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## President's Report

Tamara Lavrencic

At this time of year, with my work focused on budget and action planning, I can't resist taking a few minutes off to dust off my AICCM "wish list" and dream of all the things I'd like to do if the resources were available.

Top of my list would be for funds to rent an office and to employ our own staff to provide expanded Secretariat and bookkeeping services, thus relieving the burden on Council members, most of whom struggle to balance work and family life with AICCM business.

National Council has started a wish list in anticipation of a rush of donations once the Public Fund is established (use of public funds is subject to DCITA guidelines).

A sample of the suggestions to date include:

- Funding scholarships and internships for conservation coursework student(s)
- Funding scholarships and research costs for conservation research students, Masters and PhD
- Development of mid career training program
- Supporting research, particularly research on uniquely Australian conservation issues
- Improving access to research, and scientific and technical knowledge
- Employing an executive officer to develop policy, lobby government and establish a media presence and rapid media response to relevant issues
- Preparing public information fliers on uniquely Australian conservation issues
- Establishing an Emergency response fund.

Wishful thinking can become addictive. I also wish for a future where the role that conservation plays in preserving our shared heritage is valued and supported by all (and consequently better resourced), when AICCM members vie for positions on National Council, and when I can afford to retire from paid employment comfortably and consequently have time to carry out all the tasks that I've agreed to do as President of AICCM!

### from the editorial committee

This issue of the AICCM Newsletter is dedicated to the memory of **Dr. Tony Werner** who died earlier this year in Hobart. Tony will be well known to Australian conservators as the co-author of *The Conservation of Antiquities and Works of Art; Treatment, Repair, and Restoration*. We have reprinted an article by **Mary Wood Lee** who gives a detailed account of Tony's amazing life and commitment to conservation.

**Vanessa Kowalski** provides our feature article on her AYAD project at the Vietnam Museum of Ethnology. Vanessa returned to Australia briefly at the end of May before taking up a 10 week Helena Rubenstein internship at the Museum of Modern Art in New York. We have a number of reviews of conferences and symposiums. **Caroline Whitely** attended the MIP Conference in Newcastle-upon-Tyne, UK. **Katy Glen** reports on the AICCM Book, Paper and Photographic Materials Symposium held in conjunction with New Zealand Professional Conservators Group – Puu Manaaki Kahurangi in Wellington, NZ. **MaryJo Lelyveld** attended the recent 10th AICCM Paintings Symposium in Brisbane.

**Elizabeth Hadlow** has provided a detailed report on the development of new storage facilities for State Records NSW. With a focus on sustainability, it will be interesting to see how the building measures up in the long-term and whether other organisations follow the State Records example. **Caitlin Granowski** alerts us to potential problems with acrylic glazing. The paper conservators at the NGA have been monitoring and researching "acrylic disease".

Our regular columns are included with the second report from our President, **Tamara Lavrencic** who does a little daydreaming and future planning. *People and Places* has reinvented itself as *People and Projects* to better reflect the editorial committee's desire for it to have a stronger focus on projects being undertaken by conservators. Our Calendar continues to be a winner as a one-stop shop for information on training, workshops, conferences and symposiums.

Sadly this will be the last Newsletter with Katy Glen's input on the Editorial Committee. We wish Katy good luck on her new adventure in Moscow. Maybe we'll have a report from our correspondent in Moscow in a future edition of the Newsletter.

**Jude Fraser, Katy Glen and Helen Privett**

## AICCM National Conference, 2007 Brisbane 17 – 19 October 2007 Contemporary Collections

Dealing with collections in a contemporary context.  
Historic collections in contemporary museums.  
Current approaches to the conservation of collections.  
Traditional conservation techniques applied to contemporary collections.  
Modern materials research.  
etc ...

### CALL FOR PAPERS

The Queensland Division will host the National Conference in 2007 which is aiming to attract a larger cross-section of members by providing a program of papers from across all specialisations.

As this will be the first large-scale National Conference in several years the Organising Committee is seeking to encourage members to participate in an all-inclusive program that will bring the membership together to share ideas in a broad, open forum. The Conference will also include a SIG program for meetings within the specialisations.

The Organising Committee also aims to publish a high quality conference pre-print with the assistance of the Publications Committee. In order to achieve this the Organising Committee is now putting out a call for papers. Papers that would be of broader membership interest than have been presented at SIG events would be considered along with new papers. If you are interested in presenting a paper please prepare an abstract and forward it with the following information:

Abstract length: up to 250 words  
Author details: Name, email, postal address and contact phone numbers  
Due date: Friday 7th July, 2006  
Forward to: AICCM 2007 Conference Organising Committee  
c/- AICCM Queensland Division  
PO Box 3373  
South Brisbane QLD 4101  
Email: [davina.bonner@qm.qld.gov.au](mailto:davina.bonner@qm.qld.gov.au)  
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If you would like further information please contact anyone on the Organising Committee:

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# In Memoriam

## Tony Werner (1911-2006)

Alfred Emil Anthony Werner, chemist and conservation scientist, died in Hobart, Tasmania on January 21, 2006 at the age of 94. During a long and illustrious career he was perhaps best known to the field at large as Keeper of the Research Laboratory at the British Museum from 1959 to 1975, and as the author of *The Scientific Examination of Paintings* (1952) and, in collaboration with H.J. Plenderleith, the revised second edition of *The Conservation of Antiquities and Works of Art; Treatment, Repair, and Restoration* (1971).

Tony was born in Dublin on June 18, 1911. His father was a professor of Chemistry at Trinity College, Dublin and Tony received his BA in chemistry with first class honors from Trinity in 1933, his MSc in 1934, and his doctorate from the University of Freiburg in 1937. He then returned to Dublin and was teaching organic chemistry at Trinity when in 1947 he answered an advertisement in *Nature* for a position as a research chemist at the National Gallery in London. In an AIC interview in 1976, Tony described buying a copy of Gettens and Stout (*Paintings Materials; A Short Encyclopaedia*), which he read on the boat across to England in order to prepare for the interview. Thus began a career of more than 30 years, involving conservation research, teaching and travel.

In the post-war period there was a great deal of interest in the possible application of modern synthetic polymers to conservation treatments. Two of his most notable achievements were his work on synthetic varnishes and the development of a wax for use with wood, stone and metalwork. During his time at the National Gallery he also worked on the characterization of resins and on the development of microscopic sections for paint analysis. With Joyce Plesters, he was involved in the scientific examination of the Piltdown man, which led to the unmasking of the hoax when they were able to show that the staining on the teeth was not natural.

