Museum of Wales in 1946. These were the Phytophaga and Curculionidae of Colonel Stephen BARTON, mostly from Bristol, part of the collection of HADFIELD of Newark and the Staphylinidae of George Robert CROTCH, all purchased at Steven's in 1899. E. G. ELLIMAN'S collection of Staphylinidae etc was given to Tomlin in 1929, many specimens being collected in the Chesham area. Other collections were those of William CHANEY whose collection included specimens given him by G. C. CHAMPION and that of J. S. WHITE who lived at Droylsdon near Manchester. In 1922 Tomlin moved to St. Leonard-on-Sea by which time he seems to have been concentrating on conchology at the expense of entomology. By the time of his death few entomologists knew him personally.

Henry Wyndham VIVIAN, M.A., F.E.S. (1868-1901)

This collection of 20,000 specimens of British Macrolepidoptera was presented to the former Cardiff Museum in 1902 by Vivian's widow, Lady Maude Vivian. Later when the National Museum of Wales was established it was transferred to it and is, therefore, the earliest collection to come into the possession of the National Museum of Wales. Vivian wrote a number of articles on entomology, the earliest appearing in 1888 in *The Entomologist*. He lived at Glanafon, Port Talbot near Swansea. Certain specimens from the Evan John collection were obtained by Vivian but when the remainder of this collection was offered to the National Museum of Wales in 1931 they declined to purchase it. Evan John who lived at Llantrisant, it appears, all his life became an F.E.S. in 1865 and died in 1930. The collection was accompanied by detailed notebooks, but its ultimate fate is a mystery.

A large number of individuals have given collections of less than 1,000 specimens which are not described here. Some of these are collections of great rarities or unusual importations but their exclusion does not mean that they are unimportant. This sketch is simply to give an outline of the collections of a Museum which has obtained its specimens almost exclusively by purchase or donation over the last 70 years.

ADRIAN F. AMSDEN  
ASSISTANT KEEPER OF ZOOLOGY

#### THE INVERTEBRATE SECTION

The Invertebrate Section is responsible for all marine and terrestrial invertebrates excluding the insects and arachnids. In this article, I would like to give some indication of the contents of the collections, their significance and development.

When writing a feature article on the collections under one's own charge the problem of remaining objective is ever present. The temptation to overstate the importance of the collections is great. This is probably derived from the underlying hope that by drawing attention to them and their associated problems of understaffing and storage that some salvation may be forthcoming. No doubt all curators of natural history collections have had these hopes dashed recently with the ever increasing financial restrictions. Such restrictions however may have a spin off in that we are all forced to be more critical of our role and the value of the collections in our charge. Should we ask for large sums of money to be allocated to the storage of collections that in reality have no more significance than the Victorian compulsion for displaying collections and pretty objects from "Eastern Seas"? There is still so much to be learned about the invertebrates themselves and their ever declining natural environments that it appears to me to be wasteful to devote scant resources to bygone curios. I do not intend here to criticise truly significant historical taxonomy but rather to draw attention to the vast range of materials which are present in the invertebrate collections of the National Museum of Wales. This situation is probably paralleled in most other museums with natural history collections. The requirements made on these collections are many and include the provisions of specimens for; taxonomic research, historical research, morphological research, reference in three dimensional identification, for display, education and as records of distribution. In some cases, museum specimens may represent all that is left of some biotas. Ancilliary requirements include the provision of library facilities, laboratory equipment and study areas for visitors.

Given the wide ranging nature of the collections and the numerous requirements made of them, some assessment has been necessary in order to formulate curatorial and collecting policies. These must be in line with the level of staffing and curatorial facilities available.

Collections can be assessed by the number of user requirements that they fulfill but one also has to add into this a subjective grading. Taxonomically significant material is more important than display material, specimens with distributional data are more important than unlocalised reference material. However, it becomes obvious that nearly all the requirements except for the taxonomic significance can be fulfilled by a single collection, i.e. one which is well documented. In the National Museum of Wales this fact causes a distinct dichotomy in the collections. On one hand there are the old collections which must be assessed for their value and on the other the newly acquired material which comes via donation or our own fieldwork. Of the latter we have a degree of control over the data accumulated. Storage of this material which is almost invariably collected live, necessitates the use of fluid preservative and this in turn causes spatial and retrieval difficulties. The curatorial and collecting policies are therefore rather different in these two major groups.

The older collections are probably typical of many other museums in that there is an abundance of conchological material with small amounts of other Phyla stored in spirit.

The conchological material in the Zoology Department consists of approximately 160,000 lots, whereas the spirit material cannot exceed 10,000 jars. The conchological material is diverse in its value, ranging from the taxonomically and historically important Melvill-Tomlin collection to the poorly localised shells in the Geological Society collection. The major problem with this material is the huge amount of space required for storage and it was here that the most critical assessments had to be made.

