Amgueddfa

Yearbook of the National Museums & Galleries of Wales, 2000 - 2002

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Yearbook of the National Museums & Galleries of Wales,
2000 - 2002

Editors: Teresa Darbyshire & Sioned Williams

Amgueddfeydd ac orielau cenedlaethol cymru
National museums & galleries of wales

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Introduction

Unlike the past three issues of *Amgueddfa*, this volume covers work over two years in the National Museums & Galleries of Wales. This is not bad news – we are not slipping into publishing our Yearbook every two years – but we have decided, in addition to this normal review of activity, to issue a special edition of *Amgueddfa*, entitled *A Nation's Treasures*, which looks at the totality of our collections and explains to interested non-museum readers why it is that we think collections are important, how we acquire and care for them, and gives a glimpse of some of the high-points of our collections. So look out for that!

Over the period covered by this volume it is unquestionably true that what has had most impact on the institution is the decision of the Welsh Assembly Government to offer free admission to all visitors to NMGW's eight sites from 1 April 2001 – nine months before the charging-for-entry national museums and galleries in England followed a similar policy. As I write this in February 2002, visitor numbers are 85% up on last year's numbers, indicating that some 1,300,000 visits will have been made to our sites over the 2001-2002 financial year – an amazing result and a clear demonstration of the relevance of museums and the enthusiasm they generate, because people would not come, even for free, if they did not see something to interest them.

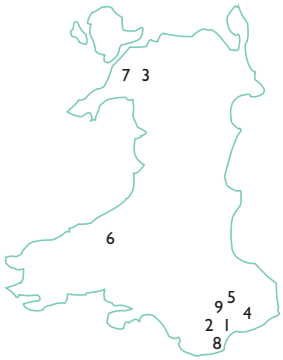
Now this is both a tremendous opportunity and a tremendous challenge for us. Most people would agree that one of the two main duties of a museum is to provide access to its collections – to exhibit them, interpret them, and allow visitors and users to interact with them in whichever way they find most comfortable.

The other main, defining, duty of a museum though (and particularly of a national museum) is to care for and preserve for posterity its collections, and use them to contribute to telling the museum's story, in our case telling Wales about the world and the world about Wales. This means acquiring and managing collections on a daily basis (a vital but often unsung task), documenting, conserving and curating them, researching either the collections or their context, and exhibiting and interpreting the results to the public. These are all fundamental core activities for a museum.

In this volume our staff present a wide range of such activities – but because of the pressures of space it can be no more than a snapshot of the range of work that is undertaken on a daily basis by this institution. The great challenge for us is to maintain this vital output. I am sure that you will be fascinated to read of the incredible diversity of activities that go on behind the scenes at the National Museums & Galleries of Wales, and I hope that this volume inspires you to visit and partake in such exciting projects.

Anna Southall
Director NMGW, 1998 - 2002

The National Museums & Galleries of Wales



1 **National Museum & Gallery**
Cathays Park, Cardiff CF10 3NP
Tel. (029) 2039 7951

4 **Roman Legionary Museum**
High Street, Caerleon, Newport
NP18 1AE
Tel. (01633) 423134

7 **Segontium Roman Museum**
Beddgelert Road, Caernarfon,
Gwynedd LL55 2LN
Tel. (01286) 675625

2 **Museum of Welsh Life**
St Fagans, Cardiff CF5 6XB
Tel. (029) 2057 3500

5 **Big Pit: National Mining Museum of Wales**
Blaenafon, Torfaen NP4 9XP
Tel. (01495) 790311

8 **Turner House Gallery**
Plymouth Road, Penarth,
Vale of Glamorgan CF64 3DM
Tel. (029) 2070 8870

3 **Welsh Slate Museum**
Gilfach Ddu, Llanberis, Gwynedd
LL55 4TY
Tel. (01286) 870630

6 **Museum of the Welsh Woollen Industry**
Dre-fach Felindre, Llandysul,
Carmarthenshire SA44 5UP
Tel. (01559) 370929

9 **The Collections Centre**
Heol Crochendy, Nantgarw Park,
Trefforest, Rhondda Cynon Taff
CF15 7QT
Tel. (029) 2057 3560

Collections & Acquisitions

Museums are defined by their collections. Acquiring relevant fresh objects with which to tell stories and to keep them for the benefit of posterity is one of the marks of the well-being of a museum. As ever, the National Museums & Galleries of Wales has had a range of acquisitions over the period covered by this volume, and this section notes some of the most interesting.

Acquisitions can be of objects or collections new to the institution (such as the computers that we are now collecting!), but equally can represent an opportunity to acquire objects long held on loan and perhaps now in danger of dispersal, of which the Jackson silver that our Keeper of Art discusses here is a classic example. The range of our collections is also well illustrated, from botanical specimens and oral-history recordings to complete buildings and heritage sites.

Eurwyn Wiliam
Deputy Director NMGW, Director of Collections & Education

The British Bryological Society Herbarium (BBSUK) has a permanent home at NMGW

The partnership between the National Museums & Galleries of Wales and the British Bryological Society (BBS) received a boost recently with the transfer of ownership of the Society's herbarium to NMGW. At the autumn 2001 meeting of the BBS, hosted by the Department of Biodiversity & Systematic Biology, a reception was held to mark the transfer of ownership and to affirm the ongoing partnership between the two organisations.

The collection of 35,000 specimens of bryophytes (mosses and liverworts) makes a substantial contribution to our Cryptogamic Botany collection and brings the total holdings for the Cryptogamic Herbarium to more than 330,000 specimens. When added to those of the Vascular Plant Herbarium, the total for the Welsh National Herbarium is now ca 600,000 specimens.

The BBS is the leading organisation for the study of mosses and liverworts in Britain, and is therefore an important partner for NMGW. The Society has an international membership and produces one of the most important international bryological journals, the Journal of Bryology.

Collection Manager Kathryn Childerhouse putting away newly curated specimens from the BBSUK Collection in the Cryptogamic Herbarium

NMGW has traditionally had close links with the BBS as past staff have been (and current staff continue to be) active members. The Museum has hosted meetings of the Society on several occasions. Transfer of ownership strengthens the links between the Museum and the BBS and provides the basis for ongoing collaboration, as the collection is a key element in the Society's activities.

A central activity of the Society is to provide a census catalogue of the mosses and liverworts of Britain and Ireland through recording by its members, and the Society herbarium is a voucher collection providing verification of the records. Specifically, the herbarium includes voucher specimens for the species from the areas in which they occur and is, therefore, a vital reference tool for knowledge of the bryophyte flora of Britain and Ireland.

Additionally, it holds the historical records that are the basis of two publications produced by the Society concerning the bryophyte species occurring in the British Isles: the Census Catalogue (a list of all the species), and the Bryophyte Atlas (a collection of distribution maps). The collection continues to grow through the addition of new records from ongoing sampling and, in this way, is both a repository of knowledge for the future and the focus of active research.

The National Museum & Gallery has been a temporary home to the specimens for thirty years and during that time they have been on loan to the Museum and housed in the Cryptogamic Herbarium. The collection has been developed over the past 100 years by the Society (and by the Moss Exchange Club which preceded it).

The change of ownership will allow much needed conservation of the specimens to go ahead. The specimens are dried mosses and liverworts, stored in packets that are mostly about the size of a small envelope. They are packeted in a variety of materials, as they have been donated to the collection by a wide variety of people. The packets range from folded standard white A4 paper, to cellophane and brown paper envelopes and many packets are in poor condition. Curation allows repacketing in high quality materials that will ensure the specimens are protected for the future. As the specimens are relatively small and dry, they are very fragile. Many of the diagnostic features needed for identification are delicate and therefore proper curation is needed for the long-term integrity of the collection.

As the collection is curated, the specimen data is entered on to NMGW's documentation system (CMS) and the packets are printed using the data transferred to the Filemaker Pro database. The aim of documentation is to allow online access

Newly curated moss specimens (right) from the BBSUK Collection beside some of the old packets (left)

to specimen data, both as an online catalogue of the collection and as a searchable database. Data from the BBS Collection has been included in the Catalogue of *Sphagnum* in the Welsh National Herbarium being prepared by staff.

In this way the information held in the collections is being made available to the public and the international scientific community. Documentation of the collections complements the traditional and ongoing practices of herbarium taxonomy. he plant collections held in the Welsh National Herbarium are part of an internationally recognised network of plant collections, which co-operate to provide access to collections held throughout the world. Loans of specimens are made between herbaria to allow taxonomic specialists to study the collections, a practice that gives the collections the benefit of the most up to date knowledge, and complements the research carried out by NMGW staff.

Through the specimens, herbaria hold vast amounts of information on many aspects of plant biodiversity. They provide a record of the plants of particular places, for example checklists and floras for Glamorgan, or Wales, or the UK, and information on the rarity of some of these plants and their conservation interest. There is information on the geographic distribution and morphological variation of groups of plants or individuals, such as introduced plants. The specimens can also be a record of which plants were used for DNA or ecological studies, or collected on a survey, and they are also the basis of the taxonomic studies that allow biodiversity to be recognised.

By continuing to develop the collections through acquisition and ongoing collection and research by staff, NMGW is playing a central role in the accumulation of knowledge concerning the flora of Wales, the British Isles and beyond.

Ray Tangney
Head of Cryptogamic Botany, Department of Biodiversity & Systematic Biology

Dragons, Zebras and Doorstops: NMGW's collection of Welsh computers

In 1943, Thomas Watson snr, Chairman of IBM, was reputed to have said that he imagined a world market for a total of only five computers. If Mr Watson had visited Wales during the 1980s, he would have been surprised to find that at least six different *models* were being manufactured here alone.

It is remarkable that Wales produced so many of the home computers of the early 1980s, but as a teenage user of a ZX Spectrum, I was only dimly aware of this connection. Trying to unravel the deceptively simple intricacies of the Sinclair BASIC language was always more important than wondering where the computer was made.

Since my appointment in May 1999 as Curator of Modern & Contemporary Industry in NMGW's Department of Industry, that Welsh connection has taken on a new significance as attempts have been made to acquire an example of every computer manufactured in Wales.

The Department of Industry had a good track record of collecting in this area as a 'Zebra' and a 'Dragon' were already part of the collection. Despite the zoological and mythical implications, both of these are actually computers. The Zebra was made by Standard Telephones and Cables of Newport and dates from the early 1960s. This is quite a rare machine as only forty were ever made, and most of these were exported. Our machine was donated by Cardiff University's Department of Crystallography. Dragon will be a familiar name to many people as they were manufactured by a subsidiary of the Mettoy company in Kenfig Hill.

However, knowing what was made here is one thing, but actually finding the computers themselves was quite another. It was at this point that I turned to the internet for help.

The Dragon 32 (left) and the Spectrum Plus

It is ironic that a high-tech device like the internet might be used to find machines that by today's standards are quite primitive. Just how primitive can be seen by looking at Dragon's computers. These were available in two versions, the thirty-two and the sixty-four. These numbers refer to the amount of memory each machine had. This was quite respectable for the 1980s, but is as nothing compared to the elephantine amounts that just one modern floppy disc can hold. The Pentium chip in the average PC works at something approaching the speed of light when put alongside the processing brain of the Dragon.

So what would a search of the internet yield? Had people moved on from early home computers, or were there still some keepers of the flame out there? I quickly discovered that the internet is home to whole communities of early computer enthusiasts, producing a myriad number of sites on every possible aspect of the home-computing era. Software for the machines is still abundantly available, as are reprints of articles from original magazines. There are even programs, called emulators, that allow you to mimic the behaviour of your favourite old computer on your modern PC.

More importantly from the Museum's point of view, I discovered that you could buy the computers themselves. Unfortunately, none of the enthusiasts associated with these web sites knew anything about where the computers were made. This problem was partly solved by a visit to the Glamorgan Record Office, where I consulted some scrapbooks that had been compiled and donated by AB Electronics of Abercynon.

These documents proved to be very important as AB not only produced most of the computer models made in Wales, but the scrapbooks also contained information about the other Welsh manufacturers as well.

Armed with this new information, I returned to the internet. My first contact was with the Electron Users Group (EUG). The Electron was a product of the Acorn company that was best known for producing the BBC computer. The Electron was a cheaper and less powerful version of the BBC, but had the advantage of using the same programming language.

The scrapbooks showed that the Electron was either manufactured by AB or was imported from Malaysia. When the Chairman of the EUG offered us a British-built machine, we were obviously acquiring a computer made in Wales.

To continue the Acorn theme, I then turned my attention to the BBC. The BBC was the most powerful home computer of

the 1980s, and certainly the most expensive, as the model B cost £399 brand-new. Although it was seen primarily as an educational machine (Mrs Thatcher wanted to put one in every British classroom), this did not stop programmers from writing games for it that could be described as some of the best produced for any computer of any era. One such program, Elite, was famously described as 'less a computer game, more a way of life'. I can personally vouch for this.

The scrapbooks showed that three firms had manufactured the BBC: AB, Race Electronics of Llantrisant and ICL of Kidsgrove. I located a dealer in vintage Acorn hardware and, as he even had individual keys from the keyboard of a BBC computer for sale (35p each), it seemed he might be able to help.

Within a few days of contacting him, I received a message saying that he had a BBC that had been manufactured by Race. Given that there was no doubt where it came from, we bought the computer.

The next acquisition was arguably the most difficult. This was ironic, considering that it outsold every other home computer and there are still thousands of examples in existence. The ZX Spectrum is synonymous not only with the British home computer industry but also with the man who could be said to have launched the whole phenomena, Sir Clive Sinclair. Although the Sinclair C5 was something of a mistake, the Spectrum was a triumph: cheap, cheerful and with masses of available software.

It was far from perfect – it looked like a doorstop and anyone who dislocated their fingers while trying to type a word by pressing three different keys simultaneously will always remember the experience. The public ignored the drawbacks however, and bought the machine in its millions.

The Spectrum's availability did not make it any easier to locate a Welsh-built model. Once again AB Electronics at Abercynon had made the Spectrum, but the majority had been produced by the Timex factory in Dundee.

Unfortunately, there was no way to tell from the computer's casing where it had come from. This left only one option: direct contact with AB. My contact turned out to be extremely helpful as he ultimately gave us an example of an AB-built Spectrum Plus.

While pouring over the AB scrapbooks, I came across a reference to a company named Torch Computers of Cambridge. They had a factory in Caernarfon and a faded photograph suggested that they had built machines aimed at the business market.

The internet provided me with an address and phone number of a firm with the same name. This company turned out to be a reincarnation of its 1980s predecessor and generously offered us an example of a machine built in north Wales.

The BBC model B (top) and the Acorn Electron

Torch's products were technologically interesting as they seem to have been the first commercial attempt to allow companies to create a small-scale intranet. A system like this would have cost £3,000 in 1983, which was quite competitive for the period.

Another firm has come to light only recently. Wilcox Computers were based in Llay near Wrexham. They operated for about twelve years from 1977 and, like Torch, manufactured business machines. Their Series II computer appears to have been aimed at medium-sized businesses and cost £7,900. By early 1980, and despite the price tag, seventy-five customers had bought a Series II.

Driven partly by nostalgia and partly to acquire a definitive set, this ongoing project has demonstrated the significant contribution Wales has made to the computer industry. That influence is still being felt, as one of the three machines that the Museum needs to complete its collection is an Apple iMac manufactured by the LG Corporation of Newport.

An example of the iMac is part of the Design Museum's collections as it has been rightly called a modern classic. This is all a far cry from my day when computers that produced more than eight screen colours were only to be found in science fiction novels, and some machines could double as doorstops.

Richard Davies
Curator (Modern Industry), Department of Industry

Beyond Yesterday's Scalpel: The donation of items from the former Miners' Rehabilitation Centre at Talygarn House

As a former coalminer, I was always very familiar with the name Talygarn, one of my great-grandfathers having spent some time there as a patient, as did many of my workmates. The very name entered into the vocabulary of the south Wales miner. If colliers were having a reasonably easy shift it was said to be 'Like Talygarn here' or, if you were not thought to be pulling your weight, you were politely asked 'Where do you think you are, **** Talygarn or what?' Former patients would also talk about the pathway to the lake, which was apparently made of champagne bottles, and the 'pornographic' ceiling paintings, which nobody had actually seen but were rumoured to be 'somewhere in the matron's offices' and involved ducks. There was also the intriguing 'model mine' that was built sometime during the 1960s and used to rehabilitate injured miners back into the routines of the coalface.

In spite of my familiarity with the name 'Talygarn' and, although my wife often travelled there as part of her nursing duties, I had never actually been there myself. I was under the impression that little remained of the house's mining past.

However, during May 2000 I was contacted by a senior member of BroTaf Health Authority who was concerned about some 'mining machinery' which was still at Talygarn, and invited me to visit the house to view it.

There has been a house on the site of Talygarn House, Pontyclun, since 1313. In 1865 the 'quiet, modest structure' was purchased by Mr G. T. Clark, the Dowlais ironmaster, who lost little time in making radical alterations. The present Talygarn House is a substantial stone mansion built in a Gothic Tudor style around 1880 with various extensions built on later during the mid twentieth century when the house became a hospital. A team of Italian craftsmen is said to have worked for three years on the interiors, which are decorated with wood panelling, painted panels and ceilings as well as other features. The house is surrounded by extensive parklands on which were grown, according to legend, specimens of every tree that can be cultivated in Britain.

In October 1923, Talygarn House was opened as a miners' convalescent home maintained by trustees under the control of the South Wales Joint Welfare Committee. Between its opening and 1939 more than 41,000 patients passed through its doors.

In 1943, the Miners' Welfare Commission was requested by the Ministry of Fuel and Power to organise a rehabilitation service for injured mineworkers. The main reason for this was the acute shortage of manpower at that time which made it vitally important to return injured colliers to work as quickly as possible. For this purpose the Commission acquired Talygarn House as a centre for the coalfields of south Wales and Monmouthshire, the Forest of Dean and Somerset. In January 1947 these coalfields constituted the south western Division of the National Coal Board.

Talygarn House – a view along the full size model coalface

By the end of 1949, Talygarn had treated 2,209 patients. Of these 91.3% returned to the mining industry, 69% to their normal work and 23% on lighter work. Of the remaining 8.7%, 2.6% found work outside the collieries, 3% were permanently retired, and 1.9% were returned to hospital for further surgical treatment.

During this period, Talygarn had the services of four orthopaedic surgeons, a matron, and an assistant matron (who acted as a medico-social worker to follow up cases after they had left the centre). Also on the staff were a female physiotherapist, four male remedial gymnasts, and a craft instructor. There were normally around 100 patients in residence at any one time, their ages ranging between sixteen and seventy years old.

The centre was equipped with one large gymnasium and two smaller ones, a radiotherapy and massage department, a plaster room and a x-ray room. Due to the need to harden the men up to return to the collieries, a carpentry shop was provided where patients cut wood, sawed logs and did more specialised woodworking. Miniature stairs and static bicycles were available to exercise unused muscles.

Each patient had a free trip to the cinema once a week as well as a free pint of beer every night. Those who were able to returned home each weekend.

By 1964, some 3,000 patients were treated at Talygarn, nineteen out of every twenty of them returning to the mining industry. During this year a letter to *The Miner* paid tribute to the centre:

There are many hundreds of workmen who are grateful to Talygarn, where extensive, major, delicate and complicated work has been carried out, which were beyond yesterday's scalpels or dexterity. These men are alive, working and have the security and peace of mind which crippled people fight so hard to get. To work means independence!

In 1951 Talygarn became part of the National Health Service. It continued to serve as a rehabilitation and physiotherapy centre until it became 'surplus to requirements' and was put up for sale in August 2000.

I first visited Talygarn during May 2001 and was given a tour of the very impressive house and grounds. However, the most exciting part was being shown into one of the hospital additions to the side of the house. This unassuming red brick structure housed the famous 'Model Mine', which was still largely intact and was much more impressive than I had expected.

The actual structure consisted of a 'mother gate', a fourteen feet high, fifteen feet long concrete tunnel supported by arch girders. This roadway was equipped with dram rails and the metal framework known as 'horseheads', which prevented falls of stone on a real coalface. There were also chain pulleys and a large steel platform to enable patients to practice lifting and taking down, the last arch girder being left held by bolts alone for that purpose.

Talygarn House – an ornate fireplace

There were two reconstructed coalfaces, one above the other, the top one being timber supported with large piles of roughly shaped Bath stone. This face was designed so that patients could practice building roof-supporting stone packs. The lower coalface was rather more interesting, being based on an early-mechanised system with a chain conveyor and individual metal props and roof bars.

On 27 June 2001, Bro Taf Health Authority agreed to donate the contents of the 'Model Mine' to the National Museums & Galleries of Wales as a 'permanent reminder to visitors of the work of the Talygarn rehabilitation centre'. After consultation with Peter Walker (Keeper, Big Pit), Phil Tuck (Technician, Nantgarw), Jon James and Russell Ellis (Conservation Officers, Nantgarw), it was decided not to remove the entire structure. The reason for this was that the 'coalface' had been tied into the surrounding building and could only be removed if the latter was due for demolition. On top of this, the wooden walkways and facades had suffered water damage and were in need of quite extensive conservation.

