Editorial

Sandra Smith
Head of Conservation

Welcome to the first edition of the Journal within 2004.

The departmental work programme is as intense as ever, and we are looking forward to the challenge of delivering more of the Future Plan for the Museum.

The Museum's New Paintings Galleries opened in November 2003, and the V&A paintings collection, a well-kept secret for many years, is once again on public display. Thanks go to the conservation team, who did a beautiful job of conserving the paintings and original frames for the gallery. The team, which consisted of permanent and contract staff developed a great rapport and their commitment to seeing the project through was outstanding. *Nicola Costaras,* the conservation team leader, highlights some aspects of this work in her article whilst *Barbara Dabrowa* gives an external perspective to working on frames and *Jim Dimond* talks about his work on two Turners.

Adding value, for the Museum or the conservation profession through training, is a key theme within this edition of the Journal. *Ruth Fletcher* is glowing in her praise for conservators contributions to training in the V&A, and the importance of them being involved with any object related skill development. *Michael Wheeler* shows how developing good working relationships with colleagues in India resulted in a unique opportunity to provide professional conservators with training in Indian painting. *Joanna Whalley* has undertaken intense and specific training in gemmology in anticipation of work for a forthcoming Jewellery Gallery. Through Joanna, the Department will make a real contribution to primary research for the gallery and this in turn will add value and interest to the display and any associated publications. Looking forward into the New Year, the installation of OCEAN *(Martin Hancock)* and the provision of live environmental data for the South Kensington site will raise many questions about use of galleries and the way the building works. Training, for anyone accessing this data, will be essential if the information is to be used realistically and for the long-term benefit of the museum collections. A slightly different angle on training, is presented by *Graham Martin* and *Marion Kite,* their work on hats has highlighted the need for cautionary changes in handling and storage methods, to ensure that staff are not subjected to potentially harmful mercury residues. Changes such as these involve re-education of long standing practice and approaches, of us as well as others.

The Department is undergoing structural change to align itself with the changing museum and this is explained more fully in the Journal. The structural chart for the Department has been redesigned, to reflect these changes and to identify the new senior management team. Last but not least the Journal also contains the latest departmental photograph, which reflects the numerous staff changes which have occurred over the last year. Unfortunately, as is always the case, not everyone could attend, but it does give some opportunity to put some names and faces together. Everyone looks remarkably cheerful in the photo, and I am sure that this will be carried through the whole of 2004!

The New Paintings Galleries

Nicola Costaras
Head Painting Conservator

The New Paintings Galleries at the V&A have just opened to the public as I write. I still can't quite believe it and find myself going to check that I haven't dreamt it. The practical conservation of the paintings started exactly a year ago in November 2002. One hundred and sixty-seven of the 200 oil paintings on display required some work and we had just under one year in which to complete it. I am reminded that the building originally built to house many of the same paintings was also completed in a year – it was opened by Queen Victoria in 1857 - and the galleries that have just been refurbished are a part of that original building.

Most of the paintings were previously on display but many had not been seen out of their frames for a long time. Condition assessments were carried out on all the paintings in the previous galleries as well as several in store. After the design for the hang had been agreed we made a further assessment, in consultation with the Head Curator of Paintings, Mark Evans, of which paintings we would select for more extensive treatment. With limited time available we wanted to identify those paintings where time spent would make the most difference to their appearance and, at the same time, ensure that they were also a priority from the curatorial point of view. Katharine Donaldson, the frames conservator, went through the same process of assessment, discussion and prioritising.

The majority of the paintings were examined out of their frames, and checked for any signs of deterioration. At the same time as documenting their condition, we made a note of any interesting technical art historical information. A number of paintings had been treated by my predecessors in the recent past and, therefore, there was no need for any further treatment although colour transparencies were taken, which meant un-framing and re-framing. Minor treatment procedures were carried out on the majority of the paintings such as the removal of surface dirt, the mending of small tears and occasionally the consolidation of loose paint. The paintings were photographed before being refitted into their frames. Progress on the conservation of the frames naturally mirrored the work on the paintings. Low reflective glass was fitted in the 111 frames that did not already have it. With the closure of the former Paintings Galleries in June we were able to turn several galleries into temporary studio space. This enabled us to work more efficiently where a large number of paintings and frames needed a small amount of work individually and meant that the new low-reflective glass could be ordered in batches. Racking on the walls of the galleries provided storage space for the paintings that were ready to be hung (figure 1).

Photography by Nicola Costaras

Figure 1. The team at work in the temporary studio in the former Paintings Galleries

Photography by Maja Kardum

Figure 2. Devi Ormond and Adam Webster in the Paintings Conservation Studio

Apart from the practical conservation of the paintings, we were also involved in designing interactives for the galleries and in writing articles for the website. For one of the interactives, Joe Padfield from the National Gallery used his digital image-processing skills to help us create a series of images corresponding to the layers of an oil painting - support, ground, underdrawing and paint layers. Printed on separate sheets of acetate, the images can be stacked on top of one another in order to convey the idea of a painting as a three-dimensional structure.

The initial examination of the small number of paintings that were selected for more extensive treatment threw up some interesting questions that merited further investigation. Viewed through the microscope it was apparent that an underlying paint layer had oozed up through the drying cracks in the surface paint layer of Corot's *Twilight: landscape with tall trees and female figure* (CAI.65). On the left side this paint was a bright pink. Having the advantage of x-ray facilities in-house, we were soon able to see from the x-radiograph that Corot had made substantial alterations to his original composition (see image on website). The pink paint was from a house now completely concealed. Because the underlying paint was still wet while the surface paint had dried, drying cracks formed in the upper layer.

During the course of the project colleagues from the Van Gogh Museum, the Statens Museum, Copenhagen, the Instituut Collectie Nederland, the Philadelphia Museum and the Fogg Art Museum came to examine paintings while they were in the studio. We contacted colleagues with a special interest in either a particular artist's work or in specific phenomena such as the protrusions that have recently been discovered in oil paintings. These protrusions were first analysed in the Netherlands when tiny craters on the paint surface and spheres of transparent material within the paint were noted during the conservation of *The Anatomy Lesson of Dr Tulp* by Rembrandt. The spheres analysed thus far contain lead soaps and they are the subject of continuing research at ICN and Mol*Art* in Amsterdam. We found similar protrusions on two paintings: *L'Immensité* by Courbet (1869) and *Le Pont de Batignies* by Rousseau which was of great interest to the researchers.

During the course of the project almost every section in the Conservation Department was involved in one way or another. One gallery is dedicated to works of art on paper and there are ceramic, metalwork, sculpture and furniture objects on display. The Science Section advised on the glass, filters and case materials and continues to be involved in environmental monitoring of the galleries.

In addition to one full-time paintings conservator, and one full-time frames conservator, Katharine Donaldson (and during her absence Zoë Allen), the conservation team consisted of two paintings conservators on one-year contracts, Devi Ormond and Adam Webster, three frames conservators: Kristina Young, Barbara Dabrowa and Sarah East on four, eight and three month contracts respectively, and two interns Rita Bachmayer and Béatrice Villemin – the former for six months and the latter for four months. A generous sponsor funded a five month contract for the conservation and restoration of two paintings by Turner, which was undertaken by Jim Dimond.

Although with fierce time constraints, the project was a wonderful opportunity to work with great colleagues, to examine a large number of paintings from the collection, to make new discoveries and to contribute to other research projects even if there was no time to investigate further ourselves. We noted several paintings with underdrawing that it would be interesting to record in the future. The large number of unlined canvases in the collection in excellent condition will also be of interest for future study of nineteenth century materials and techniques. The highlight for everyone working in the paintings studio was seeing the transformation of the two Turners as successive layers of extremely discoloured varnish were removed. It is a great pleasure for me to see the paintings in their original setting within the V&A. The galleries are a tribute to the large number of people who worked on them.