The conchological material can be roughly categorised into four sections; Category A includes all type and figured material. Category B includes all other material with historical and taxonomic significance. Category C includes material which has a reference value because of good data, Category D includes badly localised material with little historical significance.

Category A material is plentiful in the Melvill-Tomlin collection with a few others in the Fedden, Chaster and Dillwyn collections. Category B material makes up a large proportion of the Melvill-Tomlin collection and is probably present in small quantities in the Fedden, J. F. Jackson, Wotton and Rippon Collections. These latter collections however contain much Category D material and the extraction of the few significant lots is not warranted under present conditions. Category C material is mainly of British origin and besides the excellent recent collections of land and freshwater mollusca of S. P. Dance and J. E. Chatfield, there is also that of the J. T. Marshall (part of Melvill-Tomlin), Chaster, Bartlett Span and Phelps collections.

There are two components to the conchological collections, the historically and taxonomically significant Melvill-Tomlin collection along with the other type material and the reference material. The greatest user requirements have always been on the Melvill-Tomlin collection and this has therefore received top curatorial priority. A full discussion of this collection, its significance, curation and uses are given in the following article. This decision puts priority on some 80,000 lots and given no increase in the present staff level of 2 it is estimated that adequate curation of this collection alone would take some 10-15 years given the other commitments of staff remaining static.

The remainder of the invertebrate collections except for the taxonomically significant Hoyle cephalopods which includes Challenger, Porcupine and Albatross Expedition material are difficult to assess. This results simply from the lack of expertise in the groups such as the Echinodermata and Crustacea. This lack is common to all the smaller institutions and this is one instance where considerably more inter-museum-university liaison is desirable. The Tattershall mysids and the echinoderms of the Portuguese East African Expedition are probably the most notable of the non-molluscan collections.

The older collections do not entirely fulfill the listed requirements especially those of: (a) Well localised reference material needed for identifications. (b) As distributional records, or (c) Material for modern systematic and morphological study. Such deficiencies are most noticeable in the non-molluscan collections. This brings me to the other part of the dichotomy in the collections and more specifically to collecting policies. While no national collecting policy exists, it remains unrealistic to set rigid collecting policies for oneself. One however must take into account well established policies of other museums. A call for some informal intermuseum discussion seems warranted. It is possible however to note some directions in which one would like to see developments. Given the lack of British material in the collections, the aim is to build up good series of reference material of all invertebrates which would be stored in "spirit". At this moment, geographical boundaries are somewhat irrelevant, but limitations to fieldwork and local contacts would naturally restrict the area to South West, United Kingdom. As one would also expect most demand on these collections to be of a more local nature, such restrictions are not immediately disadvantageous. It is worth noting however, that the Celtic and Irish seas include the boundary between the Southern Lusitanian and Northern Boreal faunas and that faunistically one is working in an area stretching from North Spain to Norway. With this aim in mind, the fieldwork of the section is orientated towards the marine invertebrates. As far as non-British material is concerned, then one must, given the already significant molluscan collections in the section, consider any offer of material which is taxonomically or historically significant and also that which fills gaps in the reference dimension of our large world wide collection.

Despite these deliberations on the significance of use of collections there remains one obstacle, dissemination of information. No matter how important or how well documented the collections are, they will never be used unless they are publicised. To this end the section has initiated a series of handlists which are guides to the contents of the collections and their possible significance. At present they are produced only for the Melvill-Tomlin collection.

I have not included the research work of the section and will only mention that it falls into two categories. Mainly marine molluscan systematics and morphology but with a deviation led mainly by Alison Trew into the distribution of terrestrial isopods.

I hope that this article has not only informed the reader of the major contents of the invertebrate collections but has also given some broad insight into the current work of the section.

Dr. P. GRAHAM OLIVER  
ASSISTANT KEEPER OF ZOOLOGY



## THE MELVILL-TOMLIN COLLECTION

Alison Trew and Graham Oliver

The Melvill-Tomlin Collection is by far the most important single acquisition in the invertebrate section of the Zoology Department of the National Museum of Wales. Its importance is scientific as well as historic as it contains some eighty thousand lots totalling over one million specimens covering a majority of known molluscan species. Its specimens were acquired over a period of approximately one hundred years covering the great era of molluscan taxonomy. Much of the historical background to the collection and its two great initiators, James Cosmo Melvill (1845-1929) and John Readle Brockton Tomlin (1863-1954) is given by S. Peter Dance (Amgueddfa - Bulletin of the National Museum of Wales, No. 8, Summer/Autumn 1971). Just as important as the shells themselves was the library contained within the bequest. This consisted of some two thousand and two hundred volumes of books, some of which are quite rare, seven thousand reprints of many different authors from all over the world and a collection of letters from many British and foreign Conchologists.