The coalfaces were dismantled as if they were the real thing. The thirty feet long chain conveyor was broken up into its component parts and removed. The post and bar system was dismantled using temporary supports and a Sylvester prop withdrawer. It must be remembered that we were working in only four feet of height and were unsure about the safety of the concrete 'roof' that divided the two coalfaces. As strict safety measures were taken, and in spite of the heavy nature of the objects being handled, no mishaps occurred and all the chosen items were safely transported to the Collections Centre at Nantgarw.

The Talygarn donation is a unique survival of a complete thirty feet section of a typical semi-mechanised coalface of the early 1960s. I would like to thank Mrs Ann Meredith of Bro Taf Health Authority and the Talygarn security staff for allowing me to visit and photograph the house and grounds.

(By the way, the legendary 'pornographic paintings' turned out to be of a couple of semi-naked cherubs.)

Ceri Thompson
Curator (Coal), Big Pit

Women in their own words

'I didn't go to Brynrefail school. To tell you the truth we couldn't afford it because I had a sister who had just started there and there were two brothers coming up after me. We were seven children, so we couldn't all go. And at that time, the men were the important ones, not the girls because the girls were supposed to look after the house, weren't they? And the men had to bring in the money. So that they could do something apart from quarrying … they were allowed to go to school… I would have liked to have had the opportunity, but I saw the sense in it – they couldn't afford it.'

These words, spoken by Jennie Eirlys Williams of Deiniolen (born 1920s), are just a small part of the oral testimony recorded by a unique Wales-wide project which is being archived at the Museum of Welsh Life. Supported by the Heritage Lottery Fund and operated by *Merched y Wawr* in partnership with Trinity College Carmarthen, *The Oral History of Women in Wales (1920-60)* aims to record the life histories of hundreds of Welsh-speaking women through mobilising *Merched y Wawr's* extensive regional network of 250 branches and 7,000 members. The project is the brainchild of *Merched y Wawr's* president, Catrin Stevens, a former curatorial member of staff at St Fagans and now a lecturer in history at Trinity College. Although the bulk of the recording is done by two field officers (trained by the Museum of Welsh Life), they in turn have trained ordinary members of *Merched y Wawr* to interview and record older members.

Women in Swansea Training College, 1955 (Donor: Iona Edmunds, Llanelli)

Thus far, about 750 women have been interviewed, and the recordings generated fill a well-defined gap in the information we hold about the lives of women in Wales. Although the Museum of Welsh Life (through the efforts of Minwel Tibbott, an Assistant Keeper at MWL until 1995) pioneered the recording of women's oral history in Wales, the topics covered were largely restricted to domestic and practical issues, and the bulk of the fieldwork was done mainly in the late 1960s and 1970s (the interviewees having been born in the late nineteenth/early twentieth century).

The aim of this project has been to record the lives of a generation of Welsh women who have seen great social, cultural and linguistic change, covering topics such as women's welfare, paid employment outside the home, leisure and popular culture, and political involvement. Another less obvious benefit of a fieldwork project such as this is that it forms a valuable archive of Welsh speech – a linguistic snapshot in time of a whole generation of Welsh women that will be a rich source of data for dialectologists and sociolinguists. It has also resulted in the collection of a valuable photographic record of the lives of the women recorded, which is also contributing to the Museum's archives.

However, it is not only the archives that have benefited from this project. Within *Merched y Wawr*, it has promoted an awareness of the value of their testimonies as a historical source as well as the development of the skills to record them. In time, these life stories will be made accessible to younger generations not only through the educational pack planned by *Merched y Wawr*, but also through the Museum's publications and displays.

Beth Thomas
Keeper of Social & Cultural History, Museum of Welsh Life

Aluminum Palaces

In order to recreate an authentic picture of life in a prefab an appeal was published in the local newspapers during the summer of 2000, asking for information from past-occupants regarding their lives in these special buildings. The Museum received over forty letters containing priceless first hand information about life in prefabs.

The prize for the best letter went to Mrs Ann Owen. For two years she, her husband, who returned home from the army in December 1945, and two children, stayed with their parents until they were allocated a prefabricated bungalow in Cefncoedycymer near Merthyr Tydfil in April 1947. In the letter she describes their initial reaction to their new home, the community on the new estate and more importantly from our point of view, how they went about furnishing their new prefab:

'The Prefabs looked strange to us, they were grey in colour and neat and fresh if unusual … We entered the front door that was painted green, as also were the windows and back door, we found the interior was cream and green right through, very much to our taste.

We were in a narrow hall with a cupboard for coats etc. on the right, on the left a toilet, an indoor toilet. What luxury! Then a bathroom with a hand basin and airing cupboard. We were delighted, this was much more than we had expected. To our right were the two bedrooms, with wall wardrobes and cupboards, splendid! We decided the smaller room for the children … The living room was next, a large room with more cupboards and drawers. The fireplace was to our left …This heated the water, we were going to have hot water on tap. It was incredible and with two small children, it was almost too good to be true.

The kitchen was still to come, it had everything, my husband by this time was speechless with happiness. I went along the green units opening cupboards and drawers, a boiler for washing clothes, an electric cooker and most remarkable of all a fridge. We couldn't believe our good fortune … All I had to get was a table under the window, net curtains and floor covering …We had taken a tape measure with us so that we could measure the windows for curtains and the floors for coverings, this took some time, then we had to decide how to spend our coupons. This was a worry and a problem. We were fortunate in having been able to collect some furniture from family and friends. We made lists and more lists and crossed out and added, then decided on essentials and once we were in we could gradually collect what we did not have.

We had to cover the floor boards and bought linoleum for each room. The curtains I was able to make. My mother had given me her Singer treadle sewing machine. We had also made a woollen hearth rug during the previous winter. When the floors were

The children's bedroom in the prefab at the Museum of Welsh Life

The prefab's living room

covered and the curtains up we felt we had a home, we bought what we had coupons for in the way of furniture and moved in. We were thrilled and excited at having our first home, with what we thought every modern convenience.

We had bought a Rexene three piece suite, it was brown and I was able to put material, orange, green and beige … striped to cover the cushions and make curtains to match. We also bought a dark oak dining suite consisting of four chairs and an extending table. I'm still using the table. We had one fireside chair given to us and were able to buy another.

We were fortunate in having a complete bedroom suite and I was able to buy a wicker chair and a carpet mat. I had to buy a bed for my son and as our coupons were exhausted, the manager of the shop where we had bought our furniture had one made for us out of an old mahogany table, it was splendid. My daughter's cot, made by my husband, had sides we could remove and she had a little bed. There was a small coffer, I had when I was 21, between the beds and a carpet mat.

We had linoleum in each room. Rust and cream in the kitchen, autumn leaves in the living room, green and cream in the large bedroom and blue in the children's bedroom.'

Through the information gleaned from this letter and numerous others, we were able to furnish and interpret our prefab at the Museum of Welsh Life as it would have been in 1950.

Mared Wyn Sutherland
Assistant Curator (Domestic Life), Museum of Welsh Life

The Welsh Slate Museum clock

A prominent feature within the front elevation at the Welsh Slate Museum in Llanberis, Gwynedd, is the diamond-shaped face of the clock. Above it, on the roofline, is a small pagoda-like structure containing a bell and hammer, connected to the clock by a wire rope linkage. Early photographs of the building – erected in 1870 – show no evidence of the existence of this structure, and I am reasonably sure that the clock was not installed until the mid-1890s

The mechanism, installed on the second floor of what has by now become part of the Museum's administrative area, was manufactured by J. B. Joyce and Company of Whitchurch, Shropshire. It does bear a date, but this is now almost illegible – hence the inability to provide a firm date for installation.

The Museum is located within the Victorian workshops of the Dinorwig Quarry. The clock was more than simply a timekeeper for the workshops – though this alone must have been an important function, given the need to ensure the timely dispatch and arrival of trains carrying slate along the Padarn Railway from here to the Company's port at Port Dinorwic. At some stage in its life, a series of electrical connections were provided which enabled the clock to transmit, at set intervals, an electrical impulse to other parts of the Quarry Company's very extensive site. This was a means of ensuring that blasting happened on time. Such systems, usually marketed as 'pulsynetic clocks', were being provided by well-known makers such as Gent, Leicester; Dinorwig, typically, provided its own home-made, reliable, solution.

The clock above the entrance to the Welsh Slate Museum, Llanberis

A power supply was, of course, required in order to provide the electrical signals. This was supplied via wet cells, or accumulators, stored alongside the clock. One of the pleasurable discoveries made when renovating this part of the building, in the mid 1990s, was the uncovering of original graffiti on adjacent walls and panels noting the dates of battery charges. On June 10, 1909, for example, we know that Willie Owen Williams and George Hughes charged the batteries.

Although well cared for over the years, it became clear by early 2001 that the clock would require specialist attention. The satisfying discovery was made that J.B. Joyce and Company were still in existence, still at Whitchurch, and by now almost three hundred years old. Unfortunately, they have no records of individual clocks manufactured, but were fully prepared to visit the Museum, inspect and report on our clock. We ended up having the mechanism returned to the Joyce workshops where it was cleaned, all working surfaces polished, escapement pallets refaced and adjusted, and drive bevel gears and dial motion works serviced: all was then reassembled, brought back to the Museum, and commissioned. The clock now works sweetly and accurately, proving to be a precise timekeeper.

At a time when comparatively few people possessed wrist watches, the clock installed in the Dinorwig Quarry workshops was a timekeeper for its surrounding community, with its bell being audible to most of those living in and around Llanberis. To quote one local author:

'Torrai ar y distawrwydd yn nhrymder nos, a chlywyd aml i glaf yn cwyno yn y bore, "Chysgis i ddim gwerth neithiwr – clywed yr hen gloc yn taro pob awr nes iddi 'leuo"'
('It relieved the silence of the depth of night, and quite frequently one would hear of those who were unwell complaining the next morning, "I didn't sleep well last night – I could hear the old clock striking each hour until it dawned"'.)

It is pleasing to know that the old clock will continue to measure the passage of time into the twenty-first century at Llanberis.

Dafydd Roberts
Keeper, Welsh Slate Museum

Distinguished Service: Campaign and Gallantry Medals

The 450 or so campaign and gallantry medals in the NMGW collection form a small but visually attractive and historically rich element of the numismatic collections. The Museum's collection of British medals was essentially formed in the 1920s thanks to gifts from two men. In 1922, Colonel Sir William Watts, formerly Commander of the 3rd Battalion, the Welch Regiment, donated his collection of 105 British naval and military medals. This had in fact been on loan to the Museum since its foundation, having been transferred with the collections of the Museum of Welsh Antiquities, NMGW's predecessor museum in Cardiff. For several years from 1923, the Cardiff cigar importer, W. Lisle Bowles, also made generous gifts of similar medals. The Museum thereby gained a representative collection of British campaign medals, from the battle of Waterloo (1815), the first engagement for which all participating received a medal, and the Victorian retrospective awards for the Napoleonic Wars, through the colonial wars of the later nineteenth century, to the Great War of 1914-18 and beyond. However, neither was a specialist collector, so examples with Welsh associations formed only a small part, and there were few gallantry awards. In more recent years, therefore, occasional purchases and donations have concentrated on these two categories, our stated policy being to collect medals 'relating to the deeds of Welsh people'.

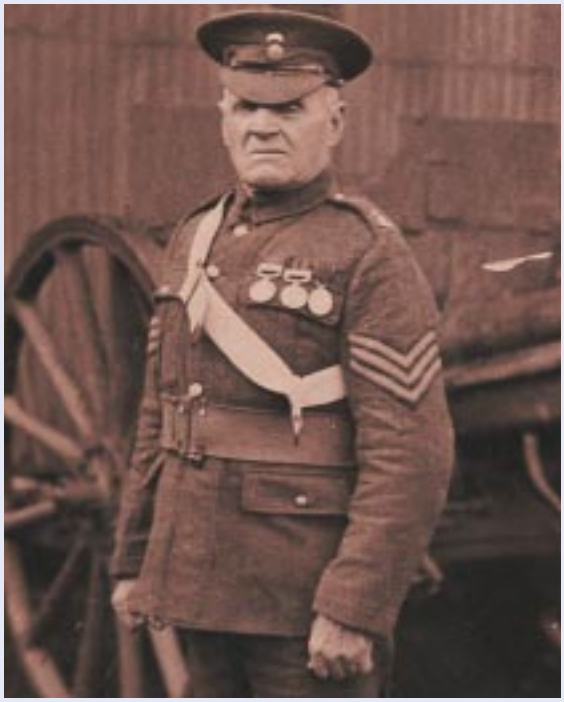
Important military medal groups acquired have included those of a Rorke's Drift veteran (see box); the Victoria Cross and other medals of Anglesey seaman William Williams, RNR, a 'mystery' award for service in Q-ships (disguised armed merchantmen used as bait for enemy submarines) in the sinking of UC 29 on 7th June 1917; and the 'Battle of Britain' (1940) Distinguished Flying Medal group of fighter pilot Glyn Griffiths, from Llandudno. The earliest military award in the collection dates from the English Civil War: the badge for the 'Forlorn Hope' (selected troops who acted as vanguards), a royalist award of 1643 introduced at the suggestion of Thomas Bushell, mining engineer and erstwhile master of the mint at Aberystwyth.

Silver badge 'for the Forlorn Hope', 1643. This would have been worn sewn to a sash or tunic

Civil gallantry, too, has an honoured place. The Albert Medal was introduced in 1866, at first awarded for gallantry at sea, but extended to the saving of life on land in 1877 to reward the heroes of Tynewydd Colliery, Rhondda, for the successful rescue of five colleagues trapped by flooding for nine days deep underground. Several Albert Medals relating to this incident are in the Museum's collection, including the gold

South Africa Medal 1877-79: '1428 Pte E. Jones 2.24th Foot'

Sergeant Evan Jones, c.1917. He was born in Ebbw Vale in 1859 and enlisted in the Monmouth Militia in 1874, joining the 24th Foot in 1877. He served in South Africa, where on 23 January 1879 he was one of the tiny garrison that held Rorke's Drift against a massive Zulu attack. He later served in the Mediterranean, India and Burma, and remained in uniform with various units until 1920. He died in Welshpool in 1931.



Albert Medal in bronze 'Presented by His Majesty to Walter Cleall for gallantry in saving life at Cardiff on the 11th August 1919'

Walter Cleall (1897-1983) rescued a maid trapped by fire on the sixth floor of the Royal Hotel, Cardiff, carrying her to safety along a narrow parapet. Photographed c.1920, he is wearing the Albert Medal and three Great War service awards. On his right chest is probably the medal of the Society for the Protection of Life from Fire (Kenneth Williams Collection).

examples presented to Isaac Pride, collier, and to the engineer William Beith. When the Edward Medal was created in 1907 for gallantry in mines and quarries, one of the first two awards went to a Welshman, Henry Everson, of Penallta Colliery; the medal was donated to the Museum by his son in 1978.

In December 1971, the Albert and Edward Medals were revoked and living recipients were deemed to hold the George Cross (GC). Of those who elected to exchange awards, seven chose that their previous medals be donated to the Museum. Two of these, Gordon Bastian and Eynon Hawkins, held the Albert Medal for gallantry at sea, having rescued fellow crewmen in torpedoed merchant ships in 1943. Three 'land' Albert Medals are those of Walter Cleall (see box); Cardiff policeman Kenneth Farrow, who attempted to save a small boy from drowning; and Margaret Vaughan who as a schoolgirl saved a boy caught by the rising tide at Sully Island, near Barry, from drowning. Former miners Bert Craig (Nixon's Navigation Colliery, Mountain Ash, 1922) and Thomas Thomas (Brynamman Colliery, 1933) donated their Edward Medals and in 1988 the Museum also acquired Craig's 'replacement' GC.

In 1990, NMGW took the opportunity afforded by the sale of an important collection to acquire three George Medals, all early awards with Welsh connections. The George Cross and George Medal (GM) were created in 1940 to recognise respectively 'heroism' and 'great gallantry' other than in the face of the enemy – primarily a response to the increased exposure of civilians to great danger during the Blitz. On 19 August 1940, the Royal Naval fuel depot at Llanreath, Pembrokeshire, was bombed and burned for seventeen days, destroying over thirty million gallons of oil. Norman Groom was one of 650 firemen who fought the blaze and one of three Cardiff men to receive the GM. John Llewellyn Davies rescued a family of four from their wrecked and dangerous house at Chingford, Essex in September 1940; and Thomas Keenan, a nightwatchman, removed an incendiary bomb from the top of a tank containing 300,000 gallons of petrol at a depot in Ferry Road, Cardiff, on 2 January 1941.

The awards highlighted here form just the tip of a historical iceberg. Unlike those of any other country, Britain's campaign medals and most gallantry awards have, since the early nineteenth century, been impressed with the name (and for military awards the number, rank and unit) of their recipients. The pride that was taken in the receipt of such awards is evident from early photographs and reflected in both the designs – often by leading artists of the day – and their production, usually by the Royal Mint, a byword for quality. Even the millions of campaign stars and medals of the Great War of 1914-18 were individually named, though those of the Second World War were issued unnamed, presumably to save costs. Most medals are, therefore, starting points for historical research into the lives and deeds of individuals. We learn, for instance, that Private Charles Symonds, South Wales Borderers, died in July 1915 defending Aden against the Turks – very much a forgotten war. Current curatorial work on the campaign medals in the NMGW collection will lead to publication of a catalogue list and some of the individual stories on the Museum's website. It is hoped that in this way, feedback from visitors to the site may expand our knowledge and understanding of these tales of 'distinguished service'.

Edward Besly
(Numismatist), Department of Archaeology & Numismatics

Saving the Jackson Collection of Silver

In August 2000, NMGW learned that 217 pieces of British and Continental silver, mostly dating from the sixteenth, seventeenth and eighteenth centuries, which have been at the National Museum & Gallery since we first opened our doors, were to be withdrawn and sold. These comprised half of a collection formed by Sir Charles Jackson, a Welsh lawyer and businessman, which had been on loan to the National Museum of Wales since 1923. After several months of negotiation and fund-raising, they were bought for the Museum for £554,400, taking advantage of tax concessions that benefited both the vendor and ourselves, and with considerable help from the National Heritage Memorial Fund, the National Art Collections Fund, and the Worshipful Company of Goldsmiths. The rest of the Jackson collection, which still belongs to another member of the Jackson family, remains on long-term loan to us.

Sir Charles Jackson (1848-1923) was born in Monmouth, and was an architect and lawyer with business interests in newspapers and Cardiff property. He was probably the most influential of a group of late-nineteenth-century collectors and antiquarians which included Robert Drane, T. H. Thomas and Wilfred de Winton, who influenced the development of the Cardiff Museum and later played a role in securing the National Museum of Wales for Cardiff. Jackson's two principal publications, *English Goldsmiths and their Marks* and *The Illustrated History of English Plate* are the foundation of modern silver scholarship. He corresponded with all the major collectors of his day, and his collection encapsulates knowledge of historic silver in Britain around 1900.

Some of the acquisitions are of outstanding aesthetic quality; such as a London-made shell-form spice box of 1609, and a massive tankard of 1679. Great rarities include an early-fourteenth-century acorn-top spoon, which is one of the very first hallmarked pieces of English silver, and a complete set of 'apostle' spoons (twelve apostles and the 'Master'), with marks of Daniel Cary, London, 1638. The most important single object is probably a two-handled cup and cover decorated in the swelling 'auricular' style associated with the Dutch silversmith Christian van Vianen who worked for the Court of Charles I in the 1630s, and was in London again in the early 1660s. Hallmarked 1668, this cup is one of a handful of London-made pieces of the period influenced by van Vianen's pattern book, *Modelles artificiels de divers vaisseaux d'argent* of 1650. The maker's mark, a monogram, remains unread, but

Two-handled cup and cover, decorated in the auricular style, London 1668

Sir Charles Jackson (1848-1923)

may be that of George Bowers, 'embosser in ordinary' to Charles II, or of Jean-Gerard Cooques, another 'alien' goldsmith patronised by the Court.

Unusual, inspirational pieces in the Jackson collection include the earliest-known silver wine taster, a seventeenth-century Catholic chalice made in Cork, which can be taken apart for concealment, a mid-eighteenth-century cream jug in the shape of a cow by another Dutch immigrant, John Schuppe, and an inkstand in the form of a library globe. The collection's range of more common objects, such as salt cellars and cream jugs, shows the evolution of shapes over time, and tells much about social customs, particularly at table. The astonishing sequence of spoons contains almost every type made over a period of 400 years.

Although the collection contains many rare and beautiful objects, that was not in the end the principal reason for believing it should be kept intact. The Jackson collection also has a unique academic value. Jackson's *English Goldsmiths and Their Marks* (1905) was the first attempt to publish complete tables of British and Irish hallmarks and makers' marks and today (in a revised 1989 edition) it is still the key reference work for all students of British silver. The *Illustrated History of English Plate* (1911), at that time the most comprehensive study of its kind, was similarly influential. In compiling and illustrating these works Jackson drew heavily on his own collection, which traces the development of styles and object types particularly well – in the case of spoons, perhaps better than any other collection. It is therefore a unique reference source and remains the subject of regular enquiries from silver specialists all over the world.