The Cleaning of Two Paintings by Turner

Jim Dimond
Painting Conservator

When cleaning a painting by Turner one is armed with the knowledge that, compared with his contemporaries, the artist had a radical approach to representing nature and experimented widely with materials to achieve spectacular effects. Turner is known to have mixed oil/wax formulations with oil/resin combinations, known as "megilps", to produce paint with the desired handling characteristics and final appearance. The treatment of two paintings is discussed in this article: technical analysis carried out on both has identified the presence of both wax and resin as mixtures with oil, but these only appear locally. These were presumably in areas where Turner required a certain texture and transparency to describe a natural phenomenon. The implication of this for the conservator is that the solubility of the paint layers may be quite close to that of the discoloured varnish to be removed, and that no single part of the painting behaves under solvents quite like any other. Indeed as it turned out with these two paintings one might argue that no painting by Turner behaves quite like any other.

Although quite close in date the two paintings are visually very different. *Lifeboat and Manby Apparatus Going off to a Stranded Vessel making Signal (blue light) of Distress ('Manby')* (SA.211) is a study of sea and sky in storm conditions, with the depiction of the deploying of the Manby Apparatus in the rescue of a ship in distress. The painting uses complex layering of paint to produce the sense of tumult in water and air. Areas on the left of the painting exhibited such a complicated arrangement of different glazes and scumbles that through the varnish it was difficult to understand quite what visual effect Turner was hoping to achieve. *'East Cowes Castle',* (SA.210) by contrast, depicted a much calmer scene of a regatta setting sail from Cowes into the Solent on a clear summer morning. The use of paint appeared to be much more understandable than *'Manby'* with glazes creating limpid watery effects and more solid impasto employed on the shore and crowd scenes. Initially it was assumed that the more visually complex *'Manby'* would present a greater challenge in cleaning.

Structurally both paintings had suffered from some aspect of Turner's technique. Large areas of *'Manby'* showed that widespread, small scale loss had occurred from a surface layer, and for years it had been assumed that the painting was too delicate to travel. Turner often returned to his paintings after a significant period of time during which the paint had dried. Fresh oil does not bind well to a dry substrate, and it is for this reason that many of Turner's paintings exhibit a flaking problem. Ruskin reported that Sheepshank's maid swept up paint fragments from beneath *'East Cowes Castle'* each morning, and the appearance of many large fills in the painting after cleaning would indicate that there was some truth to this anecdote.

The surface of the *'Manby'* was checked to make sure that there had been no recurrence of the flaking problem and then surface cleaned with water. Small tests revealed that though the paint layer in many areas could be solvent sensitive, the layers of varnish could be removed safely by careful choice of solvent mixtures. The solvents used distinguished easily between two varnish layers and finally could be used to remove the second and more discoloured layer. This was done by employing a painstaking swab rolling technique that protected the delicate paint layers beneath. The cleaning has given a clarity to details within the painting and restored the balance of colours in the subtle cloud and sea effects.

'East Cowes Castle' proved to be more difficult from the start. More consolidation had to be carried out to secure some small flakes before the cleaning was attempted. The varnish layers themselves were extremely discoloured and complex in character. Solvents could not distinguish between the layers easily, and analysis of cross sections carried out by Joyce Townsend, from the Tate Gallery Conservation Department, suggested that at least one of the varnish layers may contain oil. It was assumed that the solubility of the discoloured varnishes was too close to that of the delicate glazes in the paint layer for the varnishes to be removed safely. For this reason it was decided to remove all but the final varnish layer, and to thin this layer as evenly as possible. While this treatment could not be as complete as that carried out on *'Manby',* it did give a result that revealed much of Turner's original intention while protecting the delicate paint layers during cleaning.

The Conservation of Three Gilded Frames for the New Paintings Galleries at the Victoria and Albert Museum

Barbara Dabrowa
Conservator-Frames, Art Gallery of New South Wales, Sydney, Australia

My experience at the Victoria and Albert Museum began as I was shown the project for the new Paintings Galleries in mid January 2003. Coming from Australia it was not easy adapting to the climate, the new environment and to an enormous and unfamiliar museum. I was lucky enough to work alongside a professional team of conservators on this project who helped to acquaint me with the new studio.

A condition survey of more than two hundred items showed that several damaged frames needed full conservation, such as cleaning, replacement of lost ornament, in-gilding and toning. The majority of frames required minimal preventive conservation treatment, which included dusting and consolidation. Each of the frames requiring full conservation were examined with the naked eye and under magnification in order to decide on an appropriate conservation treatment.

My work mainly consisted of the conservation of three of the more severely damaged gilded frames. As part of the treatments I wanted to retain as much of the original surface as possible and to choose reversible conservation treatments, which would result in the least alteration of the original material. For these reasons I used a combination of both traditionally prepared materials and non-traditional materials and gilding techniques. Traditional techniques were used for preparing the surface of the gilding and a non-traditional gilding system was used for the application of the gold leaf.

Case Study 1 – Frame from 'Landscape with Stormy Sky' C.1842 (No. CA1.55)
P, Rousseau (1812-1867).

This was a French, neo-classical frame with moulded fluting and acanthus leaf corners. The frame was originally water gilded on red and ochre yellow bole with both a burnished and matte finish. Later the frame was partly re-gilded using oil gilding techniques. Bronze paint was used in the previous, unsatisfactory restoration of the ornament. The frame was dusty and dirty overall and there was widespread cracking of the compo ornament and the corner joints. Abrasion was visible along all sides of the frame and on the edges of the moulding. A few losses to the gesso and compo were found on the surface of the frame. The later, re-gilded areas were flaking which was caused by the deterioration of the oil size.

The conservation treatment began with gentle cleaning of the frame using 5% solution of tri-ammonium citrate which was removed afterwards with saliva. Initial stabilisation of the corners was carried out with undiluted Plextol B500™- a water dispersion of copolymer of ethyl acrylate, EA, methyl methacrylate, MMA, and ethyl methacrylate, EMA. This was followed by the removal of poor repairs and areas of bronze over-paint from the frame. The next step was the consolidation of cracks and fragile areas using Plextol B500 diluted with a 50:50 solution of de-ionised water and ethanol. Losses of the original gesso surface and compo ornaments were refilled with an appropriate new gesso (calcium carbonate, rabbit skin glue and water) and compo (calcium carbonate, rabbit skin glue, hide glue, rosin, linseed oil, glycerol and water). All the areas of newly applied gesso were painted red using watercolour to match the original colour of the bole.

A mixture of Plextol: B500 and Plextol D360™ (Plextol D360 is a water dispersion of a butyl acrylate, BA and methyl methacrylate, MMA based copolymer), was applied and *Superieur* (23.5 carat) gold leaf was then used to imitate the surrounding matte, oil gilded surface. The areas to be water gilded and burnished were covered with Plextol B 500 diluted in water to which ethanol had been added (50% v/v and ethanol to water 2.5% v/v). This adhesive layer was re-activated with warm breath which was sufficient to adhere the gold leaf. The surface was then burnished followed by the application of a coat of ormolu to the matte areas (Ormolu is a 10% of shellac dissolved in ethanol in glue prepared from 1 part of rabbit skin glue and 14 parts of deionised water).

Watercolour and mica powder were used for toning the new gilding to imitate the surrounding area. Finally, it was necessary to build up the back of the frame with timber (pine) to allow for additional thickness to accommodate the painting.

Case study 2 - Frame from 'Shakespeare's Principal Characters' (No. FA. 197), 1812. Thomas Stothard (1755-1834).

This was a unique 19th century frame with a slip and glazing door. The frame is decorated with arabesque, floral ornaments: and acanthus leaf corners. The compo ornament, which covers the surface, is symmetrical in the middle part of the frame only. The flowers and leaves are individually applied on the edges and the bottom parts of the ogee. The frame was originally water gilded and oil gilded with a matte finish. It was also re-gilded at a later date using oil gilding and improperly restored and painted over with bronze paint. There were many cracks in the compo ornament and at the corner joins. Abrasion was visible along all sides of the edges of the moulding. A number of losses to white gesso, compo and timber were found on the surface of the frame. Much of the ornament and all of the corners were missing. The gold leaf from the later oil gilding was flaking

The earlier unsatisfactory repairs and bronze over paint was removed; the surface consolidated, cleaned and losses filled. Plextol B500 was used as a consolidant and 5% tri-ammonium citrate was used for cleaning. Recreation of the corners started with modelling up of one corner using compo – a cast was then taken from this in order to reconstruct the other three details. Very small parts of the missing, cast floral ornament were re-carved in gesso. Other larger parts were cast, and then painted with shellac to imitate the base of the oil gilded, matte finish. Watercolour was used to replicate the base of the water gilded finish.