Tomlin began transferring part of the collection to the National Museum of Wales in the early 1940's but the main part came in 1955 after his death. It was contained in Tomlin's own cabinets and boxes and as there was no storage space in the Museum large enough for them, it was stored in the basement. The shells were not entirely arranged systematically but in many instances according to size. The collection was indexed at that time but otherwise nothing was done to it. In 1967 a new Assistant Keeper post was created in the Zoology Department to take responsibility for the collection, and a room was found to house it. Over the next three years the collection was moved into the new storage area but only partly removed from the old cabinets into the new storage drawers. In 1979, the entire Melvill-Tomlin collection was finally moved into the new storage drawers. This necessitated removing the Department's other, less important shell collections to very inadequate storage (behind the dioramas in the main Zoology gallery). All the old cabinets were removed from the Melvill-Tomlin room and the new storage was completed. This consists of a central bench which combines both compatible storage and a work surface with seating facilities. All the drawers in the room are interchangeable. The shells were arranged in the new storage into Superfamily order and the curatorial work is now being undertaken to reclassify, check nomenclature, catalogue each superfamily and to separate the types.

The collection is being resorted according to a numerical system. Each Superfamily has a letter and a number. e.g. the Tonnacea are G (for Gastropoda) 24. A classification is taken from a recognised work on the group and using this each genera and sub-genera is allocated a number. For example in the Tonnacea:-

genus	Tonna	24.40
sub genus	Tonna	24.401
sub genus	Eudolium	24.402
sub genus	Malea	24.403

Each sub genus is then arranged in alphabetical order of species. The advantages of this system is that it is easy to locate material without a knowledge of molluscan classification, i.e. the species name can be located in the index and its number found. It uses a recognised classification for each sub-family or genus so that visiting malacologists can use the system easily. The disadvantage is that although it can cope with minor revisions

or re-identification, it cannot cope with major revisions of a whole Superfamily.

The collection is being catalogued using our own catalogue sheets (See fig. 1). These are based on a computer card for ease of transcription but they are larger, so that normal handwriting can be used, which in turn is easier to read. They also have additional spaces provided for revision. The line marked O is for the original label information and then 1R to 7R to accommodate subsequent revision. The sample shown is for a type specimen and these sheets are pink rather than the normal white. Each holotype is individually registered. Space is provided for references to original descriptions, figures and for any other notes.

When a Superfamily is catalogued, a handlist is then prepared. This is in four parts, as shown by the sample pages II, III, IV and V. Page II is the general list which lists the species in classification order, as they are in the drawers, and includes name, number of lots, status, general locality and sources. A reference is included for holotypes, plus its individual registered number. Synonomies are cross referenced. Page III is a cross referenced index to determine which genus each species is classified within and Part IV is a reference to the sources of material in the Superfamily. This gives general information and a reference to more detailed information, usually an obituary. Part V is a bibliography of references used in the reclassification.

The cataloguing is based on data from existing labels and this is assumed to be correct, as this curation is aimed at giving ease of access to the collection and not as revisionary taxonomic research. The latter would be left to experts in each group. The handlists are designed solely to give other workers in malacology some idea of our holdings so they know what is available for scientific research. For this reason, the Melvill-Tomlin room has been fitted with facilities for visiting scientists, a large working area and microscopes.

The importance of the collection is in two main areas, scientific and historic. Scientific because it covers a large spectrum of the molluscan phylum with good collections of some of the lesser known groups. Historical because of the number of sources, many of whom were contemporary Conchologists of Melvill and Tomlin. The latter also bought collections and worked on original material which was then incorporated into their collections.

The sources can be divided into four main types: expedition material, sales, dealers and collectors. So far, ten superfamilies have been catalogued and one hundred and eighty three sources have been discovered. We expect to find many more.

The expedition material includes that where Melvill undertook to describe the molluscs - the Scottish National Antarctic (W. S. Bruce), the Percy Sladen Trust (Stanley Gardiner) and Torres Straits (A. C. Haddon). There is also material from "Challenger", Discovery I (ex. E. A. Smith), Discovery II (ex. A. W. B. Powell), H.M.S. Sylvia, Captain St. John, Terra Nova, Norwegian North Atlantic Expedition, "Investigator" and St. George (Hornell). Foreign expeditions are also represented in the Danish Expedition to Siam (via H. Lynge), Siboga Expedition, Princess Alice and Travailleur, Spitsbergen Expedition (via Torell or Odhner), Albatross (via Dall) and Porcupine.