The Jackson collection also complements and enriches the Museum's own outstanding collection of historic plate, much of which is associated with the historic governing families of Wales. The acquisition after eighty years of half the Jackson collection, and the likelihood that the rest will one day follow, means that NMGW can sustain and develop its role as the home of one of Britain's principal study collections of historic silver.

Oliver Fairclough
Keeper of Art

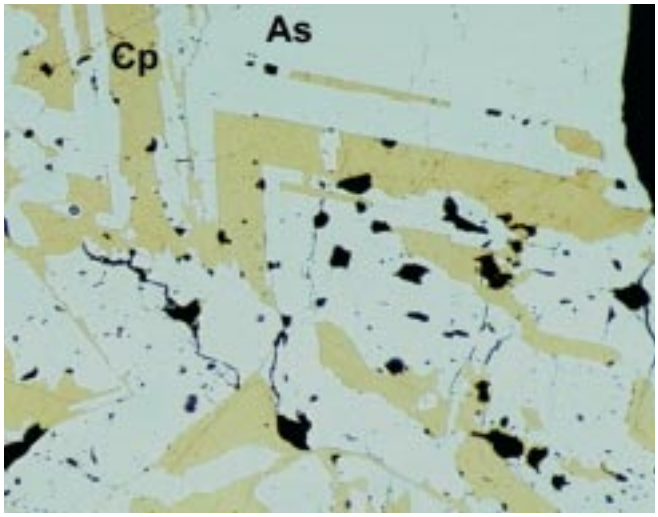
The Gilbey Gold Collection

In 2001, the National Museums & Galleries of Wales acquired the J. W. G. Gilbey Collection of ore samples from the Dolgellau gold-belt. This collection, made over thirty years ago during study for a doctorate degree, is without doubt the most important research collection of Welsh gold-ores ever amassed.

The presence of gold in Wales was known to the Romans, who worked gold-bearing mineral veins at Dolaucothi, near Pumpsaint. This is quite astonishing, given that the gold is not visible to the naked eye, occurring only as microscopic grains enclosed in sulphide crystals. However, it was not until 1845 that the gold content of the mineral veins of the Dolgellau area was first appreciated. This, too, is astonishing given that in the Dolgellau veins the gold is visible to the naked eye, and the veins had long been worked for their copper and lead. In addition, small gold flakes and nuggets were formerly common in the gravels of the Afon Mawddach and the Afon Wen. In geological terms, the origin and timing of the gold mineralising event are quite poorly understood. Only recently, for example, has it been shown that the mineralisation developed before the period of uplift and folding known as the Caledonian Orogeny, c. 400 million years ago. Prior to a paper published in 2000 by Mason, Fitches and Bevins (in the *Transactions of the Institution of Mining and Metallurgy*), previous studies, based on an erroneous radiometric age date, had suggested that the mineralisation developed after the orogenic events. Such a difference has a profound influence on models proposed for the origins of the mineral veins. The only significant research study undertaken on the gold-bearing mineral veins across the whole of the Dolgellau gold-belt was that by J. W. G. Gilbey in the late 1960s, when he was a research student at King's College, University of London. Other Dolgellau gold-belt studies have tended to focus on particular mines.

Appropriately, NMGW holds the finest collection of gold samples from Wales. A particularly valuable set of specimens was acquired in 1927 as part of the G. J. Williams collection of minerals, rocks and fossils. G. J. Williams was Inspector of Mines for Wales, and had the opportunity of visiting many metal mines in Wales when they were operating. Over the years, further samples have been acquired by donation or purchase and recently two fine gold nuggets were acquired from an exploration company who have a Crown Licence for gold prospecting in the Dolgellau area. The largest nugget in the acquisition weighs some 21.32 g.

Acquisition of the Gilbey research collection came about by a set of coincidences. Dr David Alderton, a Senior Lecturer in Geochemistry at Royal Holloway and Bedford New College, has long collaborated with our Department of Geology, and, with Richard Bevins (Head of Mineralogy & Petrology), he has researched the significance of fluid inclusions in quartz crystals, so-called 'Merthyr diamonds', from the South Wales Coalfield. David Alderton also has an interest in mineral deposits, in particular, gold-bearing mineral deposits. Quite by chance, J. W. G. Gilbey's son studied geology at Royal Holloway and Bedford New College, and was taught by David Alderton. It was through this connection that the collection of ore samples from the Dolgellau gold-belt, which formed the basis of Gilbey's PhD thesis, came to be donated to the Museum.



Chalcopyrite (Cp – copper iron sulphide) veins in arsenopyrite (As – iron arsenic sulphide) from Ffridd-Goch gold mine in the Dolgellau Gold Belt. The area illustrated is only a few millimetres across, and is a polished ore sample viewed through a reflected light microscope. This is just one of many superb samples that constitute the J. W. G. Gilbey Collection, recently donated to NMGW

One of the most important aspects of the collection are the polished blocks of ore-minerals. These are small chips of ore material, set in resin and polished on one side to an optical quality. Polished blocks allow the ore mineralogist to study the relationships of the various ore-minerals under a special microscope which displays the sample surface in reflected light. The image reproduced here was taken using a reflected light microscope with a camera attachment.

Now, for the first time, some of the interesting discoveries made by Gilbey, and only ever reported in his thesis, can be checked utilising the latest techniques, in particular using the new analytical scanning electron microscope acquired jointly with the University of Cardiff. In addition, the samples in the Gilbey Collection will provide material for new studies into the origin and timing of the gold-bearing veins of the Dolgellau area.

Richard Bevins
Head of Mineralogy & Petrology, Department of Geology

Research

The articles presented here, from the natural sciences, social history, art, geology and archaeology, exemplify the diversity of NMGW. But all, being based on objects, reiterate the core of the Museum: its collections. In order to educate we need knowledge, and the research activities of the Museum reflect our commitment to expanding the knowledge-base associated with the collections. This research gives a greater insight and hopefully a more valuable experience for all those who use our collections either as a visitor to the galleries or other researchers working on the collections. Museum research should also be seen in a much wider context and such integration is evidenced by an increasing number of partnerships, research contracts and research grants. These illustrate the demand for museum-based expertise and through our research we can project both NMGW and Wales as a centre of excellence at both national and international levels.

Graham Oliver
Keeper, Biodiversity & Systematic Biology (BioSyb) Department

Rodrigues International Biodiversity Workshop, 2001

Rodrigues is a tropical island lying some 600 km east of Mauritius in the Indian Ocean. It is only 20 km long but is surrounded by the largest coral-fringed lagoon in the western Indian Ocean, which is up to 13.5 km wide in places. Once home to the Solitaire bird, a relative of the Dodo, it was described as a verdant island by the first Europeans who landed on that uninhabited paradise. As human colonisation progressed most of the forest and indigenous land fauna was lost but the lagoon remained relatively unspoilt and became the major source of food for the growing human population. Reliance on the lagoon remains to this day but a number of impacts now threaten it's health. Since the loss of the forest, soils have been seriously eroded and washed into the lagoon, there is evidence of over-fishing, and tourism is expanding. In order to assess these impacts a number of projects were initiated by the Shoals of Capricorn Programme, a Royal Geographical Society project. However, these were hampered by the lack of understanding of the fauna and flora within the lagoon. In western Europe there is a relatively complete inventory of the fauna and flora accompanied by identification guides which facilitate all other biological research. Such fundamental knowledge is largely absent for Rodrigues and indeed for most of the Indian Ocean.

In order to begin to address this lack of a biodiversity inventory an international workshop was organised by the Shoals of Capricorn team in conjunction with NMGW's Department of Biodiversity & Systematic Biology and led by Dr Graham Oliver (Keeper, Biodiversity & Systematic Biology). The aims were to produce a species-level inventory of the fauna and flora of the Rodrigues lagoon; to strengthen regional links and offer capacity building to regional participants; to provide training in identification, collection and preservation of these taxa; to produce educational posters to raise awareness of local biodiversity; to assist in locally-led future lagoon management; and to assess the place of the Rodrigues fauna and flora in the regional context of Indian Ocean biogeography

International taxonomic experts came from eight different countries, including Wales, and were joined by regional delegates from around the Indian Ocean region. Together with the Shoals' Rodrigues team the workshop participants numbered forty and posed considerable logistical problems in this remote site. Scuba gear, boats, vehicles and sampling equipment had to be assembled. Accommodation for all delegates, tolerant of the early starts, late evenings, wet clothes and various biological specimens, was found in a guest house in the main town of Port Mathurin.

Researchers at the Rodrigues International Biodiversity Workshop, 2001

HRH Prince Michael of Kent discussing echinoderms with Matt Richmond (Tanzania) and Jean Maharavo (Madagascar)

The workshop also hosted a visit by the patron of the Shoals programme, HRH Prince Michael of Kent and preliminary results were presented at a conference at the end of the workshop in Mauritius entitled 'Understanding our lagoons and shallow seas: an integrated approach'. Both events facilitated awareness of the Shoals Programme and the workshop by the regional politicians and media.

Not only was taxonomy introduced to the regional delegates but also training in sampling and monitoring methods. A GIS (geographical information system) developed by John Turner and Bryony Chapman of UC Bangor was used to integrate all the data and now provides a readily accessible view of the distribution of habitats and species in the lagoon.

The frenetic activity of collecting and identifying samples rapidly developed the inventory of species. By the end of the workshop over 1,000 species had been recognised and an increase of 500% on previous literature data.

Species lists are, as yet, incomplete, with the taxonomists needing to refer to literature and type specimens in museum collections to confirm identification to species level. About 100 species potentially new to science have been found within the lagoon fauna.

For many of the taxa considered by the workshop, Rodrigues appears to be less diverse than other locations in the region, with the notable absence of certain species common elsewhere in the area, factors possibly due to the absence of large seagrass beds and mature mangrove forests. Even the preliminary results will contribute enormously to the understanding of local biodiversity and will be invaluable to the basis of future biological and ecological studies of the lagoon and reef.

However, more work remains to be done both on species covered in the first workshop and on those groups which could not be considered during that initial workshop due to logistical constraints.

The workshop generated considerable interest in the region and currently plans are being laid by Shoals Rodrigues for a series of similar events in Seychelles, Mauritius, Comores and Madagascar. If all goes well the next in the series will be Comores 2003.

This event has illustrated the role of the collections and expertise currently centred in the developed countries of the world and, in particular, the former colonial powers. Between the NMGW and the University Colleges of Wales, Wales is in an excellent position to play a role in capacity-building in the developing world and, in doing so, can increase its recognition as a centre of excellence for marine biological research.

Eric Coppejans collecting and advising on field identification of marine algae (seaweeds)

This workshop was supported by the Indian Ocean Commission, the European Union, the UK FCO Environment Project Fund, the Abercrombie and Kent Global Foundation, the United Nations Development Programme Global Environment Facility Small Grants Programme, Air Mauritius, Sun International, the Royal Society, the Mauritius Oceanography Institute and the Worshipful Company of Scientific Instrument Makers.

Dr Graham Oliver
Keeper, Department of Biodiversity & Systematic Biology

Sources for the study of Welsh rural dress

One problem in any study of dress in Wales is that the postcard image of the 'Welsh Lady' has become such a strong one that it is difficult to excavate a true picture, particularly in an area of textile history where little material culture survives.

In order to discover the true nature of rural dress within Wales during the eighteenth and nineteenth centuries, it is necessary to investigate contemporary sources, though many of them must also be approached with great caution. For the earlier period, the main sources are manuscript and published accounts, diaries and letters of travellers to Wales, together with paintings produced by artists who journeyed through Wales at this time. From the 1830s, there are more frequent accounts from those who lived in Wales, and had an interest in the Welsh language and traditional ways of life, not only artists and historians, but also enthusiasts such as Augusta Hall, Lady Llanover.

Later in the century, the arrival of the railways brought the beginning of mass tourism, which engendered the production of souvenir prints, china and, finally, postcards. Fortunately, there were also numerous photographers with a real interest in traditional culture and rural crafts and agriculture, who have recorded a lost society, and, incidentally, their clothing. Finally, there is material culture, the surviving garments, worn for various reasons and with various conscious and unconscious motives. Most of the existing garments in museum collections date from the middle of the nineteenth century onwards.

All of these sources can be problematic. Most of the literary sources are outsiders' accounts which concentrate on the quaint and unusual. Paintings can be romanticised and photographs were often staged. Much of the surviving material culture consists of 'conscious' Welsh costume rather than genuine occupational garments. The huge interest in national identity at the beginning of the nineteenth century within Wales, which resulted in the creation of an artificial 'standard' national dress, has for many years hidden the true, varied image of the rural population. Careful analysis can, however, bring to the surface quite a body of evidence for the actual garments worn in everyday life, particularly with regard to occupational dress. It is certainly possible to identify certain central elements of rural dress, such as the general use of woollen fabric, the wearing of aprons, kerchiefs and men's hats, some surviving as part of rural dress even into the twentieth century.

Only aprons and shawls have survived in any number, dresses and skirts mostly having worn out or been used as rags. This is hardly surprising when one considers the condition of some of those depicted in photographs. A number of flannel petticoats, however, have survived, perhaps due to the fact that, as undergarments, they received a measure of protection. Many

Watercolour sketch of Welsh woman knitting, showing footless stockings, mid-19th century

of these have been accessioned into museum collections as examples of 'Welsh costume', but are in fact not garments belonging to a conscious 'national' dress at all, but real 'peasant' or rural dress, part of the flannel wearing tradition.

In terms of these basic garments and also the general use of woollen cloth, the national dress borrowed directly from the clothing worn by women in the countryside, and their use as part of the created national dress has ensured their survival.

For a full discussion of this subject, see the article 'Welsh Peasant dress – Workwear or National Costume' in the May 2002 issue of *Textile History*.

Christine Stevens
Curator, Domestic and Rural Collections,
Museum of Welsh Life

Caerleon Roman Amphitheatre: changing ideas

As part of the celebrations marking the 150th anniversary of the Roman Legionary Museum, Caerleon, the amphitheatre was once again populated by the Roman army (the Ermine Street Guard) and nine gladiators imported from Italy. The Roman indulgence of gladiatorial combat returned to Caerleon for the first time in almost two thousand years. A huge crowd, squeezed onto the surviving banks of the amphitheatre, looked on in anticipation, but although no blood was spilt a number of ribs were cracked and the spectators went home satisfied. The amphitheatre still makes an excellent arena for events today, but what did it look like in Roman times?

The well-preserved oval amphitheatre, known to local folklore as King Arthur's Round Table, lies outside the walls of the Roman fortress. The archaeologist most closely associated with the amphitheatre is Dr R. E. M. Wheeler (later Sir Mortimer), who was appointed Keeper of Archaeology at the National Museum of Wales in 1920. He launched himself into an extensive programme of excavation in Wales at the Roman forts of Segontium (Caernarfon) and Brecon. His great energies were readily recognized and in 1924 he was appointed as Director of the Museum, during a period of extensive building work and the need for rapid fund raising. Archaeologically, Wheeler determined that the examination of the great legionary fortress would be his next advance. He decided to begin his campaign at the amphitheatre, since it was well-known, free of later buildings and 'likely to attract the considerable funds required for a long-term programme of work'. This magnetic quality of the site, he saw at once, would owe much to the fortuitous connection with King Arthur, and he was accused by some of shameless exploitation. Wheeler announced his project to the press and the bait was snapped

Italian gladiators in the Roman amphitheatre, Caerleon in 2001. In Roman times the amphitheatre would have served for parades and weapon-training, as well as degenerate and bloody pastimes


WHERE GLADIATORS FOUGHT.

Daily Mail, 17 March, 1926

up: the *Daily Mail* sent their man immediately to Cardiff and within moments, around midnight we are told, an agreement was made that the paper should provide £1,000 for exclusive rights and daily reports on the uncovering of King Arthur's Round Table. In the event the *Daily Mail* eventually trebled its original offer and presented the excavated remains to the then Office of Works (a predecessor of Cadw: Welsh Historic Monuments) as a national monument.

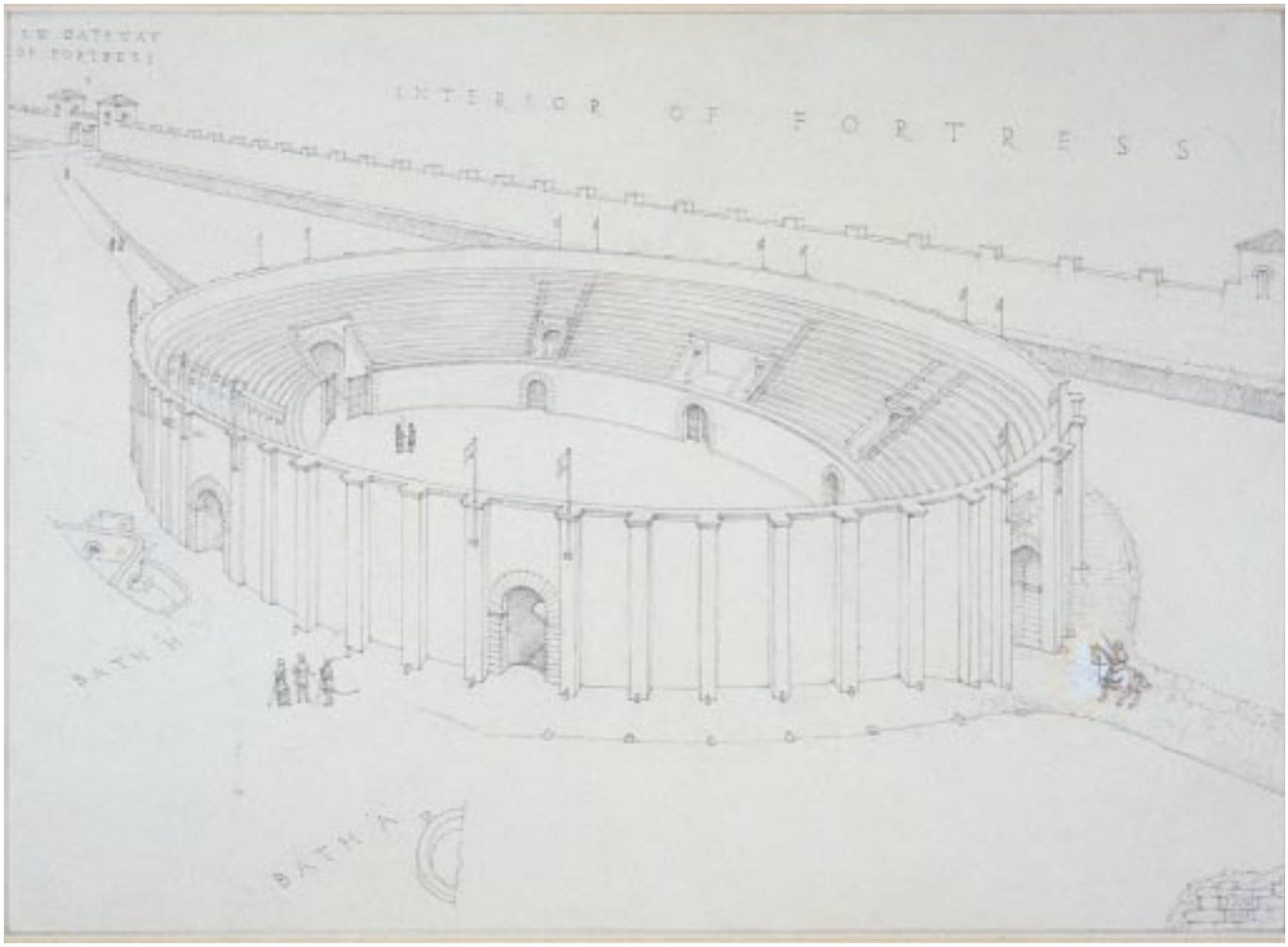
At the beginning of 1926, Wheeler announced that he was leaving for the post of Keeper of the London Museum. It was evident that he would not be able to direct the excavations scheduled for the summer and autumn, but the sponsorship from the *Daily Mail* made the project irrevocable and urgent. His wife, Tessa, took on the advance preparations for the dig and the crucial first season was supervised by Nowell Myres, a promising recent graduate from Oxford. Wheeler himself masterminded the excavation in the background, and Tessa rushed down when she had spare time from moving her

household to London. To redeem Wheeler's pledge, every evening Myres had to supply the *Daily Mail* with a newsworthy story on the day's discoveries, with 'sensational' headlines such as 'Where Gladiators Fought'. When Myres was obliged to quit Caerleon to take up his research fellowship, Tessa Wheeler assumed direction. It was apparent by this stage that the task was going to take very much longer than anticipated. She had to toil for a further eight months and she only returned to London when the history of the amphitheatre had been elucidated and it was ready to be handed over to the Office of Works for consolidation. Photographs and sections of the excavations reveal that all effort was devoted to emptying and investigating the arena, the entrances and exterior wall. It is recorded that the examination and cartage of nearly 30,000 tons of soil cost a total of two shillings a ton.