In 1954 Tony left the National Gallery for the post of Principal Scientific Officer at the British Museum, and in 1959 was appointed Keeper of the Research Laboratory. Under his Keepership many of the great treasures of Ireland including the Tara Brooch and the Ardagh Chalice were studied and conserved. He also instituted a project to study the composition of copper alloys in antiquities and the results of the laboratory's work on the Sutton Hoo ship burial were published in four volumes. During the 1960's and 70's he traveled extensively as a consultant and advisor to UNESCO and the British Council.

In 1973 he was asked to carry out a survey of conservation needs in Hawaii and the Pacific region. Much to his surprise and thanks to a grant from the National Endowment for the Arts, in 1974 the Pacific Regional Conservation Center was established at Bishop Museum in Honolulu and

Tony (whose wife had died the previous year after a long illness) took an early retirement from the British Museum to become its first Chairman. The Center provided conservation treatment for member museums, libraries and archives throughout the Pacific, and collections care training for the staff of these institutions. Under Tony's leadership membership in the Center grew from eighteen organizations to forty-three. The Center also provided internships for graduate students from conservation training programs in the U.S.A., Canada and England, and cooperated with the East-West Center museum studies program at the University of Hawaii. Tony continued to travel throughout the Pacific until his retirement in 1982.

He was active in a number of professional organizations including the International Institute for Conservation of Historic and Artistic Works (IIC) and was elected a Fellow in 1952 and was President from 1971 to 1974 and Vice President from 1974 to 1996. He was awarded the Forbes Prize in 1992 and an Honorary Fellowship in 2001. He was a Fellow of the Society of Antiquaries of London, a member of the Royal Irish Academy, a Fellow and President of the Museums Association in England, and a Fellow of the American Institute for Conservation. In 1997 the British Museum dedicated the proceedings of a conference on *The Interface between Science and Conservation* to him.

After his retirement, it was Tony's practice to spend the southern summer with his younger daughter and her family in Hobart, Tasmania, and then travel to England to visit his elder daughter, friends and colleagues in England during the northern summer. The last of these seasonal migrations was made when he was in his early 90's, when he began spending the full year in Tasmania. He continued in relatively good health until late December of 2005, enjoying fine wine, good food, lively conversation, test cricket matches, the *Times* crossword, and playing chess, croquet and (we are reliably informed) a sharp game of bridge. His warmth and charm will be missed by all who knew him.

He married opera singer Marion Jane Davies in 1939 and they had two daughters, Mari Louise who lives in Suffolk and Antoinette (Toni) who lives in Hobart. His grandson Richard, a Catholic priest, officiated at the funeral service and his daughter Toni and son-in-law Peter hosted an Irish wake at their home after the service. His ashes have been returned to England and a second memorial celebration for friends and colleagues will be held in Suffolk in May.

**Mary Wood Lee**

*Editor: This article was first published in AIC News Vol.31, No.3, May 2006 and is reprinted with the permission of the author.*

# Conservation of Shaman Ceremonial Paintings at the Vietnam Museum of Ethnology

Vanessa Kowalski, The Centre for Cultural Materials Conservation

In September 2005, I commenced a short-term project at the Vietnam Museum of Ethnology (VME), through the Australian Youth Ambassadors for Development Program (AYAD). This program places young professional Australians in developing countries throughout the Asia - Pacific region, with the aim to make a positive contribution to development. The Centre for Cultural Materials Conservation has been involved in the program since 2000, previously collaborating with the Diocese of Tagbilaran and the Provincial Government of Bohol in the Philippines, engaging in local community cultural heritage preservation.

I was interested in participating in this program and collaborating with an international museum for a number of reasons. As a relatively recent graduate in the Conservation of Cultural Materials, I wanted to use this opportunity to learn about conservation and preservation techniques practiced in Southeast Asia, and experience first-hand some of the problems Southeast Asian museums face with regard to humidity and environmental control, pest-control, storage, display, as well as their approaches to collection management and conservation. I felt that it was not only important to increase my conservation and preservation skills and knowledge, but also to share the skills and knowledge that I have gained thus far with my colleagues in neighbouring, developing countries.

The VME is the premier museum and research centre for documenting and presenting the cultural heritage of Vietnam's 54 ethnic groups. A member of the National Centre for Social Sciences and Humanities, the VME has assembled over 25,000 artifacts, such as agricultural tools, jewellery, textile garments, archives and painted manuscripts, which form its permanent collection.

The AYAD assignment, *Establishing conservation and ongoing preservation management procedures for religious (shaman) paintings within a living cultural framework* was proposed as the state of preservation and physical condition of the ceremonial paintings within the VME collection is poor. The tropical environment together with continual handling by the Shaman during rituals has contributed to the deterioration of these once sacred objects.

The primary focus of the conservation project was to undertake a significance assessment survey and a conservation survey of the Shaman ceremonial paintings in the VME collection. While the main aim of the project was to assist in the development of a Conservation and Preservation Management Plan for the ceremonial paintings, stabilization of these culturally significant items was also desired, to reduce the risk of further loss of the painted images.

The Shaman manuscripts within the VME collection belong to the Sán Chi ethnic minority group in Northern Vietnam. These ceremonial Shaman paintings are unique to Vietnam and were used by the Sán Chi Shaman to perform specific rituals, such as rites of passage and last rites ceremonies. The individual paintings within each set are either a graphic representation of a specific god or heroic figure, or relay an important story. Thus each painting has a unique ritual function.

The Sán Chi ceremonial paintings have been created using a mixture of water-based, glue-based and natural-resin based binders with pigments on hand-made *dó* paper. This paper is produced locally from the cellulose of the *Rhamnoneuron balansae* tree, which grows in Vietnam.



Vietnam Museum of Ethnology

The paintings have begun to fade, due to excessive exposure to light, and are discoloured, due to close contact with candles and contact with a polluted environment. There is evidence of insect attack, as well as tears and general loss, water damage and creases throughout the paper support. This damage has removed some of the physical representation of the heroic figures and gods, resulting in a loss of some of the narrative and meaning of the ceremonial paintings.

Previous restoration has also contributed to the deterioration of these paintings. Insoluble adhesive, which has become discoloured and brittle, has been used to secure loose fragments, while acidic papers have been used to repair torn areas and line the paintings. These previous restoration attempts have begun to fail, and no longer provide a means of support to the painted images.



An example of a Shaman painting

The Sán Chi Shaman paintings conservation project at the VME encompassed six ceremonial paintings. From these six, three of the paintings that exhibited greater signs of deterioration became the main focus of the project. Collaborating with VME conservation staff and Vietnamese artist and researcher Mr. Phan Ngoc Khue, a preliminary investigation was conducted to determine the significance of each painting within the ethnic community. The historical use of the paintings was considered, as well as a preliminary investigation into the materials and techniques used to create the paintings, in order to consider the appropriate steps required to conserve and preserve these objects.