The effect of oil gilding on the frame was achieved by applying gold leaf with a mixture of Plextol B500 and D360. The damaged, water gilded areas on the slip and glazing doors were coated with Plextol B500 diluted in water with additional ethanol (50% v/v and ethanol to water 25% v/v). This was re-activated with warm breath before the application of the gold leaf. The in-gilded surface was then smoothed or burnished where appropriate. A protective layer of ormolu was applied to areas with a matte finish and toning was carried out with watercolour and mica pigments. As with the previous frame, a pine build-up was added to the back of the frame to safely accommodate the painting and backing board.

V&A Photo Studio

Figure 1. Detail of frame belonging to *Shakespeare's Principal Characters* (Mus No. FA 197). During treatment showing areas of in-filling

V&A Photo Studio

Figure 2. Detail of frame after re-gilding of missing areas

V&A Photo Studio

Figure 3. *Shakespeare's Principal Characters* by Thomas Stodthart after conservation treatment of the painting and frame

Case Study 3 - Frame from 'Saint Cecilia and the Angels'. 1836 (Museum No. 553-1903) by P, Delaroche.

The last project was a large, classical 19th century French frame with a timber moulding and compo ornament. The water gilded, red and blue, bole slip was in the original condition except for the re-gilded corner ornaments. Stabilisation of the corners was not necessary, but the extensive network of cracks needed urgent attention. The frame had originally been water and oil gilded on a thick gesso base. At the time of investigation the frame was in a poor condition. The red bole and the partially burnished ornaments were visible through areas of bronze over-paint. The wood was also cracked, much of the ornament was detached or missing, or had been replaced with unsatisfactory repairs.

The conservation treatment of this slip and frame started with consolidation of the surface using a mixture of Plextol B 500 and water (same proportions as in the previous treatment). It was necessary to fill the losses and replace the missing ornament using gesso and compo followed by the removal of the bronze over-paint. The gaps in the slip were filled with cotton bandages dipped in Plextol B500 to act as a flexible filler.

Gesso applied on the newly replaced areas was smoothed and painted using yellow ochre and red watercolour to match the original bole. A mixture of Plextol B500 and D360 (50% v/v) was applied and *Superieur* (23.5 ct) gold leaf was then used to imitate the existing oil gilded surface. Areas to be water gilded and burnished were covered with Plextol B 500 diluted in water and ethanol (50% v/v and ethanol to water 25% v/v). This adhesive layer was re-activated with warm breath which was sufficient to adhere the gold leaf to the surface which was then burnished. The treatment was completed by applying a coat of ormolu to the matte areas which were then toned with watercolour and mica powder.

Conclusion

In all of the conservation treatments I combined traditional methods for preparing the surface for gilding with non-traditional gilding methods.

All in all I thoroughly enjoyed my time at the V&A and feel that my experience was very worthwhile.

Further reading

1. Sawicki, M. *Research into non- traditional gilding techniques as a substitute for traditional matte water–gilding method*, ICOM 13th Triennial Meeting Rio de Janeiro, 22-27 September 2002, preprints volume 2, James & James (Science Publishers, UK) 2002.

2. Thornton, J. *The use of nontraditional gilding methods and materials in conservation*. in Gilded Wood, Conservation and History, Sound View Press, 1991.

3. Thornton, J. *Minding the gap: Filling losses in gilded and decorated surfaces*. Gilding and Surface Decoration, Preprints of the UKIC Conference Restoration,1991.

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Plextol is supplied by Rohm GmbH Chemische Fabric, Postfach 4242, 6100 Darmstadt 1, Germany.

Any inquires should be addressed to the author:

Barbara Dabrowa
Conservator-Frames
Conservation Department
Art Gallery of New South Wales
Art Gallery Road, The Domain
Sydney 2000, NSW Australia
Tel: +61 2 9225 1766
Fax: +61 2 9221 6226l
E-mail: barbarad@ag.nsw.gov.au
Internet: www.artgallery.nsw.gov.au

An Introduction to Gemmology

Joanna Whalley
Senior Metalwork Conservator

Gem material is of a varied nature and includes both inorganic and organic substances from natural and synthetic crystals to, for example, pearls, corals, jet and ivory.

At the Victoria and Albert Museum, gem material is found not only in jewellery, but as inlay in wood or stone, or set in decorative metalwork and carved as objects in their own right. Some of the gem materials, however, have never been professionally assessed and may have been labelled incorrectly, if labelled at all. Others, for example those in the chalcedony group (agate, onyx, carnelian, sard), rely on a system of nomenclature which is often confusing and has changed over time. There is a need for specialist identification which can be costly, and in the past the Museum has often had to rely on the voluntary help of (eminent) external specialists.

In 2001, the V&A provided funding for the author to study for the Diploma in Gemmology – the study of gem material - at The Gemmological Association and Gem Testing Laboratory of Great Britain, London (Gem-A). Theory and practical examinations were successfully completed in March 2003 resulting in the Fellowship of the Gemmological Association (FGA). The Gem-A Diploma syllabus is extensive and covers the formation and mining and recovery methods, the chemical and physical nature of gem material, the nature and manufacture of synthetics and simulants, the fashioning of gemstones, treatment and enhancement methods, and of course, identification techniques.

Basic Methods of Gem Identification

Gem material is first examined visually (with or without magnification), to determine colour and colour effects, level of transparency, surface condition (wear/fracture/indications of cleavage/polish), lustre, inclusions (features within the material), quality of cut/polish, and level of refractivity (by viewing facet edges through the gem).

As gemstones display a variety of physical and optical constants these may be assessed with a number of instruments (Figure. 1). The method chosen depends on accessibility (restrictive mounts and settings), the nature of the gem material, and the resources available. The identity of a gemstone should ideally be confirmed with a minimum of two methods. The majority of instruments used to support identification rely on the nature of interaction between gem material and visible light, and as such are non-destructive:

Photography by Joanna Whalley

Figure. 1: Instruments commonly used in Gemmology (left to right): polariscope; dichroscope; refractometer; spectroscope

Refractometer: Visible light passes through and/or is reflected by gems. The refractometer relies on the principal that each gem species has a characteristic angle of 'total internal reflection'. The refractometer is used to measure the refractive index (RI) of a gemstone and also provides further information about the crystal structure.

Spectroscope: As visible light passes through, or is reflected by material, specific groups of wavelengths are absorbed and the remaining light is interpreted by the eye as colour. This feature is utilised by the spectroscope, a small hand-held instrument which splits light into its constituent colours in the form of a spectrum from red to violet. Characteristic absorption spectrum patterns are created when viewing some gemstones, and these may be diagnostic.

Dichroscope: If a gemstone is doubly refractive (anisotropic), light which enters the gemstone passes along two different routes. This may result in two or more colours as the light exits the gemstone. The resultant light is generally interpreted by the eye as a single colour, though this colour may vary slightly depending on the direction of view. A dichroscope separates the light on exit from the stone into its constituent colours. For example, a ruby will clearly display two colours: pink-red and orangish-red (a

natural crystal will usually be cut so that what is thought to be the best colour, pink-red, is most noticeable when viewed from above); whereas a red spinel, commonly mistaken for ruby, is only singly refractive and so will only ever display one colour.

Polariscope: Shadow patterns revealed when turning a gemstone on the table of a polariscope indicate the crystal structure of transparent and translucent gem material. In some cases diagnostic patterns may be viewed. For example, quartz usually displays a highly indicative 'bulls eye' pattern along the optic axis.

Specific Gravity (SG): SG is a figure which represents the relative density of a material, it is expressed as a ratio of the weight of a substance to the weight of an equal volume of water. This figure can be obtained by weighing an object in air and then in water and using a simple formula. The SG can only be calculated from un-mounted gem material, and is particularly useful for small carvings.