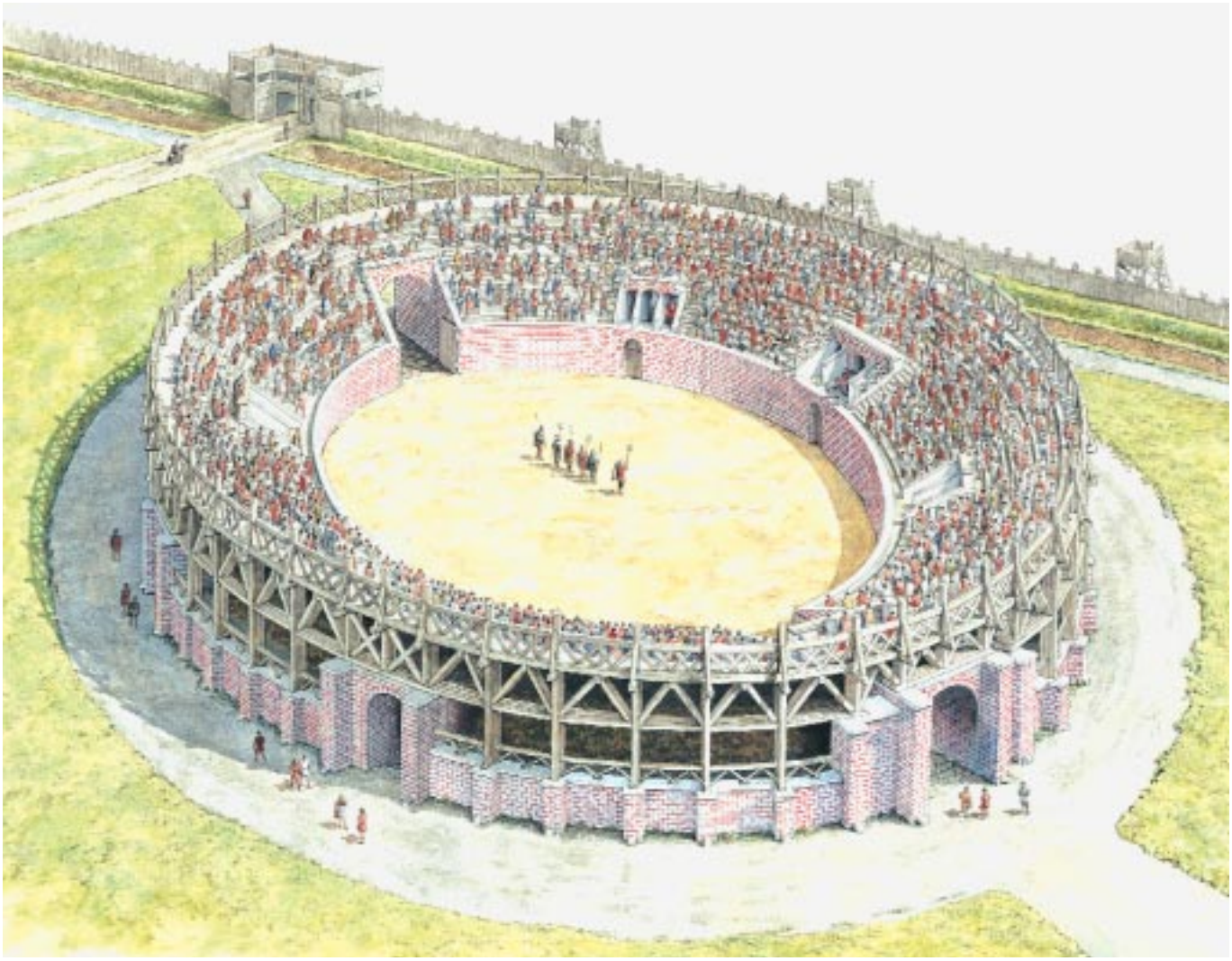
The Wheelers concluded that the amphitheatre had been constructed about AD 80, several years after the initial foundation of the fortress. In their report, published in 1928, they reconstructed the amphitheatre as an earthen and masonry structure; the auditorium was supported by a bank of earth retained by inner and outer walls of masonry. The outer

Mrs T. V. Wheeler standing in entrance B of the amphitheatre during its excavation

wall was supported and strengthened by external and internal buttresses. The original height of the whole structure could be determined with some accuracy, for the remains of the arches and the actual vaulting in the main entrances gave the rake of the vaults, which would have carried the seating over the



Reconstruction of the Caerleon amphitheatre by J. A. Wright for the Wheelers' report on the excavations in 1928. The amphitheatre is shown as a masonry structure to its full height



Artist's impression of how we now think the amphitheatre may have appeared in the late first century. Illustration by Dale Evans (1988) after the reconstruction by R. A. Anderson (1981) (Cadw: Welsh Historic Monuments, Crown Copyright)

entrances. From this it was estimated that the arena wall must have risen to a height of four metres while the external wall must have reached a height of about ten metres. It was concluded that the seats were almost certainly of wood, for no vestige of stone seat was found during the excavations. This is despite the observations reported by Archdeacon William Coxe in 1801 that: 'within memory of persons now living stone seats were discovered on opening the sides of the cavity' – the masonry seen was presumably derived from the surrounding walls.

Alan Sorrell (1904-74) – perhaps the best known painter of archaeological reconstructions in more recent years – also shows the amphitheatre built in masonry to its full height in his painting of 1939. Indeed, it was not until 1962, when George Boon (then Assistant Keeper in the Department of Archaeology, but subsequently Keeper and then Curator) excavated a small trench in the bank between entrances D and E of the amphitheatre, that a fundamental reappraisal of its superstructure was undertaken. This excavation revealed that the banks were never higher than today, for the metalled surface of the original bank was found not far below the turf. Cut into the surface of the bank were pits, a metre square and deep. Boon concluded that these pits had held the vertical members of an openwork timber grandstand. Since then, the amphitheatre has been reconstructed with its lower part in stone, but with a timber superstructure. Although the timber grandstand was perhaps intended as a temporary measure, it may never have been replaced in stone. An amphitheatre of similar construction is depicted on Trajan's Column at Dobreta, the Roman base on the Dacian (Romanian) side of the Danube bridge.

It is estimated that the timber grandstand at Caerleon contained 6,000 seats, approximately the full complement of the legion. Events at the amphitheatre, although undoubtedly less bloody, continue to attract large audiences.

Richard J Brewer
Keeper, Department of Archaeology & Numismatics

Partnerships in the Sea

It is appropriate that the title of a book on marine symbiotic relationships is also that for this article. The book, by Professor Brian Morton (Hong Kong University Press, 1988) and colourfully illustrated by Juliana Depledge – who started her career in painting after winning first prize at the Eisteddfod – details the many different relationships between marine organisms. Similarly, our own scientific studies of the seabed around Wales can also be considered in terms of partnerships – specifically mutualism, where the association benefits all partners.

The particular partnerships that the Museum's Marine Biodiversity Section is involved in concern collaboration at all levels: fieldwork, sample processing, identification of species, analysis of data and publication of results. Such partnerships are highly desirable both for financial and scientific reasons.

Financial – because large scale survey work is expensive. For example, the 1997 South West Irish Sea Survey (SWISS), part funded by the EU INTERREG programme, was launched with a budget of about £250,000 over three years. Hence such work is often difficult to support without sponsorship or by pooling the resources of several institutions.

Scientific – because, despite internationally recognised expertise in the identification of the bristleworms and molluscs that make up around 60% of the macrofaunal life in the sediments, the Museum currently has no staff dedicated to the remaining animals (crustaceans, starfish, peanut-worms, ribbon-worms, sea-squirts etc.).

The Museum commenced its investigations of marine life around Wales in the mid-1980s and by the early 1990s had embarked on a series of large-scale surveys. The first two, published together in 1995 as the 263-page BIOMÔR 1 report on Benthic Biodiversity in the Southern Irish Sea, were initiated by funding from the Museum together with scientific collaboration with the University of Wales Bangor (UWB).

A new publication on marine collections, including those in the NMGW

However, the completion of the project, which involved additional contracted taxonomists and publication of the report, was achieved through sponsorship from Marathon Oil UK, Ltd.

The second major offshore project – SWISS – linked the Museum and Trinity College Dublin as leading institutions, and UWB and Aquafact International Services Ltd, Galway, as associated

Unloading the sandbank faunal samples

partners. In addition, an MSc student and a number of individual contractors were required at various stages throughout the period. The results are being published in a three-part *BIOMÔR 2* report, the first of which (143 pp) appeared last year. The remaining issues are due to come out shortly.

A partnership between the Museum, the Countryside Council for Wales (CCW) and University of Wales Swansea (UWS), with the assistance of UWB, carried out a series of more localised surveys off south-west Wales in 1998. The sampling of Carmarthen Bay, Milford Haven and St Bride's Bay was financed by the Museum with some subsequent funding from CCW. Importantly, the Carmarthen Bay section was linked to two CCW-funded UWS PhD studentships designed to evaluate the behaviour, food and feeding of the Scoter duck – a species that was one of the victims of the *Sea Empress* oil spill in 1996. Museum staff have been closely involved with Andy Woolmer, the student studying the seabed invertebrates that are potential food for the ducks, and he expects to present his thesis later this year. Should sponsorship be obtained, it is likely that this and results from the other locations will form two or three future BIOMÔR reports.

In July 2001 the maiden voyage of the Welsh National Research Vessel (UWB), the *Prince Madog*, marked the start of a new joint NMGW-CCW programme. This has produced the first comprehensive quantitative data (using grabs) of the invertebrate life associated with Welsh sandbanks – from Conwy Bay to the Helwick sands off the Gower. The work is vital in helping support the ratification of the proposed marine Special Areas of Conservation (SACs) that CCW has placed before the European Commission. Sharing the cruise with

UWB personnel who trawled the very same locations as part of a wider study of fish habitats further enhanced the scientific worth of the sandbank survey.

While the importance of these investigations may seem obvious (e.g. for exploration, conservation, or environmental impact assessment) – why, one may ask, is NMGW so involved? The answer is simply that collections, specimens and taxonomic expertise are at the root of all such work.

Museums are the traditional centres of excellence for identifying, classifying and researching specimens. Indeed, collections are the fundamental *raison d'etre* of all museums. Taxonomic teaching and research in our Universities has virtually been replaced by more applied and 'topical' science. Yet, paradoxically, there is an increasing demand on taxonomists capable of fulfilling worldwide, international, national and local biodiversity conventions, strategies and plans. This is likely to become even more acute following the 2002 'Rio plus 10' World Summit for Sustainable Development in Johannesburg which critically assessed the implementation of government promises made at Rio in 1992 and advanced an alternative agenda for a sustainable economy.

Natural history collections are ultimately reservoirs of biological information, whereby specimens represent snapshots of biological life in time and space. From these we can infer distributions and species richness at specific locations, make comparisons with the present and projections for the future. Further, recent technological advances in, for example, DNA analysis are both enhancing the value of historical collections

Staff from NMGW, CCW and UWB working on deck of the RV Prince Madog

Sorting the sandbank samples in the NMGW marine laboratory

and encouraging museums to expand the scope of their collections and storage facilities.

The specimens from our own studies form the mainstay of the Welsh National Marine Invertebrate Collection here at NMGW and from this resource we can revise poorly known animals and describe species new to science. We estimate that about fifty from around 1,000 bristleworm species in UK waters are undescribed. Other invertebrate groups are perhaps better known, but our Irish Sea work still revealed a new species of mollusc. In their own small way, the BIOMÔR reports associated with the current Museum thrust in exploring the marine life around Wales are setting down important markers for the future.

For the future, we intend to extend our marine studies and ultimately map the Welsh seabed. The next area under consideration is that of the Severn Estuary-Bristol Channel. Plymouth Marine Laboratory comprehensively surveyed this in the early 1970s and many of the specimens were recently donated to NMGW. However, a re-survey must be a matter of priority. The newly published report by the Cabinet Office Performance and Innovation Unit (www.piu.gov.uk/2002/energy/report) recommends increasing the proportion of energy obtained from renewable sources to 20% (from ~2%) by 2020 and will undoubtedly focus attention once more on the proposed Severn Barrage and its likely environmental impact.

Looking further ahead, we have had some preliminary discussions with other interested parties about mounting a special 'Museum Centenary Cruise' in 2007. The focus of this exciting venture would be to explore the relatively poorly known Celtic Sea, linking our studies around Wales with those carried out by others at the edge of the continental shelf.

Dr Andrew S. Y. Mackie
Head of Marine Biodiversity, Deparment of Biodiversity & Systematic Biology
(http://www.nmgw.ac.uk/biosyb/marinebiodiversity)

East meets West in Cardiff

Thanks to evidence recently uncovered in the Bernard Leach archive at the Crafts Study Centre, Farnham, a remarkable acquisition of Japanese art came to light in the stores of the National Museum & Gallery, Cardiff. In July 1915, Dr W. E. Hoyle, first Director of the National Museum of Wales, received from his nephew in Japan a long letter confirming that he had just shipped from Tokyo to Cardiff several crates of objects, including utensils for the tea ceremony (*chanoyu*), lacquer, textiles and woodblock prints. A detailed list appended to the letter made it possible to identify at the Museum all but three of these objects, all of them previously undocumented and the purpose behind their acquisition totally lost.

Hoyle's nephew was Bernard Leach, at that time a young artist just discovering the joys of Japanese pottery but soon to become the pre-eminent British potter of the twentieth century. Leach was always as influential for his thinking as for his pots and it is fascinating now to be able to use his correspondence with his uncle and the Japanese collection that he sent to Wales to examine the early development of his ideas.

Leach dispatched the collection to his uncle with some apprehension: *'I hope that you will approve. … I am just a trifle fearful on that score as the* cha no yu *set is what the Japanese call* "shibui" *for which we have no quite adequate word, perhaps austere is the nearest.'*

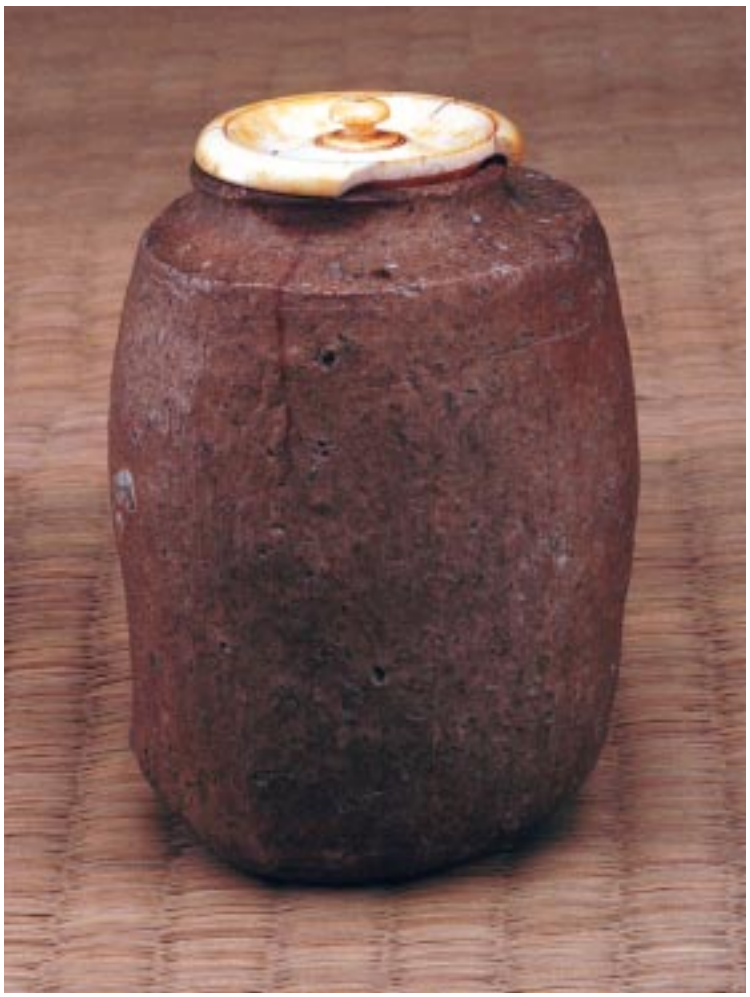
On the other hand, he did not doubt the value and the pioneering nature of what he was doing: *'The reason I have insisted upon the* cha no yu *collection is that it includes diverse articles of purely Japanese character & really good taste in one homogeneous set, suitable for a small display. … The* cha no yu *collection will I think be something unique.'*

Taking advice from tea masters, Leach assembled a selection that embodies the qualities most valued in the Japanese *chanoyu* tradition, following the *wabi* principles established by the sixteenth-century tea master Sen no Rikyū. These dictate that the objects used should not be beautiful in any conventional sense but be simple and unpretentious, possessing more profound qualities that suggest the processes

Chanoyu *objects collected by Bernard Leach*

of nature and contribute to the quiet sense of contemplation that a tea ceremony inspires.

The *chaire* (tea jar) sent by Leach exemplifies these qualities perfectly. It is an example of the roughly made stoneware of Shigaraki, whose products have been prized by tea connoisseurs since the fifteenth century. As befits a revered tea object, it has been given a poetic name, *Funabiki*, meaning 'swelling sail.' It is a delight to hold, the kind of object that guests would traditionally take pleasure in examining and praising after the host has finished serving tea.



Chaire *(tea jar), Shigaraki stoneware, probably late 16th century*

Chanoyu is an art of life, a highly ritualised act of hospitality. Objects are chosen, arranged and handled with meticulous care, so that the combination of objects and people, time and place, makes each ceremony a unique and unrepeatable occasion. Leach was insistent that this spirit of scrupulous regard for the objects be observed at the Museum in Cardiff, including photographs and sketches to indicate the precise arrangement of the objects and finally, in 1924, sending his friend Matsubayashi Tsuronosuke to the Museum to set the collection out in the proper way.

Leach chose tea utensils to represent Japanese aesthetics to the West, no doubt because his own introduction to pottery had been influenced by the philosophy of *chanoyu*. At a party in Tokyo in 1911, he 'was on the spot seized with the desire to take up this craft' as a result of the experience of decorating *raku* ware pots. The rustic, spontaneous character of hand-built *raku* pottery had made it one of the wares preferred for use in the tea ceremony since the late sixteenth century.

Leach was also influenced by the writing of Okakura Kakuzo, whose *The Book of Tea* (1906) he recommended to Hoyle. This short book is a passionate and eloquent plea for the preservation of Japanese heritage, at that time under considerable threat from rapid industrialisation and westernisation. Okakura made explicit the link between tea and the art of ceramics: *Our pottery would probably never have attained its high quality of excellence if the tea-masters had not lent to it their inspiration.*

Okakura used tea as a metaphor for traditional Japan and hoped it could be a vehicle for better understanding between East and West. This must have struck a chord with Leach, whose lifelong personal mission to achieve a creative and philosophical unity between East and West was already evident in 1913.

In later life Leach exploited his unique Japanese experience to bolster his credibility as a mediator between the cultural worlds of Western Europe and East Asia. At times he came unstuck, most notably in 1961 when, relying on the title of Kenzan VII that he had inherited from his pottery teacher in Japan, he confidently attributed to Ogata Kenzan, the first in the Kenzan line, a number of pots that are undoubted fakes. It is also recognised now that the Japanese circles he moved in, and which helped form his own views of Japan, were themselves profoundly influenced by Western thinking and that Leach's claims to have understood an authentic Japanese tradition should be treated with scepticism.

Nevertheless, Leach stands out as one of the key figures in the complex, long-standing and ongoing history of interaction between Europe and East Asia. His choice of objects for Cardiff seems to have been well judged and is important evidence for his understanding of Japan at a formative period in his life. It is fitting, too, that just as tea utensils are valued not so much for their beauty as for their antiquity and personal associations, so these objects are in turn now valued most for their association with Leach himself.

Andrew Renton
Curator (Applied Art), Department of Art

John Brett's *Pearly Summer* in Aber-porth, 1891

John Brett (1831-1902) is best known as a Pre-Raphaelite painter of meticulously detailed works such as *The Stonebreaker* (1858, Walker Art Gallery, Liverpool). He later devoted his career to seascape painting. An attractive and popular exhibition of his luminous Welsh coastal views, curated by Ann Sumner of the Art Department, was staged at the National Museum & Gallery from August to November 2001.

Along with colleagues from other departments, I greatly enjoyed contributing to the research for the catalogue entries. When I first saw transparencies of Brett's paintings, I was immediately struck by his accurate and lively portrayals of the shipping that he observed around the Welsh coastline in late Victorian times. The hanging of the paintings gave me the opportunity to study them in greater detail, thus deepening my admiration for Brett as a man who clearly understood ships and the sea!