Much material was bought at sales, mostly at Stevens in London. More detailed information is contained in "Shell Collecting, An Illustrated History" by S. Peter Dance, 1966. The material includes shells from the collections of C. Bulow (sold 1913), J. C. Cox (sold 1905), Damon (sold 1910 and 1929),

G. and H. Nevill (sold 1904), Lombe Taylor (sold 1880 and 1929), J. J. MacAndrew and Sir David Barclay (sold 1891 and 1898). These collections themselves contained material from other notable collections such as Dennison, Tankerville and Stainforth.

The third type of material was bought from dealers such as Sowerby and Fulton, Paul Geret in France, and H. B. Preston. The latter's material contained many syntypes especially from Antarctica and India, from such people as Bennet and Annandale. Sowerby and Fulton's material contained specimens from many different sources such as Hungerford and Prevost. Geret handled Bavay and Caziot.

The fourth type of material is from collectors, both amateur and professional colleagues in museums. The collectors lived and collected all over the world and included W. J. Eyerdam (Alaska), Pedro de Mesa (Philippines) Louis Dubois (Argentina), J. Viader (Mauritius), Yoichiro Hirase (Japan), William H. Turton (South Africa and St. Helena), Harold C. Winckworth via R. Winckworth (Indian Ocean), Despott (Malta), Adele B. Koto (U.S.A.), F. G. Pearcey (Britain), Sam Archer (Singapore), Miss Mckinnon Wood (Kenya), A. H. Piele (mainly Bermuda), Richard T. Lowe and Boog Watson (Madeira), A. M. Norman and Monterosato (Mediterranean). The Melvill-Tomlin collection also contains the Marshall collection of British mollusca. There was also a lot of exchange between professional colleagues. In America there was William H. Dall, Frederick Baker and H. Hamphill, Herbert N. Lowe, Hyning, I. S. Oldroyd, Charles Orcutt, Henry Pilsbry and Lorenzo Yates. In Australia there was Charles Hedley, Tate, W. Lewis May, C. J. Gabriel, Tom Iredale, W. R. P. Oliver, Roy Bell and William T. Bednall. New Zealand contacts included A. W. B. Powell, Bucknill and Drier. Material from South Africa came from Barnard, the University of Cape Town Ecological Survey (via T. A. Stephenson) H. J. Puzey, W. Falcon and the Natal Museum. In Sweden there was N. Odhner and O. Torrell, Iceland - G. G. Bardorson and Denmark, H. Lynde. Tweedie from the Raffles Museum sent material from Singapore. Edouard Lamy, Etienne Locard, Jousseume and Paul Pallary contributed Mediterranean and north east Atlantic material.

The Melvill-Tomlin shell collection therefore covers a wide spectrum and the library is well equipped to augment conchological research. The books include a complete set of Reeves' *Conchologica Iconica*, Sowerby's *Thesaurus*, reports on all the expeditions for which material exists in the collection, Tryons' *Manual*, Kiener's *Coquilles Vivantes*, *The Conchologists First Book* by Edgar Allan Poe (1st Edition and very rare), complete sets of *Journal of Conchology*, *Proceedings of the Malacological Society*, *Nautilus*, *Journal de Conchyliologie*, *Annales de la Societe Malacologique Belgique*, *Archiv fur Molluskendunde*, *Nachrichtsblatt Malakozoologischen Gesellschaft* and a few other journals. In fact, it is probably the most comprehensive collection of conchological books in Great Britain outside the British Museum (Natural History).

There is also a collection of pamphlets, reprints and sale catalogues. The latter covers almost all the shell sales of the late nineteenth and early twentieth century. In many cases the catalogues have been annotated to give name of purchaser and price paid. These are an important source of historic information.

The proportion of curatorial time devoted to this collection is considerable and some may find the details of the procedure extravagant. This detail not only has its own intrinsic taxonomic and historic value but perhaps more importantly it gives ease of access to the collection which after all, is surely the basis of curation.

FIGURE 1

SUPERFAMILY		LIMOPSRCEA (GLYCYMERIDAE)	
7R	GENUS	SPECIES	CODE
6R			
5R			
4R			
3R			
2R			
1R	Glycymeris	connollyi Tomlin 1926	11-20
0		connollyi Tomlin	
Tomlin. J.R.B. 1926 On South African Marine Mollusca with descriptions of new species. Ann. Natal Mus. 5(3) p 299-300 pl. 16, fig. 12.			
COLLECTION		MEIVILL-TOMLIN	
REGIST. NO.		55.158	
STATUS		HOLDTYPE	
TOWN, PT. POSITION		Muizenberg	
BAY etc.   FOREST		RIVER   LAKE	
ISLAND   MTN. FG.		DISTRICT	
COUNTRY   IS. GROUP		SUBCONT.	
OCEAN   SEA			
GRID   LAT.   LONG.		DEPTH   ALT.	
SOURCE		Connolly	
COLLECTOR			
EXPEDITION		STAT. NO.	