Further Examination

Visible light occupies a small fraction of the electromagnetic spectrum. In a gem testing laboratory, various parts of the whole spectrum may be used to aid identification. For example X-rays are used to provide radiograph images which differentiate between materials such as natural and cultured pearls and can reveal some treatments such as glass fills in diamonds; Infrared (IR) energy is used in infrared spectrometers such as the Fourier Transform Infrared spectrometer (FTIR) which is similar in principal to the spectroscope for visible light, but analyses infrared wavelengths rather than visible light wavelengths. FTIR can be used to identify plastics, oils and waxes, and resin-based materials such as amber.

The Raman microprobe is a spectrometer equipped with a microscope and an IR, visible light or UV laser illuminator. It was first used in gem laboratories in the 1990's and relies on the development of a database of spectra for each gemstone species[1]. Raman is particularly useful to conclusively identify gem materials in settings which restrict the use of conventional instruments; to identify inclusions, which may help to provide an opinion on the geographical origin of a natural gemstone; and to identify artificially introduced materials such as oils and waxes.

Applications of gem material examination at the Museum

Gem material has been identified and 'Gem Material Reports' produced which are provided for curators, fellow conservators and members of the public. The information is used for records, labels, and may affect treatment considerations, as is the case for materials which have been impregnated with a wax or oil and/or are artificially coloured, composite, or are particularly sensitive, such as opal or amber.

Fifty items of jewellery were examined and the gemstones identified for John Clarke's forthcoming V&A publication on Himalayan jewellery[2] (Figures.2a&b). This provided a unique opportunity to look at setting methods from this region - many of the gems are backed with foil and coloured resins which enhance colour and in many cases provide the only means of attachment. It also provided an overview of the gem materials employed: the great variety of cutting styles and possible gem localities in each item of jewellery suggested a number of differing gemstone provenances.

Photography by Joanna Whalley

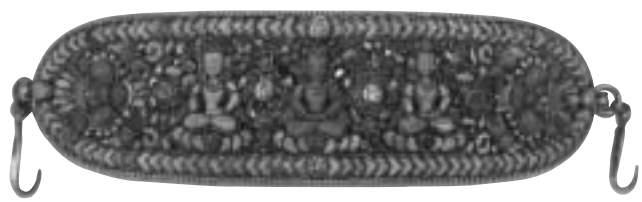


Figure. 2a: A Nepalese Head Ornament (Mus.No.IM.160-1913) for a religious image, probably 18th Century. Silver gilt, diamonds, rubies, sapphires, aquamarine, zircon, turquoise, coral, lapis lazuli, freshwater pearls

Photography by Joanna Whalley

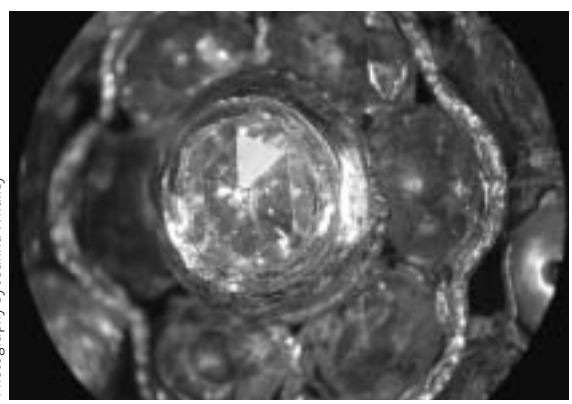


Figure. 2b: Detail of a rose cut diamond from the head ornament showing a 'trigon' (an etch pit in the surface of a natural diamond crystal displaying the crystal structure). The trigon has been left on the surface of the diamond as it was facetted in order to conserve weight, and possibly to confirm identity

Photography by Joanna Whalley

Figure. 3: The Ape Salt, c.1450-1500 18th & 19th Century, (The Warden and Scholars of New College, Oxford)

The gem materials of three objects included in the V&A's major exhibition *Gothic: Art for England 1400-1547* were identified. The resulting information has been used for exhibition labels. Among these is the Ape Salt, on loan from New College, Oxford (Figure. 3). The eyes of the ape are set with translucent pinkish red gems, and the ape supports a transparent, colourless hemisphere. These materials had not been formally identified as far as is known, and had been thought to be glass and rock crystal respectively. The use of a spectroscope and a dichroscope confirmed that the pinkish red gems are rubies; observation of inclusions and use of the polariscope prove that the hemisphere is, in fact, glass.

The Gilbert Bayes Sculpture Gallery is currently being developed as a gallery dedicated to the materials and techniques of sculpture production. Approximately 65 cameos and intaglios in a variety of gem materials are to be displayed. The majority of these objects are made of polycrystalline quartz (chalcedonies and jaspers) in its differing forms. Classification of these materials has been historically inconsistent. However, a comprehensive system of nomenclature was introduced by Margaret Sax, with help from Christopher Cavey, Alan Jobbins and Gertrude Seidmann, for the British Museum's seals[3]. The system relies on colour and colour banding; for example if a chalcedony is brown, it is called sard, however if there are distinct curved bands of other colours within it, the material will be called agate, if the bands are straight, it may be called an onyx ('sardonyx'). The cameos and intaglios for the Gallery are to be examined and re-classified if appropriate.

The analytical work so far has been demanding and incredibly enjoyable, and with other projects to come including a supporting role in the redisplay of the Jewellery Gallery, the future holds many new and exciting challenges.

I am grateful to the Victoria and Albert Museum for giving me the opportunity to attend this course. Thanks to the Metalwork Department, particularly to Richard Edgcumbe and Clare Phillips, for their continued support and encouragement; and I am indebted to Nigel Israel, Chairman of the Society of Jewellery Historians, for allowing himself to be adopted as my unofficial mentor.

References

1 Lucia Burgio, Objects Analysis Scientist at the V&A has conducted a short-term practical study into the use of Raman spectroscopy in the Museum. As part of this study, a database of spectra was developed using gems sourced by the author, and this database was used to identify gems on four items of Himalayan jewellery. *(V&A Science Dept. report No 03/37/LB).*

2 Clarke, J. (Curator, Asian Department, V&A) *Jewellery of Tibet and the Himalayas.* Due for publication in July 2004.

3 Sax, M. *Recognition and Nomenclature of Quartz Materials with specific reference to Engraved Gemstones*. Jewellery Studies 7, 1996.

For anyone with an interest in Gemmology, the Gem-A website is worth a visit at www.gagtl.ac.uk.

The following books offer a good foundation for the study of gemmology:-

1) Hall,C. Gemstones. ISBN 1564584992. Published by Dorling Kindersley, (1994).

2) Read, P. Gemmology. ISBN 0750644117. Butterworth Heinemann, (1999).

3) O'Donoghue, M. Identification of Gemstones. ISBN 0750655127. Published by Butterworth Heinemann, (2003).

4) Schumann, W. Gemstones of the World. ISBN 0806994614. Sterling Publishing Co INC, (revised edition 2001).