While the conservation lab and facilities at the VME were better equipped than expected, the treatment of the ceremonial paintings was slightly compromised. Working with VME conservation staff, conservation training and skills were exchanged through formal and informal training sessions. The conservation treatment focused on stabilizing the fragile and friable paint layers, as well as securing and flattening the degraded paper supports. Local consolidation of the paint layers as well as loose paper fragments was

undertaken, as time and resources prevented lining the paintings. Local areas of loss and damage were repaired using Japanese paper patches and the patches toned to reduce the visual impact of the losses.

It was the decision of the VME conservation staff to leave some evidence of the previous restoration methods, as they considered these later additions to be part of the history of the object. However, poorly adhered patches were removed, as well as paper fragments that were providing no support to the painting and were obscuring the original composition.

The conservation treatment completed on four of the paintings from within the collection has stabilized and secured fragile paint and paper, reducing the risk of further loss to the original artwork. The preservation plan that has been designed will ensure the long term care of this unique painting collection at the VME.

Upon returning to Australia, it is hoped that materials analysis of the pigments, binders and paper supports may be conducted, in order to confirm the use of local materials in the construction of these unique paintings and present further information on the materials and techniques used. Thus, following further research, an in-depth article on these ceremonial paintings will be forthcoming.

To link-in with the Shaman paintings conservation project that was undertaken, a workshop on *Condition Reporting Cultural Heritage Items and Surveying the Museum Environment* was presented to conservation staff working in cultural heritage institutions throughout Hanoi. The workshop aimed at introducing conservators and collection managers to some of the issues and considerations when storing and displaying cultural heritage items. Considering the tropical environment of Hanoi, participants discussed some of the problems faced, specific to their collections, and methods for addressing some of these problems. Additionally, approaches to recording and documenting the condition of cultural heritage items were addressed. Focusing on the museum environment and the surveying and documenting of



Detail of damage to the Shaman painting

cultural heritage items, the workshop was designed to enable conservation and collection management staff to conduct collection surveys within their museums.

My time at the VME was most enjoyable and an amazing learning opportunity. I now have a greater understanding of the difficulties a conservator faces working in a tropical environment, how such an environment affects particular objects within a cultural collection and the difficulties of environmental control in areas of high humidity. While many museums throughout Vietnam may not have the most modern or technical equipment, they are continually working towards developing and improving their skills in the preservation of their cultural heritage and the conditions in which their objects are stored and displayed. The VME has collaborated extensively with museums in the United States and France, and as a result, strive to adopt cost effective and international standard methods to present and store their collection, as well as conserve it.

As with many projects we undertake, our initial plans continue to expand and develop. Thus, not only did I undertake preservation and conservation treatment of the Shaman paintings, I also participated in some of the temporary exhibitions that were displayed during my time at the VME. As a result, through the research and treatment of the unique objects within the VME collection, I gained an increased understanding of Vietnamese cultural and religious values and hope to continue my engagement with our Vietnamese colleagues.

## Nominations for AICCM Conservator of the Year Award 2006

Aims:

- To recognise and reward an individual whose extraordinary efforts have directly contributed to the raising of standards in her/his organisation in Australia and/or to recognise an individual who has significantly contributed to raising conservation standards as a whole and whose particular activity has had far reaching benefits in the conservation field, nationally or internationally.
- To promote the profession of conservation and its activities to the wider community.
- To encourage membership of the AICCM.

The selection criteria, conditions of the award and nomination forms are available from the Secretariat, AICCM Inc, GPO Box 1638, Canberra ACT 2601, Phone: (02) 6295 9074, Fax: (02) 6295 9277, Email: [secretariat@aiccm.org.au](mailto:secretariat@aiccm.org.au) or at <http://www.aiccm.org.au> under Membership.

Nominations must be received by the Secretariat by **31st July 2006** and the award winner will be announced at the AICCM National Conference and AGM in October 2006.



Workshop on documentation of heritage objects

# Letters to the Editor

## To the Editor,

I refer to Mr Darby Johns' letter to the editor in the March newsletter in which he asked some questions about why the up-take of polypropylene boxes within archives has been so low.

Mr Johns' raises a number of very valid points – ones that I for one hope will be vigorously discussed by the industry in more detail. I think however that I can answer one of his questions very simply.

The answer to why archives aren't using polypropylene more widely I think is simply a question of initial or start up cost. Polypropylene has traditionally cost more to purchase initially than both archival and non-archival board boxes – and I'm sorry to say that many archives do not even have the money to buy archival board boxes. It is a question of prioritising the collections and finding suitable compromises that offer the best possible care. I note though that the cost of polypropylene has reduced significantly in recent times, and this may affect the take-up rate from now on. In actual fact I checked the price on the Albox website for a standard Type 1 box, and note that Albox sell card boxes for \$1.40ea and polypropylene for \$2.95ea – this is a 100% difference in price and goes some way to explaining why archives are still using cardboard – especially the non-archival product. When you are looking at purchasing 10,000 boxes this cost difference is significant and eats into other budgets like environmental control systems and pest management – also very important to long term archival storage. And while polypropylene may become more economic over the long term – it is a difficult point to argue at initial purchase.

I agree with Mr Johns' – we should be thinking of products that last the longest, are the most environmentally sustainable, and provide the best level of care to the archives. Unfortunately most conservators do not live in a reality that supports these views. We live with the economic imperatives of the times – if we can convince those with the purse strings that polypropylene boxes are cost effective I think we will begin to see a change.

I would also like to comment on another of Mr Johns' points – that the acidic paper contents of the boxes will impact on the life expectancy of the box itself and that alkaline buffering offers little protection from this acidity. I agree entirely – to the extent that I question using alkaline buffered

boxes (or polypropylene) in preference for a standard cardboard Type 1 box when housing records of poor quality paper. Many of us have collections running into the hundreds of linear kilometres, and we do not have the luxury of being able to afford "archival" enclosures for all our records. One of the decisions we make is about the inherent qualities of the archives themselves and how much benefit poor quality acidic records gain from being stored in "archival, inert" enclosures. Very little I suspect. Newsprint will always be newsprint at the end of the day and its ability to destroy other papers around it will always be evident. Some take the view that it is better to store the "good" papers in your collections in archival enclosures as a matter of priority, rather than to use limited resources trying to save the poor quality ones by way of alkaline buffered or inert enclosures.