No. Specimens  
IV

TONNACEA Piele 1926 (G.24)

(plus COLUBRARIINAE)

GENERAL LIST

Oocorys Fischer 1883 (G.24.01)

*sulcata* Fischer 1883 1 Cape Point

Galeodea Link 1807 (G.24.10)

*bucquoyi* Locard See *echinophora* Linnaeus  
*echinophora* Linnaeus 1758 4 Mediterranean  
*leucodoma* Dall 1907 1 Japan  
*rugosa* Linnaeus 1771 3 Mediterranean  
*tyrrhena* Gmelin 1791 See *rugosa* Linnaeus

Sconsia Gray 1847 (G.24.11)

*striata* Lamarck 1816 1 No loc [MacAndrew, Lienard]

Morum Röding 1798 (G.24.131)

*grande* A. Adams 1855 2 Japan: No loc. [Prevost, MacAndrew]  
*lamarckii* Deshayes See *oniscus* Linnaeus  
*macandrewi* Sowerby 1888 HOLOTYPE Descriptions of fourteen new species of shells from China, Japan and the Andaman Islands. Chiefly collected by Deputy Surgeon General R. Hunderford. *Proc. Zool. Soc. Lond.* 1888 p. 567-8, pl. xxviii, figs. 1-2. Loc: Hong Kong  
1 complete specimen N.M.W. 1955.158.21  
*macandrewi* Sowerby 1888 PARATYPE Hong Kong  
*oniscus* Linnaeus 1767 4 West Indies? (2): Indian Ocean (1)  
*ponderosa* Hanley 1 Japan  
*praeclarum* Melvill 1918 HOLOTYPE Description of *Morum praeclarum* sp. nov. with remarks on the recent species of the genus. *Proc. Malac. Soc. Lond.* 13, p. 69, No loc. [MacAndrew]  
1 complete specimen N.M.W. 1955.158.22  
*tuberculosum* Reeve 1842 4 Gulf of California [Piele]: Galapagos: Ecuador: No loc. [Damon]



REFERENCE OF SOURCES

- ARCHER Samual Archer (1836-1902). Collected at Singapore. Collection aquired by Tomlin.
- BELL Could be Roy Bell, an Australian collector and friend of T. Iredale. There was another Bell in the 1920's, a Alfred Bell, who was a professional collector of shells and fossils (Dance 1966)
- BRAZIER John Brazier (1842-1930) An Australian conchologist. *Obit. J. Conch. Lond.* 19, p.110
- BULOW Carl Bulow. Collection sold at Stevens in 1913
- CASEY Information required
- COX James Charles Cox (1833-1912) Collection sold at Stevens in 1905. Most of it is in the Australian Museum, Sydney (Dance 1966). *Obit. Proc. Malac. Soc. Lond.* 10, p.316
- DACIE John Charles Dacie (1860-1929) Collection sold at Stevens 1929.
- DAMON Robert F. Damon (1845- ) Son of Robert F. Damon (1814-1899) Collection sold at Stevens 1910 and 1929
- DRIER An ex-director of the Auckland Institute, New Zealand. More information required.
- DUBOIS Louis Dubois (circa 1920) Dealer in marine invertebrates from Mar del Plata (Tomlin correspondence)
- ELLIOTT Information required
- EYERDAM W. J. Eyerdam. A marine cooper who joined expeditions to north east Pacific. Member of Conch. Soc. G.B., 1929 (D. Heppell - Personal correspondence).
- GARDINER J. Stanley Gardiner. Leader of the Percy Sladen Trust Expedition to the Indian Ocean (1905). Mollusca described by J. C. Melvill 1909. *Trans. Linn. Soc. Lond.* 13, (1), pp. 65-137.
- GIBBON Information required
- GREENLEES Miss Greenlees. Information required.





THE NATIONAL MUSEUM OF WALES: DEPARTMENT OF ZOOLOGY

INVERTEBRATE SECTION: PARASITOLOGY

Dr. H. Harford Williams Parasite Collection  
(Donated to the National Museum of Wales in 1970)

The above collection contains about 1,000 lots of fluid preserved specimens (including whole intestines of fish) and 5,000 whole mounts. These 6,000 lots represent Monogenea, Digenea, Cestoda, Nematoda and Acanthocephala of fish mainly from the Eastern Atlantic; Cestoda of Elasmobranchs from the Mediterranean and a small sample of cestodes from Australian elasmobranchs. Each lot is now being catalogued with information on parasite and host names, site in or on the host, precise geographical locality (latitude and longitude) and date of collection. Specimens will be indexed by accession number, by host and parasite genus and species with a view to computerisation.