Key for Departmental Photograph: November 2003

Front to Back and Left to Right:

Front row: Alan Derbyshire, Sandra Smith, Graham Martin

Second row: Lynda Hillyer, Fiona Campbell, Valerie Blyth, Albertina Cogram, Frances Hartog, Marion Kite, Mike Wheeler, Drew Anderson, Diana Heath, Chris Gingell

Third row: Alison Richmond, Atsuko Yamamoto, Victoria Oakley, Fi Jordan, Helen Bower, Kathrin Rahfoth, Nicola Costaras, Adam Webster

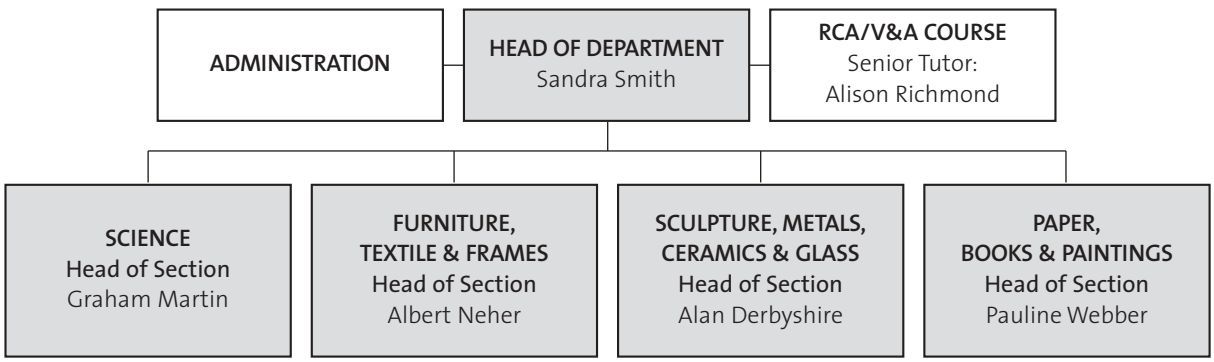
Fourth row: Christine Powell, Anne Greig, Clair Battisson, Juanita Navarro, Jane Rutherston, Susana Fajardo-Hunter, Donna Stevens, Brenda Keneghan, Zoë Allen, Victor Borges

Fifth row: Merryl Huxtable, Boris Pretzel, Tim Carpenter, Nigel Bamforth, Tim Miller, Katja Gruber, Sofia Marques

Restructuring of the Department

Sandra Smith
Head of Conservation

New Structure: December 2003



In October the Department underwent a restructuring process. This was in response to changing work practices in the Museum and the need to find more flexible ways of using staff, space and other resources within the Department.

The V&A has ambitious plans to improve access to the collections and increase overall gallery space at the South Kensington site and the Branch Museums. Maximising public areas in the V&A will reduce the overall departmental footprint.

Containing the Museum's running costs within the ever-diminishing (in real terms) grant in aid (GIA) is a challenge. Salaries take up the majority of the GIA, and the Museum is, wherever possible, streamlining the core complement and looking for more flexible ways to supplement permanent staff. As in so many national museums, external funding now finances major projects such as gallery refurbishments, and core conservation expertise is supplemented with short term, project related contracts.

Over the past two years the museum structure has been reconfigured, combining small departments into larger units, resulting in more efficient management and more effective use of resources. Curatorial departments have been amalgamated and the Collections Services Division (of which the Conservation Department is a part) has been formed.

The restructured Department has three large conservation sections: Textiles, Furniture and Frames (TFF); Sculpture, Metals, Ceramics & Glass (SMCG); Paper, Books and Paintings (PBP). The combinations partly reflect shared conservation practice and also reflect amalgamation of the material-based curatorial departments.

The three Section Heads, together with the Head of Science, form the new Senior Management Team (SMT). Conservation Administration and the RCA/V&A Conservation Course remain key areas of departmental activity and are represented on the SMT by the Head of Department. The SMT will take a strategic overview of the activities in the Department. They will take leading roles in

communicating with other parts of the Museum and the Division. They will prioritise and lead areas of departmental activity which deliver key museum objectives, such as education, access and research, as well as managing their sections and professionally developing staff. Delivering the ambitious public programme of the V&A with a reduced staff complement will be a challenge, and the team needs to identify ways of creating a more flexible workforce.

A review of space has been undertaken across the Department in response to the Museum's need for more efficient use of non-public areas. Common process and shared practice has been identified within (and across) sections and this has enabled an effective rationalisation of space. The frames and gilding sections will be combined in the furniture conservation studio and paintings conservation will join the book and paper studios during 2004. Drawing together the staff of SMCG is expected to occur in the longer term, as funding becomes available.

The structural change is just the beginning of the process, reviewing traditional work practices and identifying alternative approaches is now underway. The next steps are to look at the activities in the Department, to identify best practice from within the former sections and ensure that this is adopted within the new structure whilst also looking at ways to simplify and streamline departmental roles and communication.

Practising conservators, scientists and the administrative staff can identify changes that will make the process smoother, more efficient and effective. Involving them in this change process is therefore essential to its success, not only in terms of responding to increasing and conflicting demands on our time, but also for maintaining our departmental reputation and standards. A departmental away day in December has begun to explore these issues in more detail.

Staff Development in Conservation Issues

Ruth Fletcher
Training & Development Advisor

Readers of the Conservation Journal will know that the V&A Conservation Department sets and maintains very high standards of performance. However, you may be less aware of the extent of work carried out in the Department to further the skills and experience of a whole range of museum staff. This contributes to the targets set for the V&A by the Department for Culture Media and Sport (DCMS). The targets are summarised below:

- Access - improving the visitor experience
- Learning - expanding opportunities for both visitors and staff
- Excellence - improving our practices and promoting excellence
- Social inclusion - engagement with under-served audiences and the Regions
- Efficiency and effectiveness - development of IT and effective systems
- Care of the collections

The key staff groupings that receive training from the Conservation Department include Curatorial, Front of House and Maintenance and Cleaning – essentially, all staff who work with and around the collections. By ensuring that these groups have a basic understanding of the risks posed by environment or mis-handling, the Department's training activities:

- increase the ability of staff to alert the experts to problems quickly and efficiently, avoiding damage to the collections
- ensure that they follow best practice in care and cleaning
- enable them to more fully inform visitors about works being carried out or why access may be restricted.

These outcomes contribute to Access, Excellence, Efficiency & Effectiveness and Care of the Collections.

Conservation Contribution to Current Training
Unless otherwise indicated, full details of events can be found via the V&A's Training Schedule. Conservation contributors are listed , but many events are co-presented with colleagues from other departments within the Collections Services Division.

Future Plans
The Training Team is constantly reviewing and developing the provision of learning opportunities for museum staff. The following programmes are under development and will involve input from the Conservation Department.

- Understanding Objects and Materials
  This will offer a series of material specific modules covering aspects of Materials Science and Technology which will ensure a more advanced level of care and understanding of a wide range of material types.
- Front of House Development
  Basic conservation awareness will be an important element in this programme, enabling Front of House staff to recognise potential risks to collections.

In Conclusion
The Training Team can only achieve its goals with the support of departments like Conservation. In so doing it allows us to promote Continual Professional Development and continue to maintain the standards required by the Investor In People Award.

Programme	Topic or specific event	Contributor(s)
Assistant Curator Development Programme	Induction sessions	Lynda Hillyer
	Basic Preventive Conservation Bug & Pest Control Object Handling	Graham Martin Val Blyth Mike Wheeler, Albertina Cogram, Juanita Navarro & others
RCA/V&A course	Many sessions within programme	Various – contact Alison Richmond for detail
Individual or small group coaching	Checking Bug Traps Object Handling	Val Blyth Various
V&A Induction	Departmental Induction Tour	Tim Carpenter

CoSHH Does Work

Graham Martin, Head of Science Section
Marion Kite, Senior Textile Conservator

As a normal part of the conservation process a risk assessment is undertaken before a conservation task is started. In the UK there is also the specific issue of the Control of Substances Hazardous to Health (CoSHH) that legally impels the conservator to consider the 'cradle to grave' aspects of the chemicals in use. This law applies not only to those chemicals to be purchased and used during the conservation treatment but also to the residual chemicals in the objects themselves. The entry route to the body may be by inhalation of vapours or through the epidermis whilst handling or reshaping. This short contribution demonstrates that the CoSHH process has led to proper considerations of risk associated with the conservation and handling of felt hats shown to contain mercury salts. It also underlines the importance of understanding how the object was manufactured.

By no means a new phenomenon, the presence of mercury salts in felt hat manufacture has been known to present a health hazard to workers in the felt industry since the nineteenth century. It is generally held that the term 'Mad as a Hatter' derives from the Lewis Carroll tale published in 1865 as *Alice in Wonderland* where the Hatter at the Tea Party demonstrates the classic symptoms of mercury poisoning. More recently a 1994 paper follows up the Tuscany (Italy) compensation claims of 1,146 fur hat workers.

The potential for mercury salts to be contained in any of the hats in the V&A Collection was recognised early in the CoSHH risk assessment. A short pilot study was undertaken to verify the presence or absence of mercury by the use of energy dispersive x-ray spectroscopy (EDXRF) on a number of felt hats.