Brett first visited Wales in 1866, and in 1867 he sailed along the Welsh coast whilst on a passage from Portsmouth to the Clyde on the yacht *Victoria*. He visited both north Wales and Tenby in the 1870s, and at the height of his popularity in the 1880s, he was able to afford his own yacht, *Viking*; he and his growing family sailed in her along the Welsh coast in 1883. During those years he also made visits to Newport (Pembrokeshire), Fishguard and the Gower.

His last visit to Wales was in 1891, to the coastal village of Aber-porth, near Cardigan. Brett was not much impressed with the village (at that time still a busy coastal port and herring fishing centre), recording in his diary, 'My disgust with this place is quite past speech…'. Having close connections with Aber-porth myself, I must disagree with Brett! Despite his uncomplimentary comments about the village, his visit nevertheless provided the inspiration for a number of paintings, including his late, great work, *Pearly Summer*.

Pearly Summer is based on sketches made by Brett from the cliffs near Dôl-wen (where he was staying) on 27 July, 1891. First exhibited at the Royal Academy in 1893, the painting attracted much favourable comment. It is a broad, light and airy seascape, which comprises two foci of activity. On the left, fishermen in their boats provide human interest, whilst in the centre, a paddle-tug towing a smack and a schooner add a sense of bustle and urgency in an otherwise placid scene, accurately reflected by Brett in the limp sails of the other vessels.

However, though enchanted by the painting, I found myself asking whether or not Brett would have witnessed just such a scene from the cliffs near Aber-porth in the summer of 1891? There is no doubt that the background scene portrayed was at Aber-porth – this can be proven by the faint outline of land in the right hand background of the painting, which corresponds to Dinas Lochtyn and Ynys Lochtyn near Llangrannog, clearly visible from the cliffs near Dôl-wen. Otherwise, though, *Pearly Summer* is an agglomeration of scenes recorded elsewhere by Brett during his travels around the coasts of the British Isles, which he subsequently superimposed upon the calm corner of Cardigan Bay that he sketched in July 1891.

Brett visited Cornwall in 1880 and stayed at Penzance from 23 August until the end of September; this visit coincided with the Cornish pilchard fishing season that lasted from July to October

Pearly Summer *(Forbes Magazine Collection, New York)*

Traeth y Llongau, *Aber-porth, c.1890. Dôl-wen is the large white house in the background, and Brett sketched from the cliffs to the right. The* Mary Jane *is the second smack from the right on the beach*

each year. The fishing group portrayed by Brett in *Pearly Summer* was in all likelihood observed during that visit, as pilchard fishing involved two boats, one slightly larger than the other, handling seine nets to encompass the massive shoals of pilchards that gathered off the Cornish coast. Neither boat has a mast – the pilchard boats were always propelled by oars alone – whilst further evidence is provided by the fact that one of the boats bears the 'PZ' registration of a Penzance fishing vessel.

Turning to the central scene, we know from one of Brett's sketchbooks that he saw a paddle-tug towing a smack and a schooner off Little Cumbrae Island in the Firth of Clyde from the yacht *Victoria* on 3 July, 1867. Only after the picture had been hung, however, did I notice that both the paddle-tug and the smack bore names, respectively *Rattler* and *Mary Jane*. There is no indication in Brett's sketchbook that he recorded the vessels' names at the time, which led me to wonder as to their origin.

Rattler presents a problem, as there were two late-nineteenth-century paddle-tugs that bore that name! Neither, however, worked on the Clyde; one was owned at Liverpool and the other at Cardiff. As Brett painted a number of scenes in the Bristol Channel, in which paddle-tugs are a recurring feature, it is quite possible that he would have seen the *Rattler* at work out of Cardiff, subsequently transferring the name to the vessel portrayed in *Pearly Summer*.

We can be far more certain about the *Mary Jane*. There were a dozen trading smacks owned in Aber-porth in 1890, engaged in the coastal trades in culm, limestone and building materials. One of these was a thirty gross ton vessel built at Cardigan in 1868, and owned by Griffith Jenkins, Y Felin, Aber-porth: she bore the name *Mary Jane*, and as Brett spent the entire summer of 1891 at Aber-porth, he would definitely have seen this little smack sailing to and from *Traeth y Llongau* (the Ship Beach). It seems not unreasonable to surmise, therefore, that this may be what lay behind Brett's naming of the smack in *Pearly Summer*, and it is, moreover, one aspect of the scene that he would certainly have observed from those cliffs near Dôl-wen over a century ago.

David Jenkins
Senior Curator, Department of Industry

Upper Carboniferous Stratigraphy and Geological Conservation in the South Wales Coalfield

Wales has played a critical role in the development of the science of geology. It was here that many of the first periods of geological time were recognised and named. Yet many of the sites that inspired early pioneers, many amateurs and professionals alike, have or are currently being lost at an alarming rate.
This exploitation and destruction of sites is a result of what would once have been called progress. Fortunately, the science of geology, along with many other scientific disciplines, has come of age and with it the recognition of the importance and fragility of the natural world. Words such as 'sustainability' are commonplace in modern living. More people are learning and becoming aware of the world around them and, fortunately for geologists, what lies beneath their feet. The National Museums & Galleries of Wales is ideally equipped to research and interpret this part of the country's heritage, given its proximity to excellent sites of geological and, in this case, palaeobotanical interest.

The large Department of Biodiversity & Systematic Biology comprises many varied disciplines, of which Vegetation History is a small but important section. Over the past two years it has been busy undertaking some unique and highly productive research and outreach conservation work with regard to the primitive fossil flora of the South Wales Coalfield.

The research, undertaken in partnership with the Countryside Council for Wales (CCW), provides the opportunity to gather more palaeobotanical information and assess Welsh conservation requirements, critical in some areas of south Wales where growth and development threaten sites of importance.

As well as enhancing the Museum's already spectacular collections of palaeobotanical specimens, the research findings of ongoing fieldwork reconnaissance are fed back to CCW who manage and conserve geological sites throughout Wales.

The project arose as a direct result of a scientific need, both to gather information and protect sensitive or unique Welsh geological sites. The research revolves around the extensive geological exposure found within a small tributary of the River Neath called Nant Gwrelych. This tributary flows north-westerly off the spectacular Rhigos escarpment through impressive gorges and over numerous waterfalls. This prominent escarpment marks the northern margin of the South Wales Coalfield.

The Cwm Gwrelych-Nant Llyn Fach section provides near complete geological exposure through the Carboniferous Lower and Middle Westphalian Coal Measure sequences. This continuous exposure provides a unique section, unrivalled in Britain or Europe. The site (SN891064-SN906039) has been documented previously by Cleal and Thomas 1996, when it was included in the Joint Nature Conservancy Council Geological Conservation Review Series, volume 11, British Upper Carboniferous Stratigraphy. Prior to this publication Robertson (1932) had published limited details of the section in the Geological Survey, Merthyr Tydfil (231) memoir. Details of the geology of this tributary are also mentioned by Barclay et al. (1988) in the later revision of the memoir.

Asterophyllites longifolius. Collected: Celtic Energy opencast site, Rhigos

Laveinopteris rarinervis. Collected: Celtic Energy opencast site, Rhigos

The Cwm Gwrelych site is currently classified as a Site of Special Scientific Interest (SSSI) based on its geological worth and as such, is legally protected. It remains largely unspoilt, although much opencast mining has been conducted directly adjacent to the valley in the old Dunraven and new Selar opencast sites. Celtic Energy's large Selar site has provided magnificent and unparalleled opportunities to collect palaeobotanical specimens and observe geological trends in vast faces of freshly exposed rock. Unfortunately, mining development has obscured several lengths of exposure in the main geological section. Plans have been made with CCW and landowners to excavate, document and manage such localities in order to preserve the completeness of this spectacular natural resource.

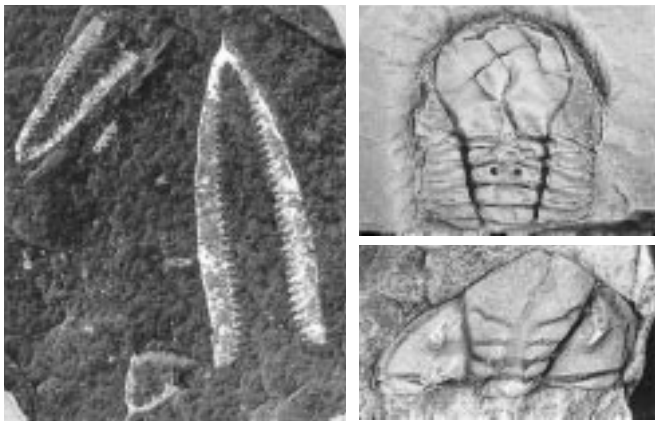
The South Wales Coalfield has yielded some of the most abundant and well-preserved plant fossil assemblages in the world. These fossils provide an important insight into the nature of the palaeoequatorial vegetation of 300 million years ago. From an evolutionary perspective, they represent more primitive groups of plants than are found in comparable habitats today. Many of these ancient plants possessed growth and reproduction strategies that differ significantly from modern vegetation, but their diversification and eventual extinction provide fascinating palaeoenvironmental and palaeoclimatic information about ancient Wales and indeed the earth.

Until now there has been no comprehensive, detailed account of the geology and the potential palaeobotanical recourses of this site. It is hoped that this description will provide a European standard by which other Upper Carboniferous Geological sections can be compared.

Ben Evans
Research Assistant (Vegetation History),
Department of Biodiversity & Systematic Biology

From Abereiddi to the Meuse

Henry Hicks, a nineteenth-century medical practitioner and surgeon from St Davids, took a great interest in the ancient rocks that crop out locally in north Pembrokeshire, and became an acknowledged expert on them. His researches led him, in 1881, to designate part of the rock succession at Abereiddi Bay as the Llanvirn Group, named after a nearby farm. This name, as the Llanvirn Series, is now used internationally as a division of the Ordovician System, encompassing rocks between about 460 and 465 million years old, and today the term is to be found in geological publications the world over – fame indeed for an otherwise unremarkable farm on the windswept Pembrokeshire coast. NMGW's Department of Geology staff have been studying Llanvirn rocks and their fossils for over twenty-five years throughout Wales, the Welsh Borderland and the English Lake District, in collaboration with colleagues from the Natural History Museum and the British Geological Survey.



Characteristic Ordovician fossils from Wales and the Meuse Valley, Belgium: (left) Didymograptus*, a 'tuning-fork' graptolite of the kind found commonly in both areas; (above right)* Pricyclopyge*, a large-eyed pelagic trilobite that is widespread in Britain and northwest Europe; headshield of Ormathops, a benthic trilobite endemic to Bohemia.*

During an international conference on the Ordovician System in Prague in June 1999, Dr Thomas Servais of the University of Lille invited NMGW staff to join a team of geologists from Belgium, Germany and the Czech Republic in examining fossils from rocks of the Llanvirn Series that are exposed in the neighbourhood of Namur, in the Meuse valley in Belgium. Our remit was to identify and compare the trilobite species that occur in these rocks with those from the British Isles, and to assess their palaeogeographical distribution. The group met in the field in May 2000. Like many of the exposures of these rocks in inland Wales, those in Belgium are small, with the best found in railway cuttings adjacent to the main Brussels to Luxembourg line. The Belgian outcrops, like so many in Llanvirn rocks, do not yield up their bounty without a good deal of time and effort, but persistence usually pays off. New collections were made, and these, together with exisiting ones in the Institut Royal des Sciences Naturelles de Belgique in Brussels, provided 'tuning fork' graptolites and a range of trilobite species, all identical with forms that occur in Wales and the Lake District. In both Belgium and Britain, the Llanvirn rocks in which the fossils occur are interpreted as having been deposited in comparatively deep waters, towards the edge of the continental shelf.

During much of Ordovician period, southern Britain, Belgium and northern Germany were all part of the eastern end of the small continent of Avalonia, separated by the Rheic Ocean from the northern edge of the vast continent of Gondwana. Other parts of present day Europe formed smaller continental areas: for example, France and the Iberian peninsula probably lay closer to Gondwana, whilst Bohemia appears to have been an independent microcontinent while Scandinavia formed part of the large continent of Baltica, which lay to the north. Benthic trilobite species tend to be endemic to each of these different areas, but those interpreted as being pelagic are common to many of them. One of the trilobite species found in Belgium has enormously expanded eyes, and falls into the latter category, and is widely distributed. By contrast, another one, described originally by Hicks from Abereiddi, is blind, and is likely to have been a benthic animal. However, like the pelagic form, it has a wide distribution, which in this case is more difficult to explain; it possibly had long-lived planktonic larval stages that ensured its dispersal into remote areas.

Ordovician rocks that are younger than those of the Llanvirn Series also crop out in the Meuse valley. They are of shallower water origin, and one of our Honorary Research Associates, Professor W. T. Dean, recognised trilobite species from them that are common to north Wales and northern England. These show that throughout the Ordovician Period, Belgium remained an integral part of Avalonia. However, strata that intervene between these and the earlier Llanvirn rocks contain trilobites unlike those from Britain, but which closely resemble forms from Bohemia. It is most unlikely that part of Avalonia split away, moved closer to Bohemia, and then merged once again. So why the similarity of these trilobites to those of Bohemia? The answer may lie in the submarine environment of this part of eastern Avalonia becoming much more similar to that of Bohemia than to southern Britain. Although the relative longitudes of Bohemia and Avalonia are unknown, the distance separating the two areas must have been sufficiently close to allow planktonic larval stages of the trilobites to cross between the two.

The outcome of this work has been on one hand to confirm close faunal links across parts of northern Avalonia during Llanvirn times, and on the other to highlight problems of distribution that have yet to be fully resolved.

Robert M. Owens
Assistant Keeper (Palaeontology Section), Department of Geology

Conservation & Documentation

The processes of documentation and conservation are inextricably intertwined; this has been particularly true over the last two years with the two departments heavily engaged in a number of major projects. The development of programmes funded by the Heritage Lottery Fund at the Museum of the Welsh Woollen Industry, Big Pit and the proposed Industrial Maritime Museum in Swansea have allowed the Museum to re-evaluate the collections, improving our knowledge about them and enhancing the way we present both the objects and the accompanying information.

The National Museums & Galleries of Wales is fortunate in having renowned specialists in a number of conservation and documentation fields, each having intimate knowledge of the collections in their care. The depth and variety of their expertise is amply demonstrated by the small selection of projects illustrated in the forthcoming articles.

Gayle Evans, Head of Documentation
Bob Child, Head of Conservation

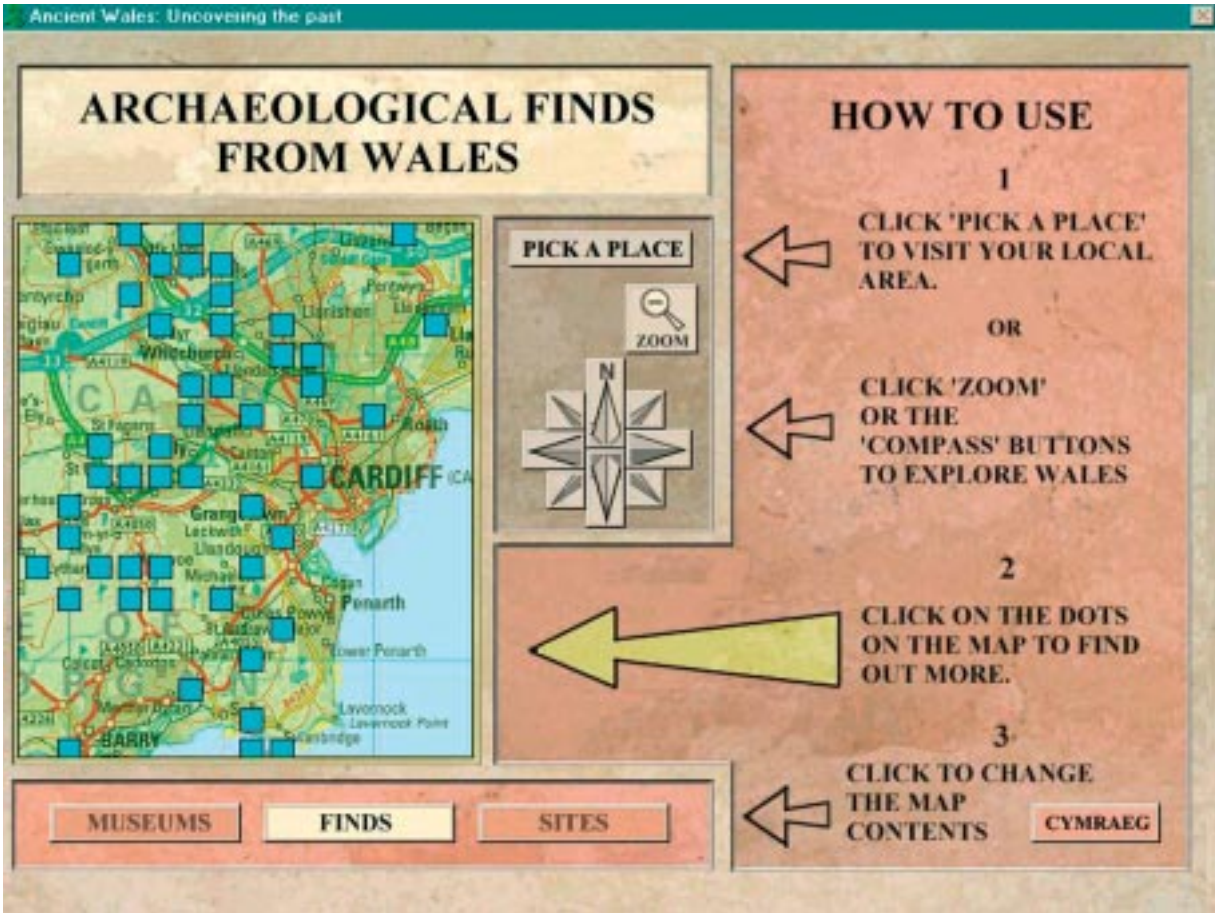
'Ancient Wales' and archaeological maps: new ways of working

The collections in the Department of Archaeology & Numismatics comprise over 850,000 items spanning all periods of Wales's history, from the Ice Age to the Industrial Revolution. With such a wealth of material one of the greatest challenges facing the Museum is how best to tell the world about the material we hold for the Nation. Over the past few years we have risen to this challenge with several pioneering projects that have utilised the power of new technologies. The most wide-reaching of these has involved the use of digital maps which, when combined with our collection information, offer a bird's eye view of the past in Wales which can be easily appreciated by all.

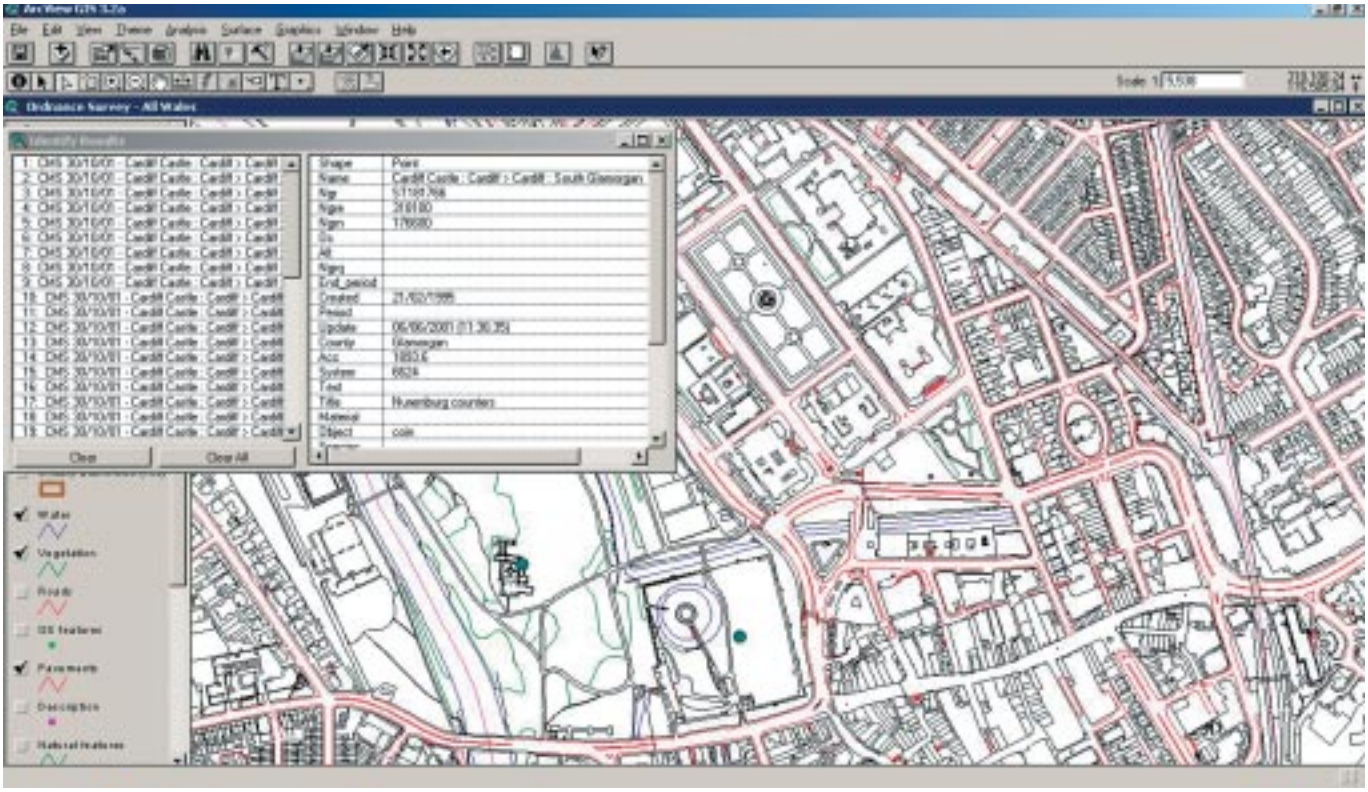
The starting point for our work in this field was our Collections Management database – a computer record that provides an inventory of the contents of the collections and which is intended primarily for curatorial use as an audit tool and for answering public enquiries. The end result was the 'Ancient Wales' project which turned the archaeological part of that database into a format accessible by all.