At present emphasis is being placed on research material from elasmobranchs and from October 1979 to March 1980 about 150 lots were conserved.

In addition to the aforementioned the collection includes an interesting miscellaneous collection of parasitic arthropods from fish and a range of helminths from all vertebrates collected and used for university teaching purposes over a period of about 25 years.

Dr. Harford Williams' personal library of books and reprints, kept at the nearby Open University in Wales building, and libraries of the National Museum of Wales and nearby University College, Cardiff have hitherto been adequate for cataloguing the collection. Towards further research progress on the ecology, functional morphology and taxonomy of this collection, however, there are plans to extend considerably the parasitology library section of the National Museum of Wales. Most literature facilities which are normally available to visiting scientists are, therefore, available.

Priority is given to research on the specificity of helminth parasites to elasmobranchs and to aspects of zoonoses in relation to the marine environment. Laboratory space and facilities are available for visiting scientists but must be pre-arranged with the Keeper of Zoology and Dr. H. Harford Williams.

Much of the material was collected between 1954 and 1970 when the northern North Sea and the Mediterranean were considered to be relatively free of pollution. This situation at present, however, i.e. 1980 is said to be considerably changed in relation to oil exploitation in the North Sea and the high degree of pollution at present in the Mediterranean. The collection, therefore, may be of interest to future investigations of the areas over a similar period of 16 years.

DR. H. HARFORD WILLIAMS  
HONORARY RESEARCH ASSOCIATE

KEVIN J. RUAL  
TECHNICIAN

THE NATIONAL MUSEUM OF WALES: ZOOLOGY DEPARTMENT

VERTEBRATE SECTION

The vertebrate collections pose the largest and most immediate curatorial problems to the department. In common with many other museums, the variety (shape, size, fragility and storage methods) of specimens creates both macro and micro storage difficulties. Storage areas in most instances are too small, even sub standard for some preservation methods, whilst non standard storage prevents the systematic arrangement of specimens for retrieval and documentation.

The situation has arisen by the redeployment of display material, especially of mounted mammals and bird cases, removed during gallery redisplay to the area reserved for scientific collections. A realignment, creating storage space for display specimens has released 800 square feet which can now be used for standard cabinets to house the bird skins, mammal skins and bird eggs in systematic sequence. Once housed, these collections which contain a limited number of specimens will make documentation retrieval and publication relatively simple when given the correct priorities.

It is considered essential that these collections be available as quickly as possible catering as they do, for a large number of enquiries from identifications to the more detailed taxonomic and distributional requests. In contrast is the mounted material which at the moment is rarely requested and would only be used for temporary exhibitions, certainly in the foreseeable future. Long term curatorial headaches are immediately apparent when the storage methods utilised for other vertebrate material are considered. Frozen, skeletal and fluid preserved material require exacting environmental conditions for their correct storage and conservation and as these three preservation methods are liable to see the biggest increases in the receipt of museum material both in numbers and volume during the next twenty years, future plans have to be carefully considered and designed to cope with this eventuality. Related to the storage of the material itself is the need for greatly improved ancilliary services in the form of laboratories (which must conform to the stringent requirements of the Health and Safety Act) and scientific technical assistants. This consideration is one which holds the key to any future development by the Department of Zoology and at the present moment is the subject of detailed forward planning.

The exact size of the vertebrate collection is not known at present but the following notes should give members some idea of our holdings and of our major strengths and weaknesses.

1. The Fish Collections

The fish collections are relatively small in comparison with the other vertebrate collections. They are derived from three major sources. The first source is common to many museums in Great Britain, for during the 1910 to 1930 era, large numbers of 'duplicates' were given by the national museums in London to other national and provincial museums. Two major duplicate collections came to Cardiff, 454 specimens from a wide variety of geographical sources were presented by the British Museum in 1911 and in 1925, 186 bottles from the Francis Day collection were presented by the Science Museum. These two collections have been restored and conserved over the past few years and are the subject of investigation at the present moment. However, one thing has become patently obvious and reflects curatorial and conservation problems associated with the maintenance of fluid preserved material. Of the 186 bottles received in 1925 from the Science Museum, only 66 are still extant, the contents of the other 120 having been destroyed after desiccation during the interim period.

The second source of fish material in the section is that derived from the museum staff and associates. Colin Matheson, then Keeper of Zoology and Professor W. M. Tattersall, University College, Cardiff, collected fairly extensively in marine areas around Wales. More recently during the late 1970s Piers Langhelt collected material from freshwater systems in Wales whilst conducting the Welsh Fish Survey for biological recording purposes. None of these collections are comprehensive but they have been supplemented by other material donated by members of the public and by anglers. The third source contains important fish material donated by Travis Jenkins, again marine in origin, which was part of mixed collections containing both invertebrate and vertebrate specimens.