Different animal hairs have been used in the manufacture of hats and one of the most important was the beaver. The most desirable and expensive hats were made from beaver. Manufacture of felt relies on the property of animal fibres to become entangled when exposed to heat, moisture and intermittent mechanical pressure. This contribution is particularly concerned with the use of mercury salts to improve the felting process for beaver fur. This is known in the fur trade as carrotting. In the carrotting process metal salts were used in conjunction with a mineral acid or strong organic acid and usually hydrogen peroxide or some other oxidising agent was included. The authors have not located any modern texts on the use of metal salts. This is probably due to the switch away from the use of such metal salts due to their toxicity and environmental impact. A key early paper that describes the chemical processes and presents an early literature survey is that of Barr and Watt. It is evident that the industry very much wanted to get away from the use of mercury salts which was introduced in the mid 18th century. For a museum curator and conservator – the remnants of mercury from the carrotting process still remains a threat.

The most common damage to historic hats is crush damage and deformation due to poor storage, and the most frequently used treatment in the conservation of hats is the use of steam to relax and reshape them to remove these deformations. During this process, the hat is manipulated by hand to ease out the deformations and bring back the shape. When hats are embrittled and degrading, the steaming and manipulation process may need to be repeated several times as re-shaping can be a gradual and slow process.

Picture by Graham Martin

Figure 1. Circa 1840, English black beaver hat (T.105-1937).

The V&A has an estimated 100 hats that may be classed as felted fur hats. Up to 50% of this part of the collection is thought to contain mercury salts. At the Museum of London there are an estimated 31 hats that are classed as beaver and so may also contain mercury salts. It is impossible to estimate the size of other collections with any accuracy but in the UK alone there must be in excess of 1000 such hats.

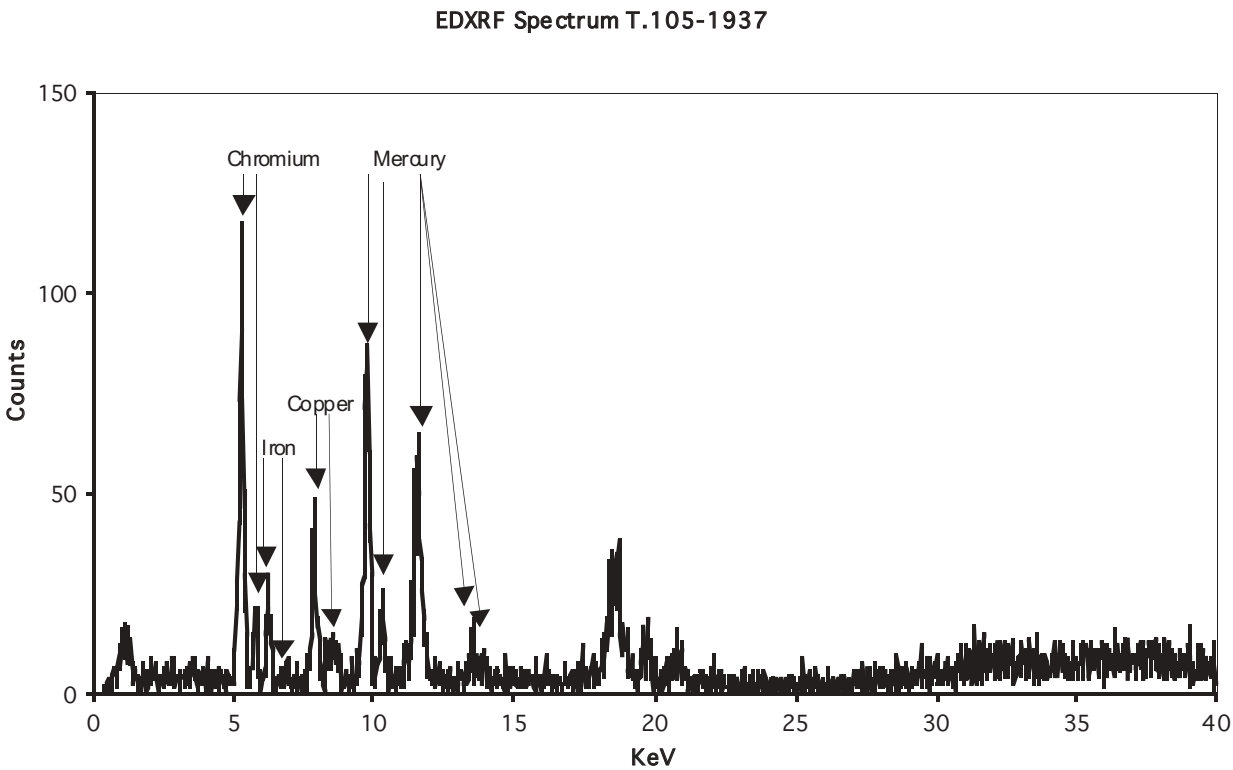


Figure 2. EDXRF spectrum of T.105-1937 showing mercury and also note chromium content.

As a short-term interim measure to minimise exposure of staff and visitors to mercury, the V&A devised a programme of isolating the hats by 'bagging'. This has been undertaken until it was possible to use EDXRF to survey the collection. To enable continuing access to the collection a prime requisite was that the bag should be made of clear transparent material and self-adhesive chemical hazard symbols were attached as appropriate. The authors suggest that this is the minimum that can be undertaken to protect staff and visitors from potential mercury exposure. Gloves and a protective suit were worn during the bagging. For the bags, Mylar™ and self adhesive tape were used. Fit and proper disposal of the mercury contaminated gloves and other material should be arranged through local licensed chemical disposal contractors.

The nature of the EDXRF analysis has considerable advantages in that the technique is non-destructive but it is difficult to quantify the levels of mercury in the felt. In order to determine these levels a specialist laboratory was contracted to undertake destructive analysis on a sacrificial hat obtained specially for these purposes. The Environmental Impact Analysis Group at the University of Derby[1] have the necessary expertise and equipment to undertake this work, that has shown that the average mercury content of this hat was 1.1% w/w[2].

A literature study had identified that the traditional conservation process of steaming the felt hat in order to re-shape could lead to the loss of mercury in the fur[3]. One of the sources reported that there was a loss of between 7% and 9% by weight of mercury when fur is subjected to a temperature of 105°C[3]. The use of steam to treat hats may give rise to exposure of

the conservator to mercury, and appropriate safety measures must be employed. To test this, under carefully controlled and agreed conditions, one half of a sacrificial hat was subjected to steaming as would be usual in conservation processes. Typically this is five to ten minutes of steam and hand manipulation. No significant difference between the steamed and unsteamed half of the hat could be found. Also, occupational hygiene monitoring of the air that the conservator was breathing indicated a mercury concentration of 0.7 μgm^{-3} where occupational exposure standards for mercury are 25 μgm^{-3} [3] [4] Note that entry to the body via skin contact has been excluded from consideration in this investigation as gloves were worn.

The authors have been aware of this issue for over ten years. The potential for arsenic, mercury, cadmium or other substances exists. Exposure of staff and visitors to other harmful chemicals must be treated with the utmost concern.

The proper use of risk assessments and CoSHH has identified the hazard and given staff a tool to manage the issues involved.

This article is an updated summary of a paper presented at the Conservation Science CS2002 conference, Edinburgh 2002[5]

References

1 Environmental Impact Analysis Group, Research Centre Director: Dr N Hudson, University of Derby, Kedleston Road, Derby DE22 1GB.
[e] n.f.c.hudson@derby.ac.uk
[t] +44 (0)1332 591719

2 Environmental Impact Analysis Group, University of Derby, TEST REPORT No 8395

3 Wood, M. and Haigh, D., A *Comparison of the Belgian and BHAFRA Methods for Estimating the Amount of Mercury Present in Carrotted Fur,* a technical report of the British Hat and Allied Feltmakers Research Association (BHAFRA) now defunct. The archives are held by the Hat Works – The Museum of Hatting, Stockport, UK. BHAFRA Library report: 35, page 6, 4 November 1955

4 Evans, R, Report from Aon Health Solutions dated 20 June 2003

5 Martin G. and Kite M., *"Conservator Safety - Mercury in Felt Hats",* Proceedings of Conservation Science 2002 Conference, Edinburgh May 22 - 24, page 177 – 181, Archetype Publications, London ISBN 1-873132-88-3, edited by J. Townsend, K. Eremin and A. Adriaens, 2003 .