At the end of the day it is all a question of priorities and economic imperative (a term I happen to loathe, but there you go!). I am trying to do the best I can with extremely limited financial resources, and the other state and local government agencies I deal with are usually worse off still in terms of records management resources. We all must make compromises and hope that they are the right ones over the longer term.

I believe that one of the topics being considered for the upcoming annual AICCM conference in Sydney later this year is sustainability in heritage – perhaps this is a topic that could be discussed under that umbrella – especially the concept of life expectancy of boxes and savings (financial and environmental) over the longer term.

Yours sincerely,  
Elizabeth Hadlow, Senior Conservator,  
State Records NSW

## To the Editor

I have received some responses to my letter, in the March edition of your newsletter, asking whether tests have been done to compare the properties of polypropylene versus buffered paperboard. For the benefit of all of your readers such tests have been done as follows.

Tests by E.T.R.S. Pty Ltd, an internationally recognised independent testing authority, were undertaken several

years ago. These tests compared the acid response and chemical stability of the Albox polypropylene boxes and the Australian acid free, buffered paperboard boxes. The results were:

**"Stability of Materials:**

During the acetone digestion, no significant degradation was observed on any of the samples of the polypropylene or cardboard samples. During the boiling water leach process, the polypropylene samples maintained their integrity. During the same process, the cardboard corrugations separated and sufficient fibres were released to slow subsequent filtration. An intense blue dye was also released. None of the samples gave a detectable acid response when filtrated. The detection limit corresponds to 1% by weight sulphuric acid in the original sample.

No detectable metals were released from the polypropylene, which gave the same results as a control blank. Sodium and calcium were leached from the cardboard together with some potassium, magnesium and sulphur (probably as sulphate) and a small quantity of copper and aluminium."

These results are provided in the Albox archive products catalogue. I should have also included them in my last newsletter. My apologies for that oversight.

Sincerely,

Darby Johns, Managing Director,  
[Albox Australia Pty Ltd]

**Editor:** Readers may be interested to have a look at Stewart Welch's paper presented at the Art on Paper Conference held at the British Museum in 2005.

Welch, Stewart Macdonald, *Open minded storage: a box maker's perspective on housing art on paper*, in *Art on Paper: Mounting and Housing*, edited by Judith Rayner, Joanna M. Kosek and Birthe Christensen, published by Archetype Publications in association with The British Museum, 2005.

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# People and Projects

## ACT

### Australian War Memorial

The big news in the Paper Lab is the birth of a son, Shaurya, to **Gajendra Rawat**. Congratulations to both Gajendra and Garima. **Dara Rome** and **Bernard Kertesz** attended the recent AICCM Paper, Books and Photographic Materials Symposium in New Zealand and both presented papers at that forum. We welcome **Cathy Challenor** back into the Textiles Lab after her long stint in Registration. We also welcome **Judith Andrewartha** from the NMA who is filling in for **Sarah Clayton** until she returns from Antarctica.

### National Archives of Australia, National Office

It has been a busy few months at the National Office, with three conservators involved in presenting papers and workshops at the AICCM/NZPCG Paper, Books and Photographic Materials Symposium in Wellington, in April. **Tania Riviere** presented the results of her long-term condition assessment and component analysis of *Men With Beards*, a composite photograph of Australia's first Ministry and House of Representatives. The analysis allowed Tania to trial the Innov-X Portable XRF Environmental Metals Analyzer, which was operated for us by Sietronics Pty Ltd in Canberra. This small, gun-like apparatus allows in-situ XRF quantified elemental analysis and enabled Tania to definitively identify the photographs as platinum prints, as well as giving us lots of information about other metals and trace elements in the photographs.

**Alana Lee** presented a paper based on research into the light-fading of iron gall inks on parchment, and also compiled a poster relating to general issues of the deterioration of iron gall inks. **Caroline Whitley** organized a workshop looking at the life and conservation of iron gall ink. Participants were able to make their own ink using such exotic ingredients as Turkish Aleppo oak galls from Kremer Pigments in Germany, and fine New Zealand/Australia sauvignon blanc, thus confirming the truly international spirit of the Symposium. Caroline has written a more detailed report, which can be found elsewhere in this newsletter.

Preventive Conservator **Ellie McFadyen** has received a handheld Photo Ionization Detector (PID) from a company called Airmet. The PID detects VOCs to the ppb level although it does not identify the specific VOCs. Ellie will be trialling the PID and giving demonstrations to staff at the NMA, NLA, NGA and AWM.

NAA conservation staff were pleased to invite their Canberra colleagues to participate in a demonstration of a Hitachi Tabletop Microscope TM-100, operated by Bert Hayes from Meeco Holdings Pty Ltd. This is a compact desktop scanning electron microscope that is virtually plug-and-play. It uses a windows-like visual interface on an attached computer, with which the subject can be manipulated; it is also possible to take digital photos using this interface. The microscope is very easy to use (even we could do it!)

## NEW SOUTH WALES

### Australian National Maritime Museum

**Jonathan London** has been liaising with Building Services in regard to air conditioning plant and ducting upgrades scheduled over the next few months, as well as commencing work on a revised Conservation Policy and Procedures Manual. Jonathan is trying to visit colleagues in other institutions to introduce himself, when time allows. He recently enjoyed a visit to the Power House Museum and met some of the Conservation staff there.

**Kathryn Robinson**, a graduate of the Masters course at Canberra University, joins us from Western Australia where she has worked at the Western Australian Museum and the Yamatji Marlpa Barna Baba Maaja Aboriginal Corporation as Heritage Officer with the Yamatji Land and Sea Council.

**Sue Frost** has been continuing work as co-coordinator of the textile re-housing project, in addition to preparing items for the exhibition, *Dreamboats & Workboats – The Halvorsen Story*. Sue has also been preparing items for a large redevelopment in the Regatta's section of the Watermarks Gallery. **Karina Acton** continues working on the implementation of the new museum database and is preparing and demounting exhibitions on child migration, Dutch Australian relations, Australians under attack and something about rowing. **Analiese Treacy** has been preparing items for the exhibition *Clipper Ships* and for two travelling exhibitions – *American War Posters* and *Rivers – A History of the Murray and Darling*, which begin touring this year. Analiese attended the Paper, Books and Photographic Materials Symposium in New Zealand, where she presented a paper, *Reforming varnished works of art on paper*, and poster, *Tab inlay method*.

**Ian Miles** is currently working on the object component of *Dreamboats & Workboats* in addition to presenting object handling workshops to staff at the ANMM. Ian has also

been working with **Jolanta Grzedzielska** in re-designing the Pest Control room and reviewing disaster preparedness equipment. Jolanta has also been monitoring the environments in the Museum and the stores and preparing a number of ethnographic objects for outward loan.