It is known that at present, several collections of fish taken systematically both in power stations and at specific sights in Wales and the Bristol Channel are extant. It is envisaged that these collections will form the main proportion of the large collections of fish due to come to the National Museum of Wales in the next few years.

## 2. Amphibian and Reptile Collections

The reptile and amphibian teaching collections of University College, Cardiff were donated to the department in the late 1960s and these supplemented those of Arthur Loveridge, especially from East Africa and of Dr. J. J. Simpson, Keeper of the department until 1926.

The important material in spirit within the collection contains a good cross section but c.300 specimens from zoos are in cold store awaiting incorporation either as skeletons or fluid preserved material.

## 3. The Birdskin Collections

The birdskin collections contain approximately 12,000 specimens. None of these are type specimens although those collections recently coming to the Museum contain important historical specimens and need to be researched. The sources of the material are similar to those for the fish.

The British Museum of Natural History donated collections of duplicate material in 1911 and 1943. The 1911 donation consisted of 856 specimens of world wide provenance whilst the 1943 donation was a collection of bird skins from British Guiana collected by F. V. McConnell. The latter collection illustrates the importance of the work being undertaken by the collection research units in this country, for it was assumed by the British Museum (Natural History) that the entire collection was still at Tring, but two major parts of the collection, one at Liverpool and now the second in Cardiff were shown to have been distributed as duplicates, making the series present in the original collection somewhat smaller. This was important, for several years ago the material was examined prior to an expedition to Guyana in the belief that the collection was complete.

One major collection recently purchased was the Vivian Hewitt collection obtained from the British Trust for Ornithology and this contained 3,183 skins representing 75% of the families and 85% of the sub-families of the birds of the world. This collection, obtained in 1979 also contains important historical specimens from various collectors and dealers such as Jardine, De la Touche, Eyton and Boucard.

The section benefited greatly from its association with J. G. Williams who worked in the Department prior to World War II. In all, over many years, 440 skins of birds, mainly British ducks and waders but with good representation of African material were donated to the department. The H. E. Forrest collection of British Birds totalling 181 skins was received in 1919 and the collections aforementioned are the major ones of any size received by the department.

The type of material now being received and collected has changed and poses difficult problems of storage and of conservation. 2,000 auks were collected during the Christos Bitas Oil Incident of October/November 1978 and these were then stored in a deep freeze trailer. A large proportion were skinned but as the current practice of the Department is to keep both the carcass and the skin, all carcasses are now in the deep freeze along with those specimens not yet cleansed and skinned. A further 600 specimens were received from a Cornish Oil spill in 1979 and it is envisaged that this type of material from particular localities can assist with detailed studies on the ecology of seabirds. Good series will better primary source material accepted by the department in the future and will require very large cold store facilities which can also, if required, be used for mammals, fish, amphibians and reptiles. The seabird studies have been published in a report, "The Collection, Storage, Cleaning and Research of Oiled Auk Corpses" and also a second on the scientific analyses of data is in preparation.

#### 4. Bird Egg Collections

Three major collections constitute the majority of the bird eggs stored within the department. The A. F. Griffiths collection donated in 1927, contains a large collection of British bird eggs but also received was a good series of both nests and eggs. The second collection is also of British bird eggs and was bequested by Gregory Haines in 1946. This collection consists of two cabinets and is accompanied by notebooks which show the material was collected between 1890 and 1930. The third collection and the most important for environmental studies is the collection of eggs of Captain J. H. Howell. This includes 45 clutches of Peregrine Falcon eggs from the early 1900s, 50 Buzzard clutches and 11 Chough clutches, all fully documented. This collection was purchased in 1971 and has been used extensively for the study of birds of prey and pesticides. The department also purchased in 1971 an egg and a mount of the Great Auk. This specimen originally being part of the Vivian Hewitt Collection.

The many specimens received from the public have over the years been prepared as excellent display material and the museum possesses one of the finest collections of cases of British birds illustrating not only the breeding pair but also their nest and eggs or young. This work was undertaken by museum staff and forms still the basis of the systematic display.