The OCEAN Project at the V&A

Dr Martin Hancock
Managing Director, Hanwell Instruments

Environmental monitoring is an essential feature both of routine collection care and of the mounting of exhibitions. External lenders of objects will often place stringent specifications on display conditions, and will commonly require proof of compliance.

In the case of the V&A, as with most other large institutions, environmental monitoring has seen many approaches used over the years, with varying degrees of success. The OCEAN (Object Centred Environmental Analysis Network) project is an attempt to combine the cumulative practical experience of the V&A staff with the technical expertise of an external company in order to produce a robust and user-friendly monitoring system. At the V&A, this new radio based system will consist of a thousand or more environmental sensors over a range of geographically separated sites.

In particular the following key specifications were made for the system:

- Each end user should have their own customized view of the system, depending on their area of responsibility
- The level of system access should be controlled based on individual users
- The system must offer a quick visual indication of conditions in all relevant locations
- Report generation facilities should be comprehensive and under the control of the end user. Depending on access level the report should range in complexity from a simple summary up to a distribution analysis
- Automated periodic reports should be available
- A simple calculation representing an overall assessment of conditions should be available
- There should be a full calibration/audit regime in place
- Minimum intervention should be required by the system administrator under normal circumstances
- The system should cope with short-term power and network failures

The past few years has seen a gradual move away from manual data recording devices (such as thermo-hygrographs and data loggers) towards centralized systems, which offer an automated collection of readings. These systems are inevitably based on modern information technology infrastructures such as local area networks and PCs. As any computer user will know, this brings its own practical problems but, nevertheless, the savings in staff time and the availability of on-line real-time data has made this the preferred approach for institutions large and small.

In parallel with the developments in IT there have been many advances in radio technology, to the point where it is now practical to reliably cover even the largest buildings using low-power, license-free radios in battery powered devices.

The approach taken for the OCEAN project was to combine radio sensors with the Museum's networking facilities. The general layout of the system is shown in Figure 1 below: -

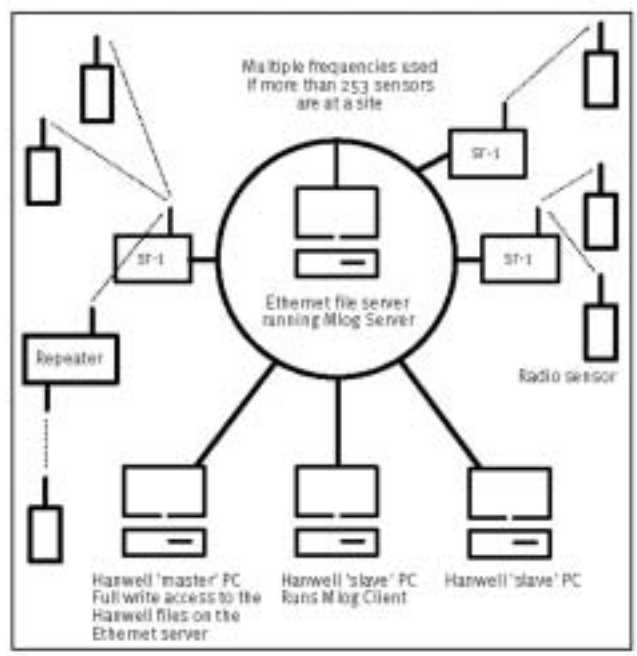


Figure 1. system schematic

In this scheme the total requirement is broken down into cells in a configuration similar to a mobile phone network. Each cell supports up to 250 sensors transmitting to a Smart Receiver (SR1) radio/ethernet converter unit. The cell will have its own designated radio frequency and may have within it repeater units as required. Each SR1 has its own fixed network address, which may be on a local or wide-area network. Each cell automatically registers sensors and their serial number.

The SR1s contain both memory and back-up power and are periodically interrogated by a program running on a dedicated server. This machine also runs the access control software and a server program. Users communicate with the server via client software, which has been customized for this project. The system administrator has remote control of this server.

The system software represents a major development of Hanwell's RadioLog industrial monitoring system, which itself has origins in the well-established environmental monitoring system (EMS) used world wide in the heritage sector. These two products are intended to support typically 100 or so sensors and are primarily text (list) based, although simple graphic representations are available.

It was considered that with such a large amount of data the text-based approach described above would be unwieldy and that what was required here was a totally graphical front end with a strictly hierarchical sensor organisation. From the users' viewpoint the most important features would be as simple as possible a method of navigating the Museum and at-a-glance indication of problem areas.

The solution that has been adopted required the design of a new user interface package. In this interface the sensors are represented as small icons on an AutoCAD™ generated drawing of each site (see Figure 2). This approach allows the user to exploit the powerful navigation capabilities of advanced drawing packages and to readily view the Museum at any appropriate level of detail. Each icon is colored red, yellow or green. In this scheme 'red' represents a current alarm condition, 'yellow' a historic alarm condition as yet not handled and 'green' indicates no problem.

Any, or all icons, can be expanded to show live values and to allow access to graphing etc via a pop-up menu.

Each sensor is assigned to a site, a division and, optionally, a department, section and subsection. Each user is given a scope of view based on the same scheme. These two pieces of information are used to create the tree view (right pane) and to customize it for each user. All sensor icons appear in collapsed form for all users but only those that appear on the tree can be processed in any way. Clicking on any tree entry will cause the drawing to adjust as necessary to show that sensor. Those sensors in alarm appear in a similar tree structure in the left pane. Currently each layer of the drawing represents a floor of the Museum but this is totally configurable to suit individual site requirements.

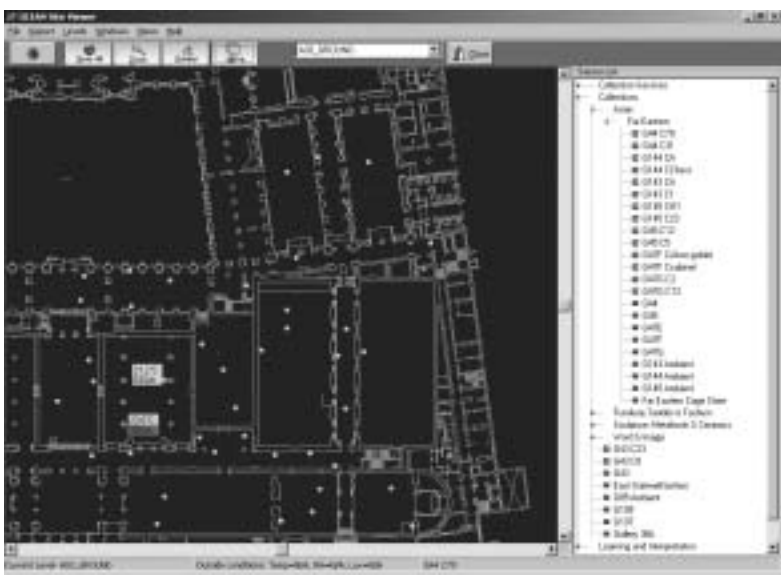


Figure 2. site screen

The system manager allocates every user an access level and this level is used to restrict the range of actions that can be performed by any individual. The usage of the system is registered in the audit trail as users log-in and log-out.

Report generation is a key requirement. The user can readily select and filter all of the sensors within his view and generate an Adobe™ portable document format (PDF) report in an optional level of detail, for any time period of interest (Figure 3). The filtering distinguishes between case, ambient and external sensors to ensure that like is compared with like. All of the normal performance figures required, such as time within specification, are automatically produced without the need for any spreadsheet work, as has been the case in the past.

Currently one cell, representing approximately one quarter of the South Kensington site, has been installed and the software is largely complete, the main exception being the functions related to the automatic e-mailing of reports.