**Kerry Head** continues to work on the textile re-housing project which involves surveying the entire ANMM textile collection, expanding the storage methods of associated textile objects (hats, shoes, handbags, flags etc) and helping to quantify further hanging storage needs of the collection.

## ICS

The planning for and execution of the major contract ICS is undertaking for Parliament House, Canberra on the so called key elements, or nearly 200 major artworks in the Collection, continues to dominate much of the work of the Materials Conservation division. The contract requires each artwork to have a conservation management plan written for it, a process which will certainly benefit the long term care and management of both the artwork and the collection as a whole. **Doug Rogan** is managing the project out of Canberra, with **Fiona Tennant** running the conservation plan team and **Adam Godijn** the treatment team. **Anna Diakowska Czarnota** and **Arek Werstak** have been working in Canberra assisting Adam as has **Myra Patusch**. ICS is contracting the works on paper to Art and Archival Pty. Ltd. where **Kim Morris** and his team have been ably assisting.

Meanwhile the Antarctic team of **Sarah Clayton**, **Nicola Dunn** and **Ainslie Greiner** are resolving a host of different treatment and logistical problems in their lab at Scott Base, and making major progress with the treatment of artifacts. They are now part of a blog hosted at the National History Museum, London for those interested in the details of what 100 year old tripe looks like when removed from its can (to be found at [www.nhm.ac.uk/antarctica-blog](http://www.nhm.ac.uk/antarctica-blog)). Sarah and Ainslie return to Australia in late August, whilst Nicola stays on until October, to be joined by **Robert Clendon** and then **Amy Ng** in November for the summer season.

**Adrian Warren** and **Oliver Hull** had an incredibly busy March working through a fine collection of furniture on board a private yacht, and have now moved onto a major collection from Ipswich Art Gallery. They have also been assisting Arek Werstak and **Michael Sietz** to restore a most unusual piece of industrial equipment known as a rostrum camera - imagine a giant camera on rails. Michael leaves us after his three-month stay to join the Australian Museum in May before returning to his native Germany. Meanwhile **Ursula Sattler** returns from the National Museum to fill his position. We also welcome **Sandra Hodgen** and **Emily Howard** to the conservation team.

**Felicity Turner** attended the Paper, Books and Photographic Materials Symposium in Wellington, not far behind **Julian Bickersteth** and Doug Rogan who are writing a collection management plan for Parliament House New Zealand and **Nicole Rowney**, who is developing a long term program for the treatment of water damaged archives.

**Ian Trapnell** has joined our site interpretation team, bringing specialist expertise on historic site interpretation. We are currently working on three archaeological sites in Parramatta, each of which began as archaeological conservation projects and then expanded into providing a full interpretation consultancy.

## Powerhouse Museum

After processing over 1,000 objects, many of them inward loans, the exhibition *On the Box: Great Moments in Australian Television 1956-2006*, opened in April. Showcasing the largest collection of television costumes, props and memorabilia ever displayed in Australia, the exhibition also includes classic Australian film clips showing how TV has kept us entertained for five decades. Preparation of this exhibition has kept the entire department busy for the past few months.

Other than preparing 60 costumes for this major exhibition, **Suzanne Chee** worked on 6 innovative outfits for the Student Fashion exhibition. The exhibition highlights textiles and fashions from the next generation of Australia's fashion designers.

**Nadia de Wachter**, **Dee McKillop** and **Margaret Juraszek** continued working on outgoing and incoming loan objects. This work included making a travelling and display support for a top hat that was worn by Australian vaudeville entertainer Roy Rene (1891-1954) for the character, Mo McCackie, in the very successful radio program, McCackie Mansion. The hat will be part of an exhibition about Roy Rene, to be held at The Performing Arts Centre in Adelaide. Margaret also resumed work on repairing a fancy dress costume blouse from 1914 which is entirely decorated with tram tickets. Delicate and painstaking paper repairs are testing Margaret's patience and eyesight as this project enters its second year!

**Kate Chidlow** has been compiling a technical information library of relevant preservation articles. The idea for this came about after discussing what preservation information was available and easily accessible online. The articles will be put onto a spreadsheet, grouped into subjects, with a website link. A library of hard copies of the articles will also be available which will assist when needing information for public enquiries. In conjunction with this, Conservators in the Regional and Community Team are creating "how to" information sheets. These consist of a series of photographs with supporting text demonstrating simple preservation

procedures. These sheets will be used to hand out at workshops and for public enquiries and will avoid copyright issues associated with other information sheets of this type. As part of the community and regional program **Mary Gissing** is continuing to work with Wollongong City Council, The Black Diamond Historical Museum, Bulli, and the Australian Museum of Costume and Textiles in Maitland following recent visits to these collections.

For six weeks during March and April two conservation professionals from the Fiji Museum - **Tubuka Raikaci** and **Savita Devi** worked with Preservation staff at the PHM and staff from Collection Integrity Department of the Australian Museum. This program is the result of an ICOM Australia - Pacific Partners grant. Through a collective collaboration with TAFE Ultimo, staff from the PHM and Australian Museum took Buka and Savita through a selected study program in two units of the CUL04 Museum and Library /Information Services Training package. Visits to numerous national, state and community museums were a component of the program and we would like to thank all of our colleagues at these institutions who guided Buka and Savita through their collections and stores. We are continuing to develop other units of the training package for future expansion of training in preservation at this transition level.

## Preservation Australia

There has been a lot of change at Preservation Australia in the last couple of months. We have leased more space at the 'warehouse' in order to set up an area for hands-on paper conservation. After foolishly mentioning to a couple of people that I missed hands-on and was thinking about doing it again, the work started coming in – so there was no other choice really. This has coincided with the decision to focus more on products for conservators rather than general archival supplies. So we are now a more specialist supplier - Mylar sleeves and products for conservators/conservation (although we will keep a stock of paper, board, tissue and boxes in Sydney for our local customers).

Our first set calendar of seminars and workshops in conservation topics has started well, with the first half of the year being well subscribed. While still delivering workshops around Australia upon request, we decided to try a regular calendar of our standard workshops based in Sydney (see website for more details). At the moment, they are held at The Framing School in Leichhardt with the wonderful support of ASA Framers (June and Jochen) – lunch at Bar Italia! Preventive consulting is always busy, with the main project being ongoing work with the Lands Department and the preservation and scanning of the contents of their Plan Room.