One of the greatest problems we faced en route to this end was that the database is not attractive to look at, and indeed could be described as very boring, no matter how fascinating its content. So we began our project by looking for a new way of presenting this record of our collections in order that it would be both understandable to a wide audience and engaging, even for those who knew little about archaeology to begin with. The solution was found in the question most frequently asked of curators: 'what do you have from where I live?' With this question in mind we began to develop a computer program that could locate the contents of our collections database as dots on a digital map. When finished, we had turned a complicated database into a simple system whereby, at the click of a button, a user could zoom in to their town or village and see at first hand the finds that have come from their home turf. The 'Ancient Wales' program was born.

With the hard work behind us we began to look at ways of presenting this new view of the past to as wide an audience as possible. We began by installing a series of interactive computer units in the archaeology galleries at the National Museum & Gallery and the Roman Legionary Museum Caerleon. Each one complements the displayed collections by showing the wealth of archaeology that lies behind the scenes. Over the past year they have proved enormously popular with the public, young and old alike.



'Ancient Wales' – the Department of Archaeology & Numismatics' route map to the past



Detailed map of central Cardiff with collections from Cardiff Castle listed on the left
(Crown copyright. All rights reserved. National Museums & Galleries of Wales (GD272221) 2002)

A further stage in our campaign to tell Wales about its archaeology was to package 'Ancient Wales' onto a CD-ROM, with over 900 copies being sent to primary schools throughout the country. In doing this we hope that teachers, who might not have planned a visit to any of our museums, will gain an insight into the archaeological material that we curate and will be encouraged to include this readily-accessible information into their lessons.

It is not just the public who have benefited from a map-based view of our collections, for it has also opened up opportunities for research by staff. One of the most important steps towards this has been the commencement of a data exchange agreement between Cadw: Welsh Historic Monuments, the Royal Commission on the Ancient & Historical Monuments of Wales, and the four regional Welsh Archaeological Trusts. As a result of this agreement, and in conjunction with our map-based software, we can now plot the archaeological knowledge – details of archaeological monuments, sites, buildings and objects – held by all these organisations on a single digital map, quickly and easily. The opportunities this brings for research are enormous. For example, if a Roman coin hoard is reported to the Museum, then at the click of a button we can check whether anyone else has recorded Roman archaeology in that area.

A further development, achieved through the support of the National Assembly for Wales, has been in the quality of digital maps that we can now use to view this information. In the autumn of 2001, NMGW entered the Ordnance Survey Central Government Agreement – a pace-setting agreement for the promotion of e-government – that gives us access to a vast quantity of their detailed mapping for Wales. With access to digital OS maps at a variety of scales we can study our collections in ever greater detail, whilst our mapping software allows us to view those collections in many new ways. For example, we can produce 3D models of the landscape and then plot our collections across them. We can explore any possible links between particular types of artefacts and different parts of the landscape. For example, are Bronze Age metalwork hoards found close to rivers? Or did Stone Age peoples avoid the uplands of Wales?

In combination, these new technologies, allied to the digital information held by NMGW and other heritage organisations, allow us to look to the future with enthusiasm. The past in Wales has never been brighter!

Dr Steve Burrow
Curator (Earlier Prehistorian), Department of Archaeology & Numismatics

The Melvill-Tomlin Collection: completing the inventory in 22 years!

One of the major tasks facing museum staff when acquiring new material is the task of curating and incorporating the items in the main collections. When the Melvill-Tomlin collection of molluscs was acquired by the Museum in 1955 it was the second largest such collection in private hands.

James Cosmo Melvill

John Read le Brockton Tomlin

The collection was started by James Melvill in 1853 and passed to John Tomlin in 1919. Both men had very diverse interests in molluscs, and consequently they built a collection representing all regions and most habitats in the world. On arrival in Cardiff it must have had over 40% of all molluscan taxa known (est. 35,000) and a much higher percentage for some parts of the world (Persian Gulf, Red Sea, South and East Africa). Melvill's notable acquisitions included rare shells of Mitras, Cones and Cowries. At the turn of last century he had nearly 400 of the 500 described forms of *Conus* including some real rarities. Melvill named over 1000 taxa, especially from areas like the Persian Gulf and a Museum publication listed these names. Tomlin continued to acquire important collections including the Pectinidae described by Bavay, *Placostylus* species described by Layard from New Caledonia and Archer's collection from Singapore. Tomlin described fewer new species himself, preferring to work on taxonomic revisions and species identification for others. On his death in 1954, the Museum received this collection, his library and papers, but no index, as Tomlin had not needed one.

One of our tasks is to improve accessibility to the collections. This collection arrived in mahogany cabinets and was stored in various parts of the building. Later, static storage was built, allowing all of the mollusc collections to be brought together. In the last fifteen years the storage of the collection has been expanded as curation has continued. Now the shells are housed in mobile storage racking with a drawer system, allowing us to increase or decrease the distance between the drawers. This is very flexible allowing organisation in a standard systematic sequence and means it is easily accessible to any taxonomic researcher. We have also been able to integrate all collections and currently have sufficient space to continue to incorporate new collections. This maintains the highest possible standards of collection stewardship.

A Melvill-Tomlin tray and handlist

Placostylus *from Layard*

Our other goal is to ensure accessibility to the data. In the past, entries were hand-written into large registers, but now documentation means entering the information into a computer database. When Graham Oliver arrived in 1978 he developed a paper system for recording information and with Alison Trew started a programme tackling curation of the Melvill-Tomlin Collection. Between 1978 and 1994 Alison, Graham and volunteers curated 64 superfamilies, establishing

the present name and labelling and securing the storage container. When each superfamily was finished the handlist was published and sent out to 120 institutions across the world. In this way the information on the collections was disseminated as widely as possible to taxonomists who name, study and describe new species as these were the people most likely to use the collections. However, if we continued such standards of curation a full inventory would take another thirty years.

In 1995, the advances in computer technology meant we could take a different approach to documenting data. At this time the Rio Summit and the demand for country-level species lists led to an increased demand on museums to answer enquiries about their holdings. Such a task is extremely time-consuming where collections are sorted in systematic sequence and consequently we were unable to handle them.

As a result we decided to accelerate the pace of documentation by inputting the basic collection information into a rapid entry database (using Filemaker Pro©) allowing many people to enter data at the same time. Since 1997 we have had over twenty staff in total inventorying and curating the collection. After twenty-two years we have completed the first inventory which means that any enquiries relating to locality, including species lists, can now be answered accurately in minutes rather than days or weeks.

Melvill's greatest prize specimen of Conus gloriamaris

First extension to collection store holding Tomlin library and roller racking

We have now databased 78,160 lots of shells in the Melvill-Tomlin collection. That is over 786,000 shells! The importance of the collection can be judged by the number of type lots (the specimens used for the first description of the species – especially the number of holotypes, syntypes or paratypes). In the first ten years working on the collection, Alison and Graham recognised 1100 lots of type, figured or cited material in the collection. However, as the graph demonstrates, in the last three years we have databased a total of 3069 lots of potential type status, indicating that we still have a lot of work to do to enhance the quality of information about these objects.

To research the status of a lot may take anywhere from half a day to a week: tracing the literature describing the species; comparing handwriting on specimen labels with the handwriting of the person who described the species; verifying that the specimens came from the location given in the species description; and checking the specimens to see if they look like the specimens which were illustrated. With many older collections, the shells used to describe new species were not differentiated and thus it is only the detective work of museum curators and taxonomists around the world that can help to locate and document the status of material. Now that we have an inventory this task is made much easier, as the entire database for all items in this prestigious collection will be accessible to taxonomists worldwide. Hence we have many helpers!

Our next target is to incorporate digital images of the type material and increase access to these beautiful objects through the web.

You can visit the Melvill-Tomlin Collection on our website at: http://www.nmgw.ac.uk/biosyb/collections/mollusca/index.en.shtml

Mary Seddon, Harriet Wood and Graham Oliver
Mollusca section, Department of Biodiversity & Systematic Biology

The T. H. Thomas Collection at the National Museums & Galleries of Wales

Since 1998, one of the major projects in the Prints & Drawings Study Room has been the re-inventory of the collection of Thomas Henry Thomas (1839-1915), one of the founding fathers of the National Museums & Galleries of Wales. The collection, which comprises over 1,000 prints, drawings and watercolours as well as a substantial amount of archival material and miscellania, entered the Museum in the early part of the twentieth century as a series of gifts and, following Thomas's death in 1915, two large bequests.

The main body of the collection comprises three boxes, each containing around seventy folders, with each folder holding between one and ten objects. The folders are numbered and grouped by similar subject types. Until recently, it had been assumed that this ordering system was the work of Thomas himself, but a closer inspection of the handwriting has revealed it to be that of Isaac Williams, the first Keeper of Art at the Museum. It is subsequently not known in what form these works entered the collection, although there is an elusive scrapbook, referred to in contemporary correspondence which has not been discovered. As the ethics of curatorship were rather different then to what they are now, it seems most likely that this scrapbook was disseminated on entry and its contents reassembled into the folders in which they appear today. Their contents are exceptionally wide-ranging, and of relevance to all curatorial areas of the Museum. Sample topics include the depiction of modern life, both rural and industrial, the natural world, archaeology, anthropological and ethnographical drawings, book illustration and folklore.

Thomas was born in Pontypool in 1839, the son of a Baptist minister. In 1858 he went to London to pursue his artistic training, studying first at Carey's and then at the Royal Academy. It is known that he studied under the artist Daniel Maclise, but was also thought to have had tuition from such nineteenth-century luminaries as John Everett Millais, William Powell Frith and Frederick Leighton. He then spent periods in France and Italy, where he met the sculptor John Gibson and the painter Penry Williams, and much of Thomas's work from this period is not dissimilar in style or sentiment to that of Williams. On his return to London in 1864, he devoted himself to portraiture, design and book illustration, working as a special artist for *The Graphic* and later for *The Daily Graphic*, for which many illustrations still survive. They are diverse, ranging from work on the Severn tunnel at Portskewett to royal visits. It was for the *Daily Graphic* and *Animal World* that Thomas recorded an incident in 1890 on Grassholm Island, off Haverfordwest, where he witnessed the destruction of a gannet colony by the crew of a vessel, the *Sir Richard Fletcher*. The publication of these drawings led to public outcry and resulted in a question being raised in parliament about bird protection, though the perpetrators were let off with only a small fine.

Sometime between 1866 and 1878, Thomas settled in Cardiff, where he remained until his death. His Welsh heritage was clearly of great importance to him, and he became involved with the Eisteddfod and the Gorsedd and joined the Royal Cambrian Academy. He was also a key member of the Cardiff Naturalist's Society, becoming president in 1888, and many of his drawings are illustrations for this purpose. He accompanied scientific expeditions, including a trip to the west coast of Ireland in 1886 to examine ocean fauna; and to Italy in 1899 as part of a group of geologists to make a study of the volcanoes of Sicily and the Neapolitan district. A further example of his interest in geology can be seen in his discovery of a large stone slab in the churchyard at Newton Nottage in 1878, which was recognised as an important find and named *Brontozoum Thomasii* as a tribute.

It is not possible to detail every part of the collection here, but some notable areas include the *Silva Silurica* [sic] series, made with the artist Charles Conway and containing studies of trees

T. H. Thomas, Effect of explosion at "Cwtch" Colliery, *from 115, Mining, NMW A 12383, pen and wash with pencil on paper*

T. H. Thomas, Mrs Jones, the Devil and the supper beer *(1880), from 58, British Goblins; NMW A 11953, pen, ink and wash on paper*

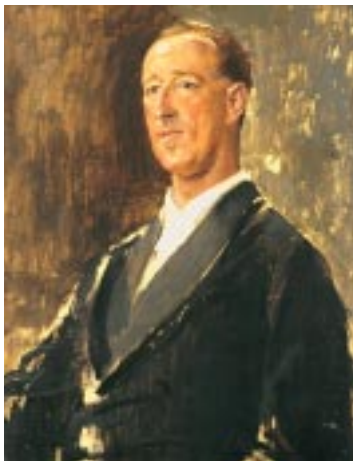
in Wales; illustrations to the 1880 book *British Goblins* by Wirt Sykes; illuminated works of Tennyson (*The Lady of Shallott* and *Oenone*) and illustrations of mining communities. Among the miscellaneous objects is a cigarette box filled with drawings by a group of children from a school in Thame, Oxfordshire, which appear to be part of an experiment by Thomas as a response to a contemporary Italian publication, *L'Arte de Bambini* which analysed the drawing techniques of children. Although further research into Thomas's experiment has unfortunately reached a dead end, they remain a particularly intriguing part of the collection.

It is fair comment to suggest that Thomas's all-embracing interests somewhat hampered his artistic development and prevented a more widespread recognition he might have had had he devoted himself solely to art. This is, however, an observation, not a criticism – the strength of the Thomas material lies not in its artistic merit but in its quirkiness, its breadth, and that it represents an almost complete catalogue of the major concerns of the nineteenth century. Seen from this perspective, Thomas can be viewed in the tradition of J.W.Goethe and John Ruskin, men whose works spanned many diverse disciplines and sought to bridge the gap between science and the arts. In addition to this, Thomas was also an avid champion of Welsh art and artists, and worked to support the cultural life and preserve the heritage of Wales wherever he was able. NMGW is fortunate to have received such a comprehensive bequest, especially one that encompasses all curatorial departments; and a future exhibition should provide the reappraisal that this extraordinary man deserves.

Bryony Dawkes
Fine Art Documentation Assistant

The De Walden Collection of early European arms and armour

The 8th Baron Howard de Walden (1880-1946) was a writer, sportsman and patron of the arts. His sporting prowess was formidable, as dramatically demonstrated within the space of a few days in 1906, when he distinguished himself as spare man of the British Olympic fencing team at Athens and one of his horses won a good race at Newmarket. He wrote several plays, a number of librettos and a series of pantomimes for children. His interests also extended to the past, and he had strong antiquarian tastes which included genealogy, heraldry and armour. His homes included Seaford House in Belgrave Square, Dean Castle in Kilmarnock and Chirk Castle, which he leased and made his home for thirty-four years. During the first quarter of the twentieth century he formed a remarkable collection of early European arms and armour, mainly for his Scottish home. However, this collection also included a number of classical pieces – helmets, swords, spearheads, belts and armour – mainly Greek, Etruscan and Roman, which were displayed privately at Seaford House.



Portrait of Lord Howard de Walden (1880-1946)

The diverse talents of this versatile man were matched by his generosity to many branches of art and charity. In this capacity, Lord Howard de Walden became President of the National Museum of Wales in 1942, an office he held until his death in November 1946.

The collection of classical arms and armour was removed from London to Chirk Castle for safe keeping during the Second World War. In 1945, Lord Howard offered to lend his collection of 'antique bronze objects' (seventy-nine items) to the National Museum for a period of ten years. Through his generosity he also presented a number of highly ornate display cases so that the Museum could exhibit much of the collection. After his death, his son, fulfilling his fathers wishes, donated the collection to the Museum in 1947. Although some items remained on display until the mid-1960s, the collection did not feature in the new archaeology galleries opened in the west wing of NMG in 1965. Since then the collection has been kept in store, though important parts have been lent for display in the Ashmolean Museum, Oxford and the Armouries, Tower of London.

Interest in this important collection was renewed when a request was received from the British Museum to borrow two silver gilt belts in 'Sarmatian' style and two roundels in 'Scythian' style, for the 'Fake' exhibition in 1990. Research by a Russian scholar had shown that these items had almost certainly been made in a jeweller's workshop in Odessa between 1890 and 1910. As a result, it was decided to embark on a programme of conservation and analysis, with the intention of producing a catalogue of the collection and an exhibition.

Routine X-radiography has shown that many of the objects are genuine, but others reveal signs of being 'improved' or even manufactured more recently from antique metal components cut, soldered and fashioned into classical forms. In order to meet the demand for classical antiquities during this period, it was quite common to produce an identifiable object using ancient pieces from a number of sources, in other words a pastiche. There also appear to be a certain number of fakes, where the metal used was inappropriate for the period of the piece. Lord Howard de Walden was well aware of this, for whilst arranging this loan, he wrote that *'there are certain pieces you may not wish to have, such as … several specimens of doubtful authenticity'*. In order to acquire a representative collection, Lord Howard had himself commissioned a number of copies of famous pieces, such as the Battersea Iron Age shield.

Study of this important collection will not only throw light on the ancient technology of the genuine pieces of classical arms and armour, but also some of the practices of the antiquities market of a century ago. Two examples of the latter are illustrated here.

Etruscan 'helmet'

The first object to be examined from the collection was a helmet, made of bronze and embellished with gold, dating from the Etruscan period.

The helmet was initially X-rayed to determine the condition of the metal and the extent of the corrosion, as well as to reveal details about the construction of the helmet. However, the X-ray uncovered much more than was originally expected, for dense solder lines could be clearly seen criss-crossing the image creating a patchwork effect. Closer inspection revealed that the helmet had undergone considerable restoration work in recent times; cracks had been filled with solder and holes patched with metal, again soldered in place. To disguise these recent repairs a fake patina mimicking corroded bronze had been applied over the top. This process was confirmed when a section of the false corrosion was removed to reveal the original surface patina below.

Analysis of the composition of the metal revealed that the bronze helmet did in fact date back to antiquity, and even the patches of metal used to repair the holes were ancient. However, there were indications that the gold was modern.

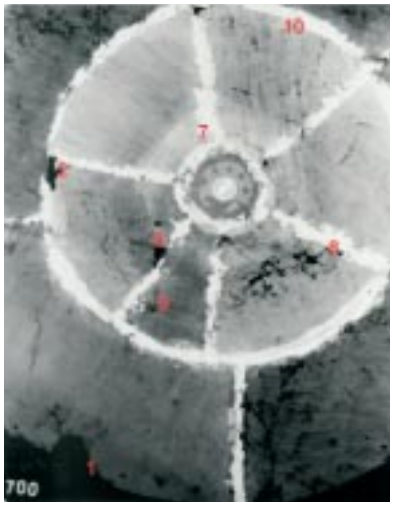
Etruscan bronze 'helmet' embellished with gold

The investigations concluded that this object was a pastiche. An original helmet in poor condition had been repaired and embellished with decorative elements that would no doubt have increased its value and made it more desirable to collectors. This work may have been carried out in the later nineteenth or at the turn of the twentieth century.

Questions as to how to treat the object also had to be addressed. Should the modern repair work be removed or conserved? In the end, it was decided to remove half the false patina in order to reveal the repair work below, for it was felt that the alterations were now part of the history of the object and could shed light on techniques employed at the time the collection was being compiled.

Bronze 'shield'

One of the most recent objects to undergo analysis and conservation from the collection was a small round bronze shield. The X-rays clearly illustrated that the shield is composed of eleven separate pieces of metal, joined together using a dense solder. Analysis of the metal components confirmed that at least three different metal sheets, themselves probably originally antique, had been used to construct the shield. The X-rays also showed that, although the shield superficially looked to be in relatively good condition, most of the metal components are in fact cracked or chipped and some have almost completely disintegrated. A green fabric adheres to the reverse of the shield and this was used both to support joins and cover missing areas.



X-ray of the 'shield' showing clearly that it was made of 11 separate pieces

The X-rays, together with close visual examination, also indicated that not all of the patination had formed naturally on the shield's surface and at least some had been applied in order to disguise cracks and joins. The present appearance of the shield is not the result of corrosion, but a deliberate application of pigments to give the piece an antique appearance. Conservation and scientific analysis have shown this shield to be a pastiche.

Richard Brewer, Mary Davis and Penny Hill
Department of Archaeology & Numismatics

What lies beneath – the conservation of a fossil sea reptile

Routine conservation monitoring of the palaeontological collections in the Department of Geology revealed an ichthyosaur that, on first examination, appeared to require a small amount of remedial work. What was to have been a brief job turned into a major conservation project and resulted in a story that attracted international media interest.