#### 5. The Mammal Collection

Very few of the mammal skins of the collections have come as a result of specific research projects, the series in the collection having been developed over a long period of time from material submitted by members of the public and occasionally researchers. The collection of Mustelid skins are extremely important. The most important of these being 90 skins and skulls of the Polecat *Mustella putorius* from a wide selection of Welsh sites. These are also supplemented by Polecat/Ferret material which has been the basis for several papers. 17 skins of feral mink *Mustella vison* which has escaped from mink farms and several from elsewhere in Wales have been established but far more could be sent to the National Museum. 95 skins of Stoat *Mustella erminea* mostly Welsh material and 54 skins and skulls of Weazel *Mustella nivalis* from Welsh sites combine with 11 skins of the Pine Marten *Martes martes* to form the Mustelid collection. 25 skins of the badger *Meles meles*, including 3 erythristic, are present from the collections, all but 2 from Wales. The small mammals are represented by the following numbers of skins:

32 skins of Bank Vole *Clethrionomys glareolus brittanicus* (16 preserved in spirit).

22 skins of Skomer Vole *Clethrionomys glareolus skomerensis* (1 preserved in spirit).

95 skins of Long-tailed Field Mouse *Apodemus sylvaticus* (7 preserved in spirit)

24 skins of Yellow-necked Field Mouse *Apodemus flavicollis* (2 preserved in spirit).

The only systematically sampled collection was received in 1964 from D. Saunders. This contains small rodent material, skins and skulls and ectoparasites of the following species:

Common Shrew *Sorex araneus* 213  
Skomer Vole *Clethrionomys glareolus skomerensis* 79  
Bank Vole *Clethrionomys glareolus brittanicus* 7  
Long tailed Field Mouse *Apodemus sylvaticus* 5  
House Mouse *Mus musculus domesticus* 3

The Chiroptera collection is much smaller than would be expected - all future material received will be stored in fluid preservative, as all these collections are used quite frequently for morphological and distributional studies. The department possesses a good collection of pelts from the fur trade and some 200 skins of rabbit bred to simulate rare pelts. This material was part of an important economic zoology collection developed during the 1920s and 1930s and will be used for a display in Trade in Endangered Species in conjunction with the Fauna Preservation Society later on this year.

A collection was received from Captain G. H. Douglas Pennant in the early 1900s. This consisted of a large number of game heads and mounted mammals which were previously used for display but which are now in storage. Some large mammals are still displayed including a Thylacine purchased in 1968.

#### 6. The Osteological Collections

As with most osteological collections the large mammals are well represented mainly as articulated skeletons but there is a major shortfall in the smaller mammals and birds. Amphibians, reptiles and fish are also well represented as the basis of this collection and some of the others formed the teaching museum of the University College, Cardiff's Zoology Department before its transfer to the National Museum of Wales.

Very few comparative series of closely related species are present but a good collection exists of all the different breeds of dog and carnivores. Over 2,000 specimens, some full skeletons and others, just skulls are present in the collections which occupy at the moment a very large area making reference and retrieval extremely difficult. The collection is used primarily by archaeologists wishing to compare material from digs and to this end and for storage purposes most of the large articulated skeletons will be disarticulated over the next few years and new storage provided. It is hoped that the lack of skeletal material of the many common bird and mammal species can be rectified and to this end a macerator and degreaser was purchased two years ago but as yet is inoperative, due to stringent requirements involved in installment and operation.

#### 7. Pleistocene Faunal Remains Collection

A great deal of research and fieldwork has been undertaken in the cave systems of Wales which is reflected in the pleistocene faunal remains held by the Zoology department at the National Museum. There are in total 193 boxes of remains from many different localities and these are stored at the present moment under the display cases in the main gallery. This again causes both conservation and retrieval difficulties and a review is being undertaken by conservators to assess the work required on the specimens and for restorage. The localities from where the material has been received are as follows:

LOCALITY	ACCESSION NO.
Little Garth Cave	20.359
Paviland Cave, Gower	24.94
Council of the Carmarthenshire Antiquarian Society (1,300 pieces), Coygan Cave Carmarthenshire	33.153
Craig-y-nos, Brecon	34.389
Coygan Cave, Carmarthenshire	34.390
Amroth, Pembrokeshire	31.363 34.749
Segontium, Caerwent	37.699
Ty Isaf, Breconshire	39.190
Bacon Hole, Gower	44.85
Dyserth Castle	39.190 45.179
North Wales	47.97
Llantwit Major	49.238
Spalding, Lincolnshire	53.358
Uskmouth, Monmouthshire	55.258
Various Welsh Sites	57.524
Spritsail Tor, Llangerydd, Gower	60.108
Caerwent	61.174
Gop Cave	61.381
Dinorben	62.111
Tyddyn Bleiddyn	68.414
Cefn Cave, Somerset	68.415
Twyn-llechfaen, Breconshire	68.469
Kenfig	78.59

The vertebrate collections, although not of great taxonomic importance when compared with the conchological collections or indeed, some of the entomological collections are used widely for faunistic data, identification, display and by schools. It is essential therefore that they be reorganised and restored and I hope that this brief introduction to the collections in the Department will serve until such time as the department has completed its detailed listing of the collections.

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