The business has now settled into four main streams – Products, Seminars and Workshops, Paper Conservation, and Preventive Conservation Consulting. Makes for a busy working life, so if anyone is thinking of working privately in Sydney please contact **Kay Soderlund**.

## State Library of NSW

**Cecilia Harvey** is preparing items for the EORA exhibition. One item she is currently working on is a large, unfixed pastel portrait of Ricketty Dick, which is thought to have been created by French artist Charles Meryon (c 1843-1846). The pastel drawing has been executed onto a prepared grey ground on handmade paper. The edges of the paper are adhered to a wooden plank. The wood has warped and split, tearing the paper support down the centre. The pastel is extremely friable and susceptible to changes in appearance and texture with direct application of water. Cecilia is working on separating the paper support from the board with the item face up. This has involved delaminating the wooden board with a scalpel and gently humidifying the edges of the paper with Gore-Tex. The wood residue is then removed. Treatment is only half complete with the exhibition due to open in June.

A joint project between the National Library Australia, State Library of New South Wales and the Historic Houses Trust saw the completion of the first part of a travelling exhibition entitled *Joseph Lycett: Convict Artist*. This exhibition currently on display at the Museum of Sydney includes 34 original items from the State Library of NSW collection. The exhibition includes printed wrappers, which were the soft cover issues for the publication of *Views in Australia*. These wrappers are rare as they were often discarded by the binder when the entire volume is made up, and they show how the publication was first issued. **Martin Bongiorno, Lang Ngo, Trish Leen** and **Nichola Parshall** all worked on this project and will continue to look after Mr Lycett as he travels to Newcastle Regional Gallery and the NLA next year.

In April **Tegan Anthes** visited Auckland and Wellington as part of a study tour. The tour began in Auckland with Sarah Hillary, Ute Strehle and Camilla Baskcomb at the Auckland City Gallery. Counter disaster preparedness was the main point of interest for the study tour. A Fredrick Garling watercolour from the Auckland Gallery collection was also examined. This Garling is in similar condition to the works in the SLNSW collection. Tegan visited the Auckland War Museum and met with Merv Hutchinson again discussing counter-disaster measures, of interest as the Museum is currently undergoing major building works. As part of the tour Tegan attended the Paper, Books and Photographic Materials Symposium in Wellington, followed by several more visits to Wellington institutions including the National Library, The National Archives and the National

Preservation Office. Lang Ngo and Trish Leen also attended the Symposium.

## State Records NSW

**Elizabeth Hadlow** has just completed the treatment of probate records that had been variously repaired with gummed linen tape, Sellotape, Magic tape and a "bituminous" paper tape that appeared to be some kind of "home" preparation. The "bituminous" tape in particular was problematic due to the extensive staining that it left in the paper after it had been removed. It was found that the best way to deal with it was to remove all the other tapes and then completely immerse the document to remove the tape by dissolving as much of the adhesive as quickly as possible, thereby reducing the staining. This forty-two hour treatment was made somewhat redundant when the reader who requested it said that they no longer needed to see the document as they had sourced the information somewhat illicitly elsewhere. Elizabeth has also been preparing an 1828 trigonometric survey of Port Jackson for display in an exhibition at the SLNSW. The map has extensive tearing that has required the removal of the linen backing so that more effective repairs can be done.

A rush on parchment divorce and equity records has had **Frances Cumming** and **Jill Gurney** stretching and flattening numerous parchment documents over the past few months. The records had suffered severe water damage whilst in storage at the Supreme Court and over the years had turned into solid gelatinous bricks. Jill and Frances have had success opening the packages using slow humidification and then localised application of ethanol/water mixtures to unstick areas of pronounced water damage.

We have recently been asked to prepare a number of plans of Sydney Central Railway Station for Railcorp to digitise – they are undertaking refurbishment of the station. The plans appear to be ferrogallic prints c1900-1910. There is an interesting manufacturers stamp on the verso of some – "Max Wurcker's sensitised papers. Made in Sydney". We have been able to establish that Max Wurcker was a fairly prominent printer at that time – his business, Aarque, merged with Anitech sometime in the 1960s. Anitech is still in existence. If anyone is able to furnish us with any further information we would be most appreciative – either about Max Wurcker or ferrogallic prints generally. They are of course similar in chemistry to iron gall ink – with the additional issues of residual acidic developer from the manufacturing process. Our prints are brittle and torn and also have fugitive hand-colouring which, along with their ferrogallic nature, limits aqueous treatment options.

**Carol Marsh**, our Assistant Conservator, is on extended leave in the United Kingdom for 10 months. It seems that there is some magnet drawing all who work at State Records NSW to the Northern Hemisphere!

## TASMANIA

### Archives Office and State Library of Tasmania

It has been a very busy time for the Conservation section with loans and exhibitions. **Stephanie McDonald** has handled the loan of scrimshaw and other items for the *Islands to Ice* exhibition at the Tasmanian Museum and Art Gallery; the loan of 3 works by Joseph Lycett to the Historic Houses Trust in Sydney; and the return of *Hall Green* by Knut Bull from the travelling *Town and Country* exhibition. **Penny Carey-Wells** prepared and installed the exhibition *Mountain Magic – the women, art and flora of Mount Wellington* in the Tasmaniana Library. The exhibition was the part of the Mountain Festival in Hobart featuring seven contemporary artists and works by women artists from the Heritage Collections. Stephanie and Penny are in the midst of preparing *Drawing the Line* – a multiple venue exhibition of maps in the Tasmaniana and Allport heritage collections areas. Along with a smaller map display we prepared in the Archives Office of early Van Diemen's Land Company maps and related items, these are all part of the *Australia on the Map 1606 – 2006* celebrations.

Stephanie has been cleaning mould-affected material, removing photographs from "magnetic" album pages and treating photographs which have been bent to fit into old legal file systems. She also advised on the salvage of material affected by a fire in a regional library and has been involved with proposed work to improve relative humidity levels in our storage areas.

### Queen Victoria Museum & Art Gallery

**Jucara Defarias**, paper conservator, and **Mar Gomez**, paintings conservator, have recently completed the complex conservation treatment of the Frederick Strange's watercolour *View of Launceston looking east from Cataract Hill, c. 1859*, for the first exhibition in the series *Launceston Through the Eyes of Artists and Photographers*. Jucara and Mar worked on the restoration of this large watercolour for about four months. Initial examination of the watercolour revealed a layer of varnish applied by the artist and a great deal of overpainting that occurred during previous restorations. Over time, the varnish had oxidised obscuring the fine detail of the painting. The artwork also had many tears and creases over the surface and had been relined onto a new canvas and mounted on a stretcher in previous restorations.