Ichthyosaurs are marine reptiles that lived during the Mesozoic Era, 65-200 million years ago – the same time that dinosaurs inhabited the land. Interpreted in the past as fish, lizards and 'sea dragons', they are now known to be similar in appearance to dolphins, and have large eyes, distinctive long jaws with sharp teeth and limbs modified into paddles.

This particular ichthyosaur was donated to the Cardiff Municipal Museum in the late nineteenth century and subsequently became part of the collections of the National Museum. The specimen is incomplete and comprises the lower jaw, front paddle, ribs, vertebrae and part of the hind paddles. It was prepared originally to partially expose the bone in the rock matrix, then mounted in plaster and supported by a wooden frame, to allow display on a wall. The bones were highlighted in brown paint, and the rock and plaster were covered with several layers of green and grey paint.

The specimen showed evidence of having been restored several times during the twentieth century, although no records exist of this previous work. The restorations included the

Ichthyosaur specimen prior to conservation (1750 mm by 720 mm by 70 mm)

Ichthyosaur specimen after conservation

addition of new plaster and the repainting. A display label attached to the plaster surface identified the species as *Ichthyosaurus intermedius*, and indicated that it had been collected from Street, Somerset. The label described the specimen as *'the greater part of a small individual preserved with but little disturbance of the bones'* – a statement later found to be quite misleading

Examination of the specimen revealed extensive damage, with cracks running through both the bones and the surrounding plaster. Both the specimen and the plaster mount had been painted in a way that obscured previous restorations. Due to the poor condition of the mount and surrounding wooden frame the specimen was at risk of further damage and there was also concern that pieces might be lost, therefore conservation was necessary to ensure its long-term stability. It was also structurally unstable, so we decided to remove all the paint layers and surrounding plaster and to extract the original fossil skeleton and its associated rock matrix.

The paint was chemically and mechanically removed, and during this process it became apparent that the actual skeleton and surrounding rock comprised only a small portion of the specimen, with the greater part being made of plaster. Removal of the paint layers also revealed that several areas had been enhanced. For example, the missing ends of the ribs had been moulded in plaster and then painted to match the rest of the specimen, giving the false impression that areas of the skeleton were complete.

X-radiographs, taken prior to conservation in an attempt to identify any internal damage to the bone and rock matrix, revealed an inconsistency in one section of the vertebral column; a dark shadow surrounded the bones and appeared to be visually out of context. When the paint from this area was removed, it was observed that a channel had been excavated in the rock and individual loose vertebrae had been fixed inside it with plaster.

Beneath the paint layers, the single preserved front paddle of the specimen was revealed to be a reconstruction. All of the bones had been extracted and then rearranged in plaster. 'Bone-shaped holes' in the surrounding rock matrix suggest areas from which bones had been removed before being relocated, but it is possible that some bones had come from other specimens.

The biggest surprise came when the paint was removed from the rock surrounding the jaw, revealing it to be a different colour and type to that containing the rest of the skeleton. Not only were at least two individuals involved, but examination proved the head and body to be two different species. This was a specimen that had been greatly enhanced by the original Victorian preparators.

Press coverage of the story!

Once conservation was completed a new support system was required. The size and weight of the original frame made moving and storing the specimen difficult, and a lightweight but strong alternative was required. Supports for the individual pieces of the ichthyosaur were moulded using an epoxy resin laminating paste, and these were attached to a panel composed of an aluminium alloy core faced with a glass epoxy skin.

Although it had been revealed during treatment that the specimen was made up of two different species, it was decided that the head and the body should be mounted together. Some of the old restorations were also retained; the plaster surrounding the paddle and one small area of rib made from a fibrous fill were left intact. The newly mounted specimen was installed in the Museum's interactive Glanely Gallery, in the National Museum & Gallery. Instead of being displayed simply as a taxonomic specimen, the ichthyosaur demonstrates both the recent conservation work and highlights the techniques used by Victorian preparators.

Intense media interest was sparked when the Museum's press office sent out a release to announce a gallery talk for the public on the conservation of the specimen. This resulted in the story being covered in the national and international press in addition to television, radio and the internet, including a live interview with ABC Radio in Australia! The accuracy of the media coverage was very variable, but it did generate enquiries from around the world.

Dr Caroline Buttler
Senior Conservator, Department of Geology

Radium dials

Work on the Museum of Welsh Life's (MWL) extensive clock collection has raised concerns about the health and safety aspect of one part of the collection.

From the end of the nineteenth century until around the mid-twentieth century the luminous appearance of dials was achieved by the combination of radium and a scintillator such as zinc sulphide, ground up within a colourless varnish or other medium, and used as a paint. It was not limited to time-keeping dials, but to wherever luminosity might be an advantage e.g. compasses, aircraft dials etc. The dials were produced for the mass market, and by the popular manufacturers of the time, such as Ingesrsoll and Westclox. Many examples (but not all) looked different from the norm as they possessed white numerals and hands upon a black background.

1918 gent's wristwatch showing denatured and missing areas of radium paint

There are a number of examples of radium dials in the clock and watch collection at MWL. We used a radioactive contamination monitor to gauge the extent of risk from radioactive exposure, posed by these dials. During testing we noted the radioactivity emanated for approximately 1 metre radius from the dial, however, the luminosity bore little relation to the degree of radiation. The depletion of luminosity might be due to the deterioration of the other constituents of the paint, such as the scintillator, since radium itself has a half-life of approximately 1,600 years! The highest readings showed dials to have a reading of 3,000 counts per second against a naturally occurring background level of 8 – 10 counts per second. The measurable dose of Radium 226 in a watch is apparently about five times the dosage from a chest X-ray. The readings confirmed that the dials could be hazardous to health if exposure was not limited in some way, for example by enclosing the dials in a sufficiently dense material, by confining them to a little used area of the store and providing warning signs as to the nature of the hazard. Examples of these dials have also been identified and withdrawn from public display areas. Their storage or display falls under an 'external' radiation problem, which can be contained or limited by using simple procedures, as above.

However, a factor of concern is the possibility of 'internal' radiation poisoning which could be cancer-forming. The 'internal' risk is possible through carrying out remedial work on the dials, such as cleaning the dial face, the glass cover or working on the mechanism and, as a result, inhaling radioactive dust or ingesting tiny fragments of the same.

Since the dials are anything up to 100 years old, the paint in some cases is breaking down resulting in an increased risk of contamination from exposure to particulates. Further testing of containers and storage areas will be required in order to ensure a clean working environment within the Museum stores.

Emyr Davies
Furniture Conservator, Museum of Welsh Life

Exhibitions & Interpretation

'Exhibition' is an easy word to define; it means showing people things. 'Interpretation' is much more difficult. You might say that the thrust of museum research is to gather information, and then *interpret* it on the basis of available evidence.

At the other extreme, interpretation means the manner in which we try to engage the public with the museum collections. We have to find ways of sharing our fascination of a subject with the public and to promote our relevance and interest. 'Interpretation' shows the way in. To do this, it demands all the techniques of clear language, compelling images, education and entertainment, harnessing all technology available.

The stories that follow show ways in which Museum colleagues have shared collections, enthusiasms, expertise and skills. Exhibitions have focused the public interest on aspects of our heritage. Interactivity, whether person-to-person or through new outreach technology, has sought to inform, educate and – yes – entertain. And, in the case of geologist Tom Sharpe's mission to Newfoundland, his work continues a tradition of exporting our interpretative skills beyond the bounds of Wales.

Ian Fell
Assistant Director, Exhibition & Interpretation

Art on tour

NMGW frequently lends works from the art collection to temporary exhibitions, both in Britain and abroad. However, when we lend, we are usually contributing to projects which are not of our making. To research, curate and tour a whole exhibition of our own works of art to other museums and galleries enables us to reach a new audience and to raise the profile of NMGW both within Wales and beyond. Touring exhibitions also promote contact with colleagues in other institutions, and develop working partnerships for the future. Almost every year an NMGW art exhibition tours, sometimes to an overseas venue (both Japan and Finland during the last three years), but more usually to museums and galleries within Wales. In 2001 we were able to mount a more ambitious touring programme than usual, as the art exhibitions curated at the National Museum & Gallery were comparatively modest in scale.

The year saw two different exhibitions on the road. The first of these, *Gwen John: A Life in the Shadows*, comprised a selection from our unrivalled collection of the artist's drawings and sketchbooks, first shown in the Prints & Drawings Galleries in 1998. This exhibition was re-assembled for Harewood House, Leeds, at the request of its curator, and was shown in the very different setting of a great neo-classical house, as part of a season on the theme of portraiture. Despite an opening delayed by foot-and-mouth disease restrictions, the exhibition was seen by 24,400 visitors in May and June. A smaller version of the exhibition then went to Tenby, Gwen John's childhood home, where a further 14,000 people visited between 1 August and 26 October.

There are over 15,000 watercolours and drawings in our art collections, as well as another 15,000 engravings and photographs. These light-sensitive works on paper regularly provide material for temporary exhibitions in the two Prints & Drawings Galleries at the National Museum & Gallery, such as this year's *Images of the Floating World*, an exhibition of our Japanese Prints mounted to coincide with the Japan 2001 Festival. One of Bethany McIntyre's first tasks on appointment as Assistant Curator (Prints & Drawings) in 1999 was to curate the exhibition *Sisters Select*, drawn from the seventy-four works on paper bequeathed by Gwendoline and Margaret Davies in 1951 and 1963. This aspect of the sisters' collection has long been overshadowed by their much better-known paintings and sculpture, but it includes eight watercolours by J. M. W. Turner, as well as work by Cézanne, Daumier and Camille Pissarro, and many British artists of the first half of the twentieth century.

Sisters Select was shown first at the National Museum & Gallery from September 2000 to February 2001. It then travelled to the Gallery of the School of Art, Aberystwyth, itself

Sisters Select *at the Victoria Art Gallery, Bath*

endowed by the Davies family, for three months, and later to the Royal Cambrian Academy, Conwy, for the month of June. The tour finished at the Victoria Art Gallery, Bath, from 25 August to 4 November. Back in 1918, the curator of the Victoria Art Gallery, John Witcombe, had organised an influential loan exhibition, which included a number of works from the Davies collection. Some of these returned with *Sisters Select* eighty years later. The 1918 exhibition was one of the first occasions on which paintings by Cézanne had been shown in a British public gallery. We added one of these, *Midday, L'Estaque*, now one of the most important and best-loved paintings in the National Museum & Gallery, together with a Renoir and a painting by Armand Séguin, also shown in 1918. In its expanded form, *Sisters Select* was the Victoria Art Gallery's most successful exhibition for years, attracting 25,500 visitors in ten weeks, against a background of declining attendance at Bath's other museum sites.

Over an eight-month period, more than a hundred of our watercolours and drawings were seen in north and west Wales, as well as in two venues in England. The two touring exhibitions had nearly as many visitors as the six art exhibitions at the National Museum & Gallery over the same period. They were also supplemented by staff talks and lectures. We took part in a highly successful study day at Harewood, and with the University of Bath we organised a major seminar on British collectors of Impressionism which attracted a distinguished group of speakers and over 150 delegates. A hectic few months, but one that brought new contacts and lessons for the future.

Oliver Fairclough
Keeper of Art

'Do Something Different' Sessions

When the interactive Glanely Gallery opened its doors for the first time in December 1999, we knew that we had a great resource for exploration and investigation. We little thought, though, that the opportunities presented by direct access to the collections would gain so much popularity across such a wide age group.

Right from the start it became common to find a five-year-old busily studying an insect with the aid of the user-friendly video microscopes sitting next to an adult visitor who might be reading up on Swansea pottery or getting to grips with different types of ammonites or stone axes. In addition to the discovery area, the wide range of hands-on or craft activities which became a feature of weekends and holidays ensured a steady stream of school-age visitors.

Children on the front steps of the Museum with the Japanese kites they made in Glanely Gallery

To provide a little structure and a better scope of activities for young visitors the 'Do Something Different' Club was organised. Initially funded by a private donation it allowed us to run a series of two-hour activity sessions once a month aimed at 6-12 and 12+ age groups. Unlike many of our drop-in sessions the 'Do Something Different' Sessions could be booked up to two weeks in advance with up to twenty-five places being available. It was a measure of the popularity that it quickly became common to find the places fully booked within half an hour of booking being opened!

Once at the session, youngsters would spend two hours immersing themselves in a topic with plenty of opportunities to ask questions and some really great activities to take part in. Topics ranged from a morning with a Hedgehog Hospital through Viking silver-smithing, Japanese kite-making, fossil-chipping and reptile-handling (complete with some very large live snakes). Specialist staff were available where appropriate and the Glanely facilitators arranged for plenty of creative inspiration. The older age group was treated to some behind the scenes views of the Museum as well as a fossil-collecting field trip and the opportunity to work with digital imaging technology as a way of interpreting the British Art Show.

Whilst many children came back regularly for other sessions there was no shortage of new faces at the sessions and many of the children made new friends as well as discovering that there is more to the Museum than glass cases and static exhibitions.

The 'Do Something Different' Sessions have evolved a little over the last year to take account of the comments and suggestions from participants, and they still bring in record levels of interest for activities in the Glanely Gallery. Plans for this year include sessions on portrait painting, creative felt making inspired by fossils and the chance to try your hand at archaeological reconstructions.

For more information on the 'Do Something Different' Sessions or the Glanely Gallery in general, please call (029) 20573142 or email Sally.Pointer@nmgw.ac.uk.

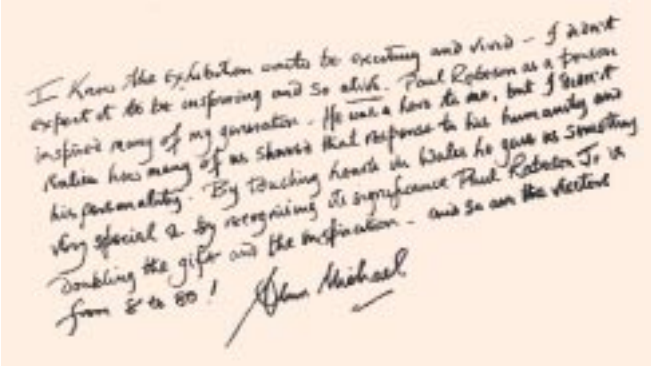
Sally Pointer
Gallery Manager, Glanely Gallery

Let Paul Robeson Sing!

This was the cry that echoed around the free world during the period in the 1950s when McCarthy's anti-Communist paranoia confined Paul Robeson – but not his wonderful voice – to America. It is also the title that emblazoned the posters and panels for one of NMGW's most moving exhibitions in recent years.

The 22,000 visitors who experienced *Let Paul Robeson Sing!* at the National Museum & Gallery, Cardiff were, in a sense, only the beginning of a small phenomenon. The original exhibition here has generated a companion exhibition in the National Theatre Museum in Covent Garden, another compact version which opened in January 2002 in the Dylan Thomas Centre, Swansea; and a touring edition which is bringing Robeson's voice and story to many smaller venues in Wales. Visitors proved to be much more than visitors, they were participants: their invited graffiti on the exhibition walls spoke of the potent symbol that Robeson represented for them.

Alun Michael MP, the former First Secretary of the Welsh Assembly, was among the hundreds who wished to leave their responses to Robeson on the exhibition walls, sharing their feelings with later visitors:



It would be redundant to paraphrase the words which appeared on the introductory panel, written by Phil Cope, who was commissioned to produce the exhibition for the National Museum, its partners and sponsors:

Paul Robeson's life is a chronicle of the cultural and social history of the twentieth century. His gifts were prodigious. Scholar, athlete, linguist, singer, actor, orator and activist, his talents shaped his turbulent times and left a memorable mark on all who met him.

This could seem rather a sweeping statement to justify our promoting a somewhat tangential subject for a NMGW exhibition. While many of us grew up with Robeson's resonant bass voice thrilling us from the wireless, a voice tinged with a slight mystery in that it came from a distant black man, not all were aware of his particular significance and passion for Wales. The exhibition was powerful evidence of a tale worth the re-telling; for here we rediscovered a man who would remind us of our brotherhood across cultures.

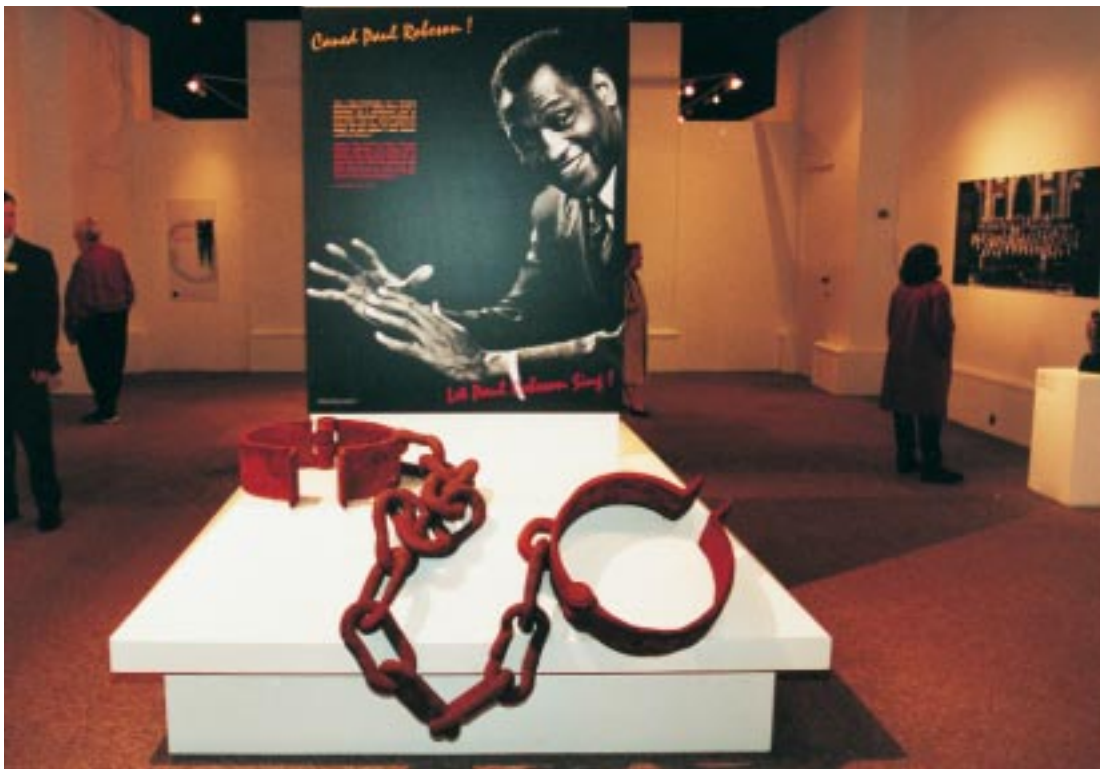
On a practical level, apart from the considerable political will that led to the creation of the exhibition, it was not the easiest to bring into being. The basis of the content was in a collection managed by Paul Robeson Jr's agents in America. Diplomacy was a necessary tool in the hands of NMGW Exhibitions Co-ordinator Dr Deborah Spillards; she persuaded American colleagues who 'owned' the Robeson inheritance with true academic passion, that we too could be trusted to re-visit the material from a Welsh perspective.

Fortunately too, after a pilgrimage to the States by Phil Cope in search of archives that resided in sometimes competitive academic institutes – so much for brotherhood! – he gained access to Paul Robeson Jr himself. Phil knew that he had been blessed with a degree of trust when from within a wardrobe in his own Manhattan home, Robeson Jr produced a robe of deep purple. This was ultimately displayed for the first time in the NMGW exhibition as that which Paul Robeson had worn in his renowned performance as *Othello* with the Royal Shakespeare Company in 1959.

However treasurable such items may be though, *Let Paul Robeson Sing!* was not summed up by objects. Measured by conventional rules-of-thumb, the exhibition had an excess of narrative on the walls – but what a potent narrative, supported by what powerfully reproduced images. Visitors will remember this wealth of archival photography, complementing the strikingly lit displays of memorabilia, and those elements of theatricality, which dramatised some of the themes of Robeson's life.

We saw the giant broken manacles and chains, a reminder of the fact that his father escaped from the slavery into which he was born on the Robeson plantation in North Carolina. We experienced, too, the Avenue of Abuse, walking over broken 78rpm Robeson records and burnt papers which symbolised the racist riots of Peekskill in August 1949. We watched the evolving mural which artist Philip Childs created, working with children from many Welsh schools, and heard the innovative soundtrack, commissioned from composer Andrew Griffiths, which gave the exhibition a voice to match its vision.

Most of all, perhaps, we realised, because the exhibition walls invited our public responses, that this exhibition was not a one-way message, it was a dialogue. It has been progressively our understanding that exhibitions should not be static installations; they should be, where possible and appropriate, an organic process, responding and evolving to reflect that which our public bring to and require of the exhibition. Indeed, as one of the notable spin-offs from the exhibition, the Paul Robeson



Broken chains welcome visitors to the Let Paul Robeson Sing! *exhibition*

Wales Trust has now published *Breaking Chains, Making Links*, a compilation of the responses that the visiting public wrote on the exhibition walls. The words are deeply moving.