The current intention is that the remainder of the hardware will be installed at the main site during the first two quarters of 2004 with the other buildings added in late 2004/early 2005. The e-mailing options will also be completed in phase 2 of the project and the software rolled-out for general use.

The system is working well with a high reliability of radio coverage and a few regular users. Interested readers should contact Graham Martin or Boris Pretzel in the Science Section.

Acknowledgments and Informations

Hanwell Instruments Ltd., 12-13 Mead Business Centre, Hertford, SG13 7BJ, UK

AutoCAD™ Autodesk, Inc., 111 McInnis Parkway, San Rafael, California 94903, USA

Adobe™ Uniroyal Chemical Company Inc., Benson Road, Middlebury, Connecticut 06749, USA

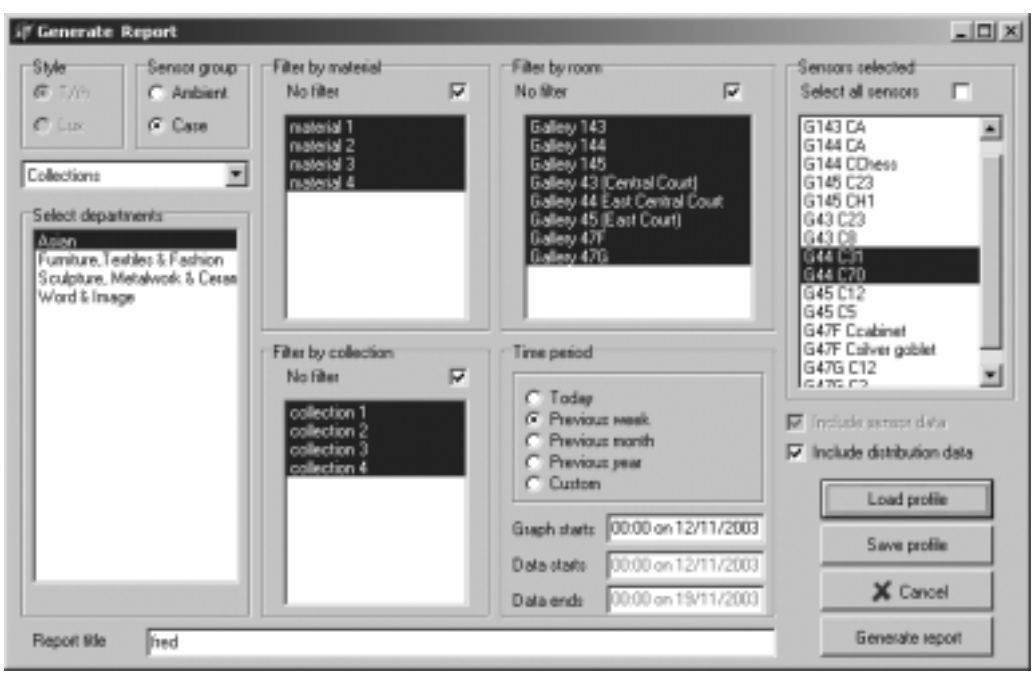


Figure 3. report selection

An Indian Painting Workshop led by Shammi Bannu

Mike Wheeler
Senior Paper Conservator

Shammi Bannu is a renowned master artist in India with a very long family tradition of miniature painting which stretches back several hundred years. His father Bannu was well known across India as both an artist and as a skilled restorer of miniature paintings. Shammi was invited to England to demonstrate painting techniques in the Hamzanama exhibition space for a period of two weeks. His visit to the UK was generously supported by the Friends of the V&A. He kindly agreed to also hold a workshop at the V&A during his visit.

Based in Jaipur, Rajastahn, Shammi is among a small group of artists in India working in a completely traditional style using mineral pigments which they prepare and grade themselves. Jaipur is renowned as a centre for arts and crafts and has a tradition of both painting and jewellery making, as well as being a centre for trading of minerals and precious stones. Many of these same minerals are used as both settings in jewellery and as artists pigments. Lapis lazuli is a good example of this type of semi-precious stone used for both purposes. Likewise, the knowledge of gold and silver working techniques are useful in the preparation of the metallic leaves used for preparing gold and silver paints.

The target audiences for this one day workshop were both artists and conservation specialists. It was hosted by the V&A Paper Conservation Section in May 2003, as part of a programme of events designed to tie in with the *Adventures of Hamza* exhibition organised by the Smithsonian Institution, Washington DC that was exhibited at the V&A from 15 March - 8 June 2003. Twenty people attended the workshop which was conducted in the Paper Conservation studio and in the Hamzanama exhibition space.

The day began with a slide lecture designed to introduce the audience to the pigments commonly used for painting as well as explaining some of the basic preparation methods, that include grinding, washing to remove impurities and grading according to particle size. It was of interest to notice the variety in the colour of pigment originating from different natural sources and the degree to which the colour may vary according to the amount of grinding and preparation it has received. Gold paint is made from gold leaf which has been mixed with gum and ground down with the palm of the hand on a flat saucer until a liquid paint is produced. It takes many hours to produce only a very small quantity of this precious paint which is commonly used in place of gold leaf for the decoration of Indian miniature paintings on both cloth and paper.

Participants examined both pigments and papers and learned how to use the traditional, curved squirrel hair brushes which allow extremely fine lines to be drawn on the paper and are used for applying the paint to small areas. Samples of the different pigments were painted out by participants while Shammi showed the audience his method of assembling a cloth and paper support, which was similar to the laminated type used for the Hamzanama folios in the Hamza exhibition. He also demonstrated the way of stretching out the adhesive-soaked cloth on glass and adhering the dampened paper to it with wheat starch paste.

By the end of the day, participants were left with a far greater appreciation of the time and effort which goes into producing a miniature painting and the painstaking nature of the painters craft. It is to be hoped that this rich tradition will continue to thrive in the rapidly changing world of twenty first century India.

Photography by Mike Wheeler

New Intern

Anne Kwaspen

Textile Conservation Intern

In 2002 I completed a two year course studying Restoration/ Conservation of Textiles and Costumes at the Royal Academy of Fine Arts, Antwerp, Belgium. Before this I had already obtained a Masters Degree in Fine Arts, with an option of Textile Art. In addition to the design and execution of my own wall tapestries, I learned several traditional textile techniques and developed a genuine fascination for old textiles.

For some years now, I have been working as a pattern-cutter and design assistant for several fashion designers, and this experience has proven to be a major advantage in the understanding of patterns of historical costumes. In fact my prime interest is in costume conservation.

I have already spent some time abroad in several conservation workshops. During a two month stay in the Czech Republic I worked mainly at the Baroque Theatre of the Cesky Krumlov Castle, where I started a project for preventive conservation in the storage of 18th century theatre costumes.

Next I worked as an intern in the Textile Conservation Studio at Hampton Court Palace. My main job there consisted of the conservation of hats and the preparation of display supports for the exhibition, "Hats and Handbags of HM Queen Elizabeth II", at Kensington Palace.

I am very pleased that I have been given the opportunity of an Internship, for seven months, at the V&A. During this period I will have the chance to gain more 'hands on work' experience. My program here varies a lot – I am working both on costumes and other textiles – allowing me to practice several different techniques.

New Staff RCA/V&A

Dr Vincent Daniels

Research Fellow, Conservation Science, RCA

Vincent Daniels studied for his BSc at University College Cardiff where he stayed to do research into the properties of thermally degraded poly(vinyl chloride). During some of the academic holidays he worked for Bush, Boake and Allen, a perfume and flavourings manufacturer.

After a year of post-doctoral research he joined the British Museum in 1974 to study problems of paper and library materials. Since then he has worked on a wide range of conservation research problems but is principally interested in paper and cellulose-based materials, dyes and pigments.

He was a Visiting Research Fellow at Sussex University for two years while working on plasma treatments for antiquities. He left the British Museum in 2003 and is now a consultant in conservation science and works part-time as a Research Fellow at the Royal College of Art where he is working on the fading of indigo. He is a Fellow of both the International Institute of Conservation and of the Royal Society of Chemistry.