The first stage of the conservation treatment involved removing the layers of varnish and overpaints using ethanol and isopropanol gels. This process was repeated three times over the whole surface of the artwork. To encourage the removal of the varnish that was ingrained within the paper fibres, the artwork was then immersed in a bath of

ethanol solution. Prior to that the artwork had to be separated from its canvas and stretcher. The last stage involved immersing the artwork in a bath of calcium hydroxide. This process enabled the removal of most of the yellow deterioration of the paper and improvement of its condition. The artwork was then pressed under weights to reduce creases, and losses were filled using toned paper.

After treatment, the extensive conservation work revealed some amazing detail that was previously unseen, such as the artist's original colours and brush strokes, the fine detail of the churches, public buildings and the river edge of Launceston. **John Hay** constructed a replica colonial period frame for the watercolour using musk veneer with a gilt slip. This frame was styled from the veneer frame on Hawkins painting *Port Arthur, 1850*.

This project wouldn't have been possible without the collaboration between paper and paintings conservation departments, and it is a good example of the advantages of combining conservation knowledge across different disciplines.

In Objects Conservation, **Linda Clark** has been working over the last months on the rehousing of the Scrimshaw and the Convict Costume collections. She has also completed a conservation assessment and museum management plan for the Sheffield Museum in Northern Tasmania.

**Michael Smith**, as the Museum's Disaster Response Co-ordinator, has been kept busy over the last three months dealing with a severe mould outbreak in the Wet Zoological Invertebrate Collection area. The process involved moving material from highly contaminated areas through a triage and treatment area to a clean temporary storage area. The critical parts of the process involved establishing the Occupational Health and Safety strategies for the people involved and the extension of the class three Flammable Goods Store license to include the treatment and temporary storage areas. The mould outbreak occurred due to flaws in the building design and construction that allowed rainwater to enter the space. The building has currently been remedied and a cleaning regime will be enacted once the collections are returned. The project has involved thirteen people working part-time for a period of four months and it has also proved the usefulness of an organised disaster response using our recently completed Disaster Plan.

## VICTORIA

### The Centre for Cultural Materials Conservation

**Travis Taylor** and **Alexandra Ellem** commenced work at the Centre in early April as interns in paper and paintings respectively. As part of their internship, they will be undertaking research projects, aiming to produce a

publishable paper. Travis is examining the material characteristics of Japanese-made calligraphy papers. Alex is investigating the materials and techniques of Hugh Ramsay, including pigment and medium identification and exploring the preservation of the artist's estate.

**Katy Glen, Louise Bradley** and **Jude Fraser** attended the recent AICCM Book, Paper and Photographic Materials Symposium in Wellington. Louise presented a paper on the capturing of watermarks using a digital camera and a poster on mounting and framing of large tapa cloths. All paintings staff attended and presented papers at the AICCM Paintings SIG meeting in Brisbane in early May: **Cushla Hill** (co-authored with **Marcelle Scott** and **Holly Jones-Amin**) - *New beginnings: Conservation training at the University of Melbourne*; **Caroline Fry** - *The conservation treatment of a small oil painting at the National Museum of Fine Arts, Hanoi*; **Jocelyn Evans** and **MaryJo Lelyveld** - *Would you like a varnish removal with that? Exploring the client-conservator relationship in conservation decision-making*; Alex Ellem - *Max Meldrum's Methods and Materials*.

Marcelle Scott has been awarded the Arts Faculty Dean's Teaching Award for her inspirational leadership in the development and delivery of interdisciplinary education and training in conservation.

Holly Jones-Amin has received an Ian Potter conference and travel grant to attend the IIC Munich Conference in August/September where she will be giving a paper. Holly is juggling teaching, objects treatments, and managing objects and textile labs until Abigail Hart's position is filled. Notable projects include Dame Edna Everage's spectacle collection, which everyone is dying to try on (!) and a group of WWII items recovered from the crash site of the RAAF Dakota aircraft A65-61, which crashed in bad weather on 18 September 1945 in Indonesian Papua.

The Medical Evacuation Flight with a total crew and passengers of twenty-nine, was returning wounded Service personnel from the battlefields of Morotai to Townsville for medical attention, two weeks after the end of World War Two. The aircraft's location was unknown for twenty-five years until its discovery on the edge of a section of the Cartensz Ranges at 14,000 ft (4270m). It was the extreme climatic conditions that deterred two previous recovery attempts in 1970 and 1999, yet it was also the climatic conditions that weathered and preserved many of the artefacts that remain. The items were recovered in 2005, and had therefore spent sixty years at high altitude and in extreme weather (including snow) on the Cartensz Ranges.

The general condition of all items recovered from the crash site is remarkable. Small amounts of vegetation were attached to the felt of the slouch hat, which was also heavily weathered and torn, with corrosion to the Rising Sun

badge. Corrosion had also developed on the two knives, which were constructed of varying alloys and included a weathered wooden handle. The cosmetic items, including a Max Factor lipstick (complete with red lippy), were also in remarkable condition with low-level discolouration, corrosion and general weathering.

## Museum Victoria

**Helen Privett** will be travelling to Worcester, Massachusetts, USA in May to take part in the Metals Conservation Summer Institute at the Higgins Armoury Museum. The course will feature the Museum's extensive collections and is taught by international practitioners, in association with the Worcester Polytechnic Institute. Helen and **Catherine Lovelock** continue their work with a cross-disciplinary/cross-organisation committee to identify and assess hazardous substances in the Museum's collections. The committee is formulating risk assessment-based procedures for identification, labelling, storage, display and other use of objects/specimens containing hazardous substances, as well as resolving personal protection and training needs for staff. Catherine will be travelling with a Museum Victoria team to Fiji in May to provide advice and specifications for architectural construction and fit-out of new collection storage, conservation and general work facilities at the Fiji Museum, as part of ICOM Australia's Museum Partnership Program.

**Penny Nolton** has done great work in leading the Conservation Department's transition from using Texpress to using EMu. Our database is the last of all of the Museum's databases to be transferred to EMu. We're going to resolve 'tricky' outstanding data transfers now our catalogue/tabs are finalised, procedures are written and we're starting to use EMu on a regular basis. Penny has also been working on a travelling exhibition called *Destination Australia*, diverse outward loans, site inspections of potential new acquisitions to the collection, and a website review project.

**Alayne Alvis** has been providing conservation advice to staff in the Engineering Workshop on conservation, activation and restoration of the Cowley Steam Road Roller. As is common with large technology objects, issues are often about degree of treatment, rather than whether or not to treat. Alayne has also been refining maintenance manuals for miniature-scale industrial engine models (some which are many decades old) on activated display due to public interest.

**Sharon Towns** and **Michelle Berry** have completed major treatments (4 in total) and installation of Trade Union banners from the Museum's collection, to widespread acclaim. The banners look fantastic alongside current banners from contemporary union organisations, in the exhibition, *Banners of Pride*, celebrating the 150th anniversary of the 8 Hour Day movement. Michelle and

Sharon will assess other Trade Union banners, and similar over-sized painted textile items in the museum's collection, until the end of Sharon's contract in May. **David Coxsedge** and **John Clarke** continue to provide comprehensive integrated pest management services for collections housed in display and storage areas across all of Museum Victoria's campuses.

**Angeletta Leggio** presented a paper at the Paper, Books and Photographic Materials Symposium on the recent (very large) acquisition of pallet-loads of equipment, objects, images and paper-based materials from the now-closed Kodak manufacturing plant in Coburg, Melbourne. Angeletta is also working with **Philip Masters** on a condition-survey of motion picture film holdings in the Indigenous Cultures collection.

All conservators, plus CCMC students **Susie Collis**, **Di Whittle**, **Rebecca Dallwitz** and **Tammi Lye**, participated in a rushed but highly-organised assembly of mannequins, and installation of costumes and materials, for the launch of the exhibition, *Spirit of the Games*, two days after the evening Opening Ceremony of the Commonwealth Games in March. Due to the nature of this "semi-secret, just wait and see what arrives at midnight from the MCG" project, the conservators' quick judgement and dexterity were invaluable in processing quantities of unusual material and resolving reliable short-term display methods.

## National Gallery of Victoria

In the Paintings lab treatment of two major paintings was completed this month. **John Payne** treated Jacopo Amigoni's masterpiece, *Group Portrait: the singer Farinelli and his friends* and **Carl Villis** completed Palma il Giovane's *Portrait of an old man*. Carl has begun a complex structural and surface treatment of a rare fifteenth-century Italian profile portrait. **Michael Varcoe-Cocks** has commenced technical research and a treatment programme for the Gallery's Australian Impressionist holdings ahead of a major exhibition to be held at the NGV next year. University of Melbourne conservation student, **Raye Collins** has been working part-time with Michael on this project.

**Melanie Vella** gave a paper on the treatment and research of two von Guerard paintings at the AICCM Paintings Symposium in Brisbane. She has also been working in the Exhibition Section on the Colin and Cecily Rigg jewellery exhibition, comprising surprising media including a flayed kitten, Metcard tickets and magnets. **Janelle Borig** has been on site visits to assess and clean Deborah Halpern sculptures for a retrospective opening soon. **Catherine Earley** has been working on the Departmental 06-07 budget and making brief guest appearances at installations and de-installations.

In the Textiles lab **Bronwyn Cosgrove** and **Kate Douglas** have been working on the *Abstract Mode* exhibition (think patterns, think geometry) but have now turned to the *Ikut* and *Thomas Harrison* shows.

In Objects **Marika Strohschneider** has been liaising with artist, Deborah Halpern on the relocation of the big Angel from the NGV:International moat to a location by the river's edge near NGV: Australia. **Trude Ellingson** has returned with the *Colour Power* exhibition. **Catherine Millikan**, with **Holly McGowan-Jackson** and **Noel Turner** from Frames and Furniture lab, are supervising the beginnings of a foam replacement project focussing on boxed and palletted works housed with EVA foam that has proved to be damaging. The Frames and Furniture lab is also working on the Australian Impressionist exhibition. Holly has recently married and we wish her and Claudio all the best.

In the Paper and Photographic lab, we have two new part-time staff until the end of June. **Sallyanne Gilchrist** is working on the Joseph Brown collection, and **Nick Selenitsch** is assisting **Pip Morrison** in the preparation work for an upcoming exhibition of large format photographs. Pip attended the recent Paper, Books and Photographic Materials Symposium in Wellington and delivered a paper on her research into solvent use on cibachrome photographs. **Briony Pemberton** is conducting research into the 9 x 5 catalogues, and has been preparing and installing scrolls in the Asian art exhibition *Mountains and Streams*.

## WESTERN AUSTRALIA

### Patricia Moncrieff, Textile Conservator, Consultant and Educator

Earlier this year Patricia travelled to Europe and spent some time studying textiles, conservation techniques and display systems. First stop was Brussels, to view several Brussels 16th - 17th century tapestries in the Musee del la Ville at Grand Place, and the collection of 15th - 16th century tapestries on display at the Musees Royaux D'art et Histoire. She also visited Brugge, renowned for its lace making industry. It was interesting to see that there is an enormous amount of machine-made lace being manufactured which obviously does not compare with the aesthetic quality of the hand made laces accorded to the region.

From here, she travelled to Paris, visiting Notre Dame with a special interest in its ecclesiastic collection of textiles. Particularly interesting was the tunic worn by Louis IX, King of France 1214-1270, worn for discipline or scourge! On to Le Louvre, and of course Mona Lisa was a must but there were some very interesting Coptic textiles from the 6 - 7th Century that were fascinating.

From here to London and the Victoria and Albert Museum to see the wonderful textile collection and the magnificent Raphael cartoons of designs for tapestries commissioned by Pope Leo X in 1515. Each cartoon is made up of numerous sheets of paper glued together, on which the design is painted in distemper, a mixture of pigment and animal glue. The cartoons were sent to Brussels to be woven in the workshop of Pieter van Aelst. They are magnificent.

Back in Australia, Patricia will be travelling to Singapore mid-June to conserve a large privately owned Peranakan collection of ceremonial wedding costumes and accessories. Peranakan textiles consist of sumptuous silks, embroidery and beadwork, incredibly colourful and intricate.

## Western Australian Museum

Having established its superb collection storage and research facility at Kew Street, Welshpool and moved the main collections from the city site, which was an asbestos nightmare waiting to unfold, the Museum is now moving its collections in East Fremantle to the new collections store and the contiguous warehouse. By relocating the Maritime History objects collection from A-shed on Victoria Quay in Fremantle, the spaces in that prime visitation site will now be able to be filled with a superb collection of maritime craft that will be on open – access storage.

Bofors guns have been moved, torpedoes sorted and relocated etc. The whole of the museum furniture collection has been moved to Welshpool from a warehouse in Willetton and from Blinco Street in East Fremantle. Harmoniums, dressers, clocks, couches, prams, pot stands, wardrobes, home-made furniture and more are now united for the first time. Before the end of the fiscal year, all the furniture will have been placed in a systematic order on custom built pallets and shelving inside the fully climate controlled collection facility.

The Museum has purchased a