So why did the remarkable Paul Robeson capture the imagination of a country of which he said 'There is no place in the world I like more than Wales'? His politics certainly chimed with that of many so-called 'ordinary working people' in the Welsh valleys and beyond. He had found a symbolic bond with the Welsh miners from south Wales back in the 1920s, and he later sang in the valleys to raise funds for Republican Spain. He found parallels too as he discovered his African inheritance, and recognised that other nations shared his struggles to protect and define their culture against colonialism.

The location shots for *Proud Valley* were filmed in south Wales, and few could resist the emotional spirit raised by this, Robeson's favourite film. Most of all, there was a tremendous symbolism in the trans-Atlantic telephone link between Robeson, deprived of his passport in New York, and the 1957 Miners' Eisteddfod in Porthcawl. Voices of unity reached across the oceans. In Reithian terms 'Nations spoke unto nations', but not just with the rubber-stamped voices of the dominant classes, but in the accents and tongues of Welsh miners, and with the deep music of Robeson's liberated mind in an imprisoned body.

The exhibition suppressed curatorial objectivity to observe: *Robeson's voice will never be forgotten in Wales, a nation nurtured on choral harmony and sharing his passion for the cultures of struggle and democracy.*

When the exhibition opened at the National Museum, Paul Robeson Jr arrived from the States with his wife Marilyn to share our celebration of his father. He proved much in demand by the television and press, as were those whose passion had promoted the idea of the exhibition – Dr. Hywel Francis MP, Alun Michael MP, Rodney Bickerstaff of UNISON, and artistes Beverley Humphreys and Willard White, whose own singing paid tribute to Robeson. Paul Robeson Jr worked diligently in the hours before the opening to share his memories, philosophy and inherited passion with the cameras. Still, we asked ourselves – in a heightened version of the question we ask every time we open an exhibition – would the son of Robeson like it?

He liked it. He said in his opening speech 'This exhibition here in Wales has become *the* Paul Robeson exhibition *for* the world!' We weren't going to grumble at that. Freeing the Robeson memory to sing within our walls had been our rare privilege.

Ian Fell
Assistant Director, Exhibition & Interpretation

LET PAUL ROBESON SING! was a collaborative project between the National Museums & Galleries of Wales and the Theatre Museum, National Museum of the Performing Arts, London. The exhibition evolved from *Paul Robeson: Bearer of a Culture*, produced by the Paul Robeson Foundation Inc. Sponsors included The National Assembly for Wales, The Department of Culture, Heritage & Sport, The Home Office, T&GWU, Unison, GMB, HTV, Cywaith Cymru/Art Works Wales, Academi, and Arts & Business New Partners. The Paul Robeson Wales Trust has been responsible for further exhibition development.

Roman resources produced in partnership

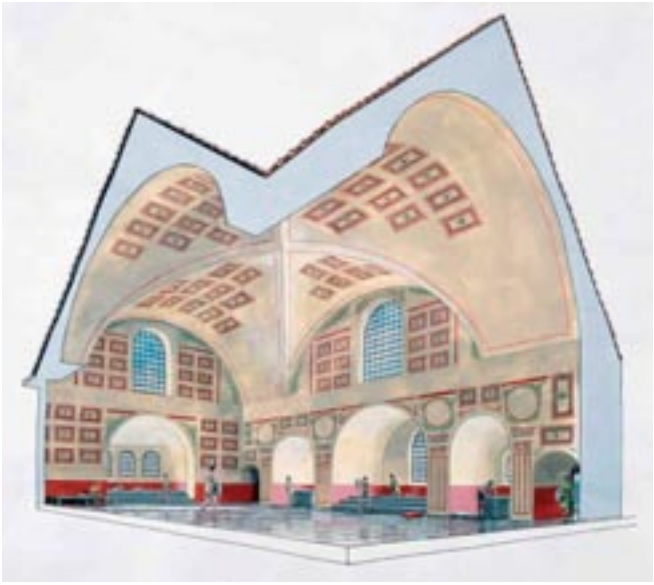
Twenty-six thousand students a year partake in our educational programmes at the Roman Legionary Museum, Caerleon (RLM). Caerleon is the site of one of the three main Roman fortresses in Britain. The high number of visits is due both to the quality of the Roman remains available and to a continually evolving range of facilities, activities and resources on offer. In order to develop the potential of these assets, a number of partnerships have been formed.

Our core partnership with Cadw: Welsh Historic Monuments is well established and together we provide an integrated educational programme in Caerleon. Through this co-operation we have been able to provide access to all of the Roman resources on site. This is very important, as the artefacts housed in RLM are complementary to the heritage sites managed by Cadw, enabling us to provide a complete picture of life at the Legionary Fortress.

One of our main projects this academic year has been to develop outreach resources for the Fortress Baths. Firstly, we produced an artefacts box, developed from a talk frequently delivered by our Curatorial Officer, which can be used to develop an understanding of life at the Fortress Baths from the objects found there. Initially it was used for schools engaged in video conferencing with the RLM and then replicated to the outreach collection to enable a greater number of schools to access the artefacts prior to visiting. These artefacts boxes were funded by the Clore Duffield Foundation. The outreach resources required guidance notes for teachers and to this end we involved Newport Local Education Authority (LEA) at an early stage to ensure the most effective educational basis.

Newport LEA's Advisors were very enthusiastic about the possibility of their schools being able to access the NMGW and Cadw resources on their intranet. Together we worked on delivering history using IT as the medium. Their expertise in producing quality educational internet resources was highly beneficial not only for the Newport schools but to all children studying Romans in their school curriculum.

We decided upon our curriculum objectives, in consultation with the LEA officer for history, before forming a working party which comprised three LEA officers as well as four experienced teachers whose release time from daily work was paid for by the Education Business Partnership (EBP). Newport LEA's information technology advisor convinced us of the merits of producing a 'web quest' (an American concept), in which the children work through a series of activities using information from the internet. To complete the challenge, they make a PowerPoint presentation to a group of their peers. Over five days the working party wrote and produced the 'web quest' ready to be used by school children.



'The frigidarium' (Cadw: Welsh Historic Monuments. Crown Copyright)

During the 'web quest', children build up to their challenge through a series of five tasks which enable them to research from artefacts, selected websites, books, photographs and multimedia (developed by Cadw, NMGW and Newport LEA). The activities include simple spreadsheets, map work, an artefacts session, research and drawing work. The resources were launched in Welsh and English in June 2002, having been tested beforehand by the schools involved in the project.

Throughout this project we had access to 'primary resources' and specialist information from NMGW, Cadw and Newport LEA. This included a large bank of photographs and artists' impressions of objects and buildings relating to the baths at Caerleon. One of the most impressive components of this was a three hundred and sixty-degree view of the barrack room in which you can click on artefacts in the room to see them from all angles. Another particularly engaging feature was the inclusion of a video, which animates a quotation by Seneca the Younger who wrote about his life close to a public bath. This web resource illustrates how our organisations are able to offer a higher standard of activity by sharing our resources and skills.

We will continue working with LEAs and heritage organisations across Wales in the production of resources and special activities to continue the improvements in our service to schools. To view the web quest look for the 'Resources' link on www.nmgw.ac.uk/education.

Nigel Cross
Education Officer, Roman Legionary Museum

Self / Portrait: the redisplay of art in Gallery 16

If you have taken a walk around the art galleries since October 2001, you might have noticed a significant change: Gallery 16, the space at the National Museum & Gallery which displays art post-1960, has recently been refurbished. A white cube now replaces the beige square and the contents have been altered.

Our reason for making this move is perhaps obvious: as our contemporary collection grows and our space to display it remains finite, we have been finding it increasingly difficult to tell a meaningful art-historical story of the last forty years within the confines of one room. This fact combined with the arrival of a number of new contemporary acquisitions which had never been on public display, prompted us to opt for a changing, thematic hang. Thus, if you now visit Gallery 16, you will find work by emerging artists hung alongside modern masters under the banner of *Self / Portrait*.

This broad theme explores notions of self-identity and the representation of others. Traditional figurative portraiture is represented by the work of Shani Rhys James and Francis Bacon, but other ideas such as personal history and childhood memory are explored. For the first time we have introduced a video work – a loan from the Arts Council of England Collection to the permanent gallery displays: *Measures of Distance*, by Mona Hatoum, tells of the artist's return home to Beirut in the 1980s and explores the theme of exile and separation and the effect of war on family life.

The materials used in the making of the works on display reflect more realistically contemporary artistic practice: oil on canvas is present, but alongside work made of wood, clay, grass, wool, rubber and even human skin. Donald Rodney, who died in 1998, suffered from sickle-cell anaemia and his work reflects the impact his illness had upon him: *My Mother My Father My Sister My Brother* is the title of a tiny house made from the skin taken as a result of his numerous operations. In using his own body as his medium, this art work becomes a literal self-portrait. In contrast, Bethan Huws' *Boats* are made from a memory of the artist's childhood in north Wales, when she used to make similar objects out of rush and float them down the river.

The intention is to change the display on an annual basis. This will offer the visitor the chance to see more of the collection more often, although it will mean that some of their favourites may not always be on display. However, by selecting an overarching theme for what can often be challenging and difficult art, we are attempting to make contemporary art more accessible and enjoyable. The response to date has been very favourable and we hope that visitors will continue to be both challenged and inspired.

Helen Waters
Assistant Curator (Modern & Contemporary Art), Department of Art

Gallery 16 (installation shot)

Flight

In the ninety-nine years since Orville Wright became the first human to fly by means of a powered machine, aircraft development has surpassed all expectations. Today, air travel is taken for granted; we can fly half way around the world in twenty-four hours and travel at twice the speed of sound. Through rocket technology, men have even walked on the Moon. We accept that aircraft fly but how many of us have ever wondered why something so heavy doesn't fall out of the sky? This was one of many questions addressed in the largest temporary exhibition the Museum has ever undertaken, *Flight*, which opened in July 2001.

A Hawker Hurricane stands guard outside the National Museum & Gallery

The idea of examining the evolution of flight through geological time had been germinating since 1994. Beginning with the first flying insects, 350 million years ago, the story was to finish with a brief look at how humans, who cannot fly naturally, had managed to join the animals in the skies. Like acorns, the final result grew into something far more ambitious, that caused many a headache and stretched the fabric of the building to its limits!

Central to the ethos of the exhibition was the necessity of explaining how things fly. Therefore, a major part examined the principles and problems that all flying things have to contend with. From the outset a device to generate lift is required, which is usually some sort of a wing. Wings come in all shapes and sizes, dependent upon the lifestyle of the animal. Aircraft wings follow suit. For instance, the albatross, which spends much of its life gliding effortlessly over the oceans using the power of the wind over the sea to generate lift, has long, narrow wings, as do man-made gliders which use moving air to a similar effect. At the other extreme the short, stubby wings of the sparrowhawk give it great manoeuvrability for chasing its prey amongst trees, a shape mimicked by highly manoeuvrable fighter aircraft like the Hawker Hurricane. With the help of the Imperial War Museum, Duxford and the Aircraft Recovery Team from RAF St Athan, we managed to acquire examples of both of these aircraft. Unfortunately, we could only get one of them into the building, the *Hurricane* having to stand guardian over the grass outside the National Museum & Gallery.

Flying things need a strong, lightweight framework. Flying vertebrates have evolved bones full of hollows and air spaces that are light but very strong. Insects, although small and light, still have to contend with the same problem. Their tough, chitinous exoskeletons are very strong and light and resemble a miniature version of an aircraft fuselage. The next problem to overcome is drag, which is nullified by streamlining and the use of smooth surfaces – think of Concorde.

Once in the air a power source is required unless one wishes to just drift in the wind like plant seeds. As well as providing lift, animal wings also produce thrust. Humans have failed to replicate this superb design despite many fruitless, and in some cases highly comical, attempts to emulating flapping bird flight. Humans overcame this problem with the development of the engine driven propeller and, in time, the extremely powerful jet engine. Due to the weight of muscle tissue, flying animals are limited as to the maximum size that they can attain. Due to the immense power that aircraft engines can generate per unit of weight, planes are not so shackled and have been able to get larger and larger.

From the outset it was felt that the principles of flight would be best explained through a 'hands-on' approach. It was here that the main exhibition sponsors, GE Aircraft Engine Services, Inc., came into their own. Teams of their apprentices and graduate

Part of the section on early aviators including Captain Ernest Willows of Cardiff and Sir George Cayley, who is generally considered to be the founder of the science of aeronautics

The GE CFM56-5A Airbus engine, hanging from its false wing in the gallery, dwarfs the first jet engine to be manufactured in the USA in 1942, the AE1. Both items were lent by GE Aircraft Services Inc.

engineers designed and built five interactives to explain these principles. The finished products have been extremely popular and heavily used, especially by children, and one suspects that GE are very thankful that children are not allowed anywhere near aircraft engines!

GE also managed to acquire one of the stars of the exhibition, a CFM56-5A turbofan jet engine that is used to power the A320 Airbus. This four-ton engine, with its 1.7 metre wide fan blades is not the largest in the GE stable, but still required the Museum's front door to be removed for the first time since the Museum was built in order to get it in. This engine was suspended beneath a false wing in the gallery and was a stunning sight. It totally dwarfed the AE 1 engine, which sat underneath. The latter was the first jet engine to be produced in the USA and launched the United States into the jet age.

Flight contained much more than the few things mentioned here. Our 400-seat Reardon Smith Lecture Theatre was turned into a cinema with a plethora of specimens hanging from the ceiling, including the Museum's own monoplane, *Robin Goch*, and a replica of a nine-metre wing span pterosaur, one of the largest animals ever to have flown. It was made by Dr David Martill (who worked on the *Flying Giants* episode of the BBC's *Walking with Dinosaurs* series) and his team at Portsmouth University. Elsewhere, examples of modern and fossil insects, reptiles, birds and mammals could be seen rubbing shoulders with models of planes and rockets. Spectacular images of animals in flight, by the photographer Stephen Dalton, adorned the panels and the whole was bound together by clips of film. Storylines touched on ballooning, mythical flying animals and objects, early aviators, aircraft development and, finally, space-travel, past, present and future.

Even though this temporary exhibition took over more space than any other we have yet produced, *Flight* only really scratched the surface of the topic. We would have required most of the building to do the subject justice and much bigger doors to get many objects in! Putting the exhibition together brought us into contact with many organisations without whose help we would not have been able to achieve what we did. To them we are extremely grateful.

After closing in Cardiff the exhibition moves to the Yorkshire Museum, York for six months before hopefully transferring to the Emirate of Sharjah in the United Arab Emirates.

Stephen Howe
Collections Manager (Palaeontology), Department of Geology

From Wales to Newfoundland

One of the great successes of the permanent *Evolution of Wales* exhibition in the National Museum & Gallery, Cardiff is the impact it has had on geological museums in two quite different parts of the world. Not only did it so impress the Ruler of Sharjah in the United Arab Emirates that he wanted one exactly the same for his new Desert Park Museum, it has now influenced the displays of another new museum, this time on the other side of the Atlantic. In 1997, a project team working on a new geological interpretation centre for St John's, Newfoundland visited our exhibition and found that the approach and style of *Evolution of Wales* were closest to what they wanted to achieve. Accordingly, an invitation was extended to the Geology Department to provide expertise and, in 2000, Tom Sharpe, Curator of Palaeontology and Archives, who has been involved in both the *Evolution of Wales* and the Desert Park projects, was seconded for several months to join the Newfoundland team.

The new centre has been established by the Johnson Family Foundation, a charitable trust which has funded various community heritage projects throughout the Canadian Province of Newfoundland and Labrador. The Johnson Geocentre, which opened in June 2002, aims to make both Newfoundlanders and visitors aware of the remarkable geological story of the province, and to explain how studies of the Newfoundland rocks have benefited our understanding of ancient continental drift and plate tectonics. Geological processes have also given Newfoundland a wealth of minerals and building stone which have been exploited for centuries, while offshore, the Grand Banks are changing from a rich fishing ground to a major oil province. The Geocentre will act as a focus for the public awareness of geology, highlighting current events as well as mineral and oil exploration activity.

The foundation acquired an 18-acre plot adjacent to Signal Hill National Historic Site which belongs to Parks Canada, the Canadian National Park Service. Signal Hill is a prominent headland overlooking the entrance to St John's Harbour, and in addition to its historical importance as a defensive site, it offers spectacular views over the city and along the coast. As such, it is the most visited heritage site in Newfoundland. The Geocentre lies on the approach road to Signal Hill and is therefore ideally placed to attract visitors on their way to or from the top of the hill.

Geocentre site under snow, December 2000

Geocentre under construction, June 2001

The Geocentre site is an area of rounded, glaciated rock outcrops and boggy valleys. Most of the site will be maintained in its natural state, and the Geocentre building has been designed by Newfoundland architect Charles Cullum to minimise its visual impact on the landscape. At the start of April 2000, peat and glacial till were excavated from a hollow between rock outcrops, and a flat roof built across it. The natural vegetation will be restored to this flat roof and only a glass-fronted entrance building and parking lots will be visible. Most of the building is underground, allowing the natural rock walls to form part of the 1,500 square metre exhibition area.

The exhibition has been designed by Strata, a consortium of designers in New Brunswick, Nova Scotia and Ottawa, who have come together specifically for this project. To set up a geological museum from scratch is a challenge. In the NMGW we can draw on our reserve collections which have been acquired over more than a century, but in Newfoundland, as in Sharjah, specimens for exhibition have had to be acquired from a variety of sources. This involved field collecting as well as soliciting donations from collectors, prospectors, mining companies, the Provincial Geological Survey, Memorial University, and other institutions. We were able to offer help with the appointment of designers and subsequent development of the gallery design, the development of the storyline, the acquisition of specimens, and liaison with colleagues in the university, the Geological Survey, and the establishment of a relationship with curatorial colleagues in the Newfoundland Museum.

The involvement of the National Museums & Galleries of Wales with this project is apposite: 500 million years ago, eastern Newfoundland was part of the same microcontinent as Wales, and the two regions share a common fossil fauna. For example, the same species of trilobites are found both here in Wales and near St John's. To illustrate this point, we have lent a fossil trilobite, *Paradoxides davidis*, from Pembrokeshire for display in the Geocentre next to a specimen of the same species from identical rocks in eastern Newfoundland.

Tom Sharpe
Curator (Palaeontology and Archives), Department of Geology

Temporary Exhibitions

National Museum & Gallery, Cardiff

Horrible Histories: Funfair of Fear
15 April – 20 August 2000

British Art Show 5
8 September – 5 November 2000

Pwy Ydym Ni? What Makes Wales?
5 December 2000 – 4 March 2001

Nature in the Glass: the Creations of Blashcka & Son
1 April – 17 September 2001

Sisters Select: works on paper from the Davies Collection
30 September 2000 – 11 February 2001

Let Paul Robeson Sing!
24 March – 3 June 2001

Flight
8 July 2001 – 24 February 2002

Walking with Dinosaurs
29 March – 30 June 2002

Vanities & Virtues: Printmaking in Stuart Britain
24 February – 20 May 2001

Images of a floating World: Japanese Woodblock Prints
2 June – 28 August 2001

Will Roberts (1910-2000)
8 September – 2 December 2001

Drawings by Augustus & Gwen John from the Collection of the NMGW
15 December 2001 – 17 March 2002

Piranesi Prints
30 March – 7 June 2002

Art in Wales Gallery

Painting the Dragon
8 April – 9 July 2000

Miner-Artists: The Art of the Welsh Colliers
22 July – 15 October 2000

Welsh Artists Talking
28 October 2000 – 25 March 2001

Cambria's Curse: Images of the Welsh Bard (1750-1850)
10 April – 29 July 2001

John Brett: A Pre-Raphaelite on the Shores of Wales
14 August – 25 November 2001

Richard Wilson at Work
8 December 2001 – 7 April 2002

Museum of Welsh Life, St Fagans

Between Two Worlds
To April 2001

The Builders and the Dreamers: 100 Years of the Labour Party
8 June – 12 October 2001

Koyo Hosoe: The Unknown Japan
19 November 2001 – 21 April 2002

Turner House Gallery, Penarth

Watercolour Society of Wales
1 April – 29 May 2000

Ken Elias – New Pictures
10 June – 30 July 2000

South Wales Art Society
5 August – 8 October 2000

Genius Loci – Spirit of Place: The Pembrokeshire Landscape and Graham Sutherland
21 October 2000 – 31 October 2001

South Wales Art Society
10 November 2001 – 27 January 2002

Watercolour Society of Wales
2 February – 7 April 2002

Touring Exhibitions

Let Paul Robeson Sing!
Tracking Dinosaurs
Animal Magic
Horrible Histories: Funfair of Fear
Sisters Select: works on paper from the Davies Collection
Gwen John
Flight
Art in Exile

Publications by National Museums & Galleries of Wales staff in 2000 - 2002

(The names of NMGW staff are shown in **bold** type. NMGW publications are in shown in ***bold*** type.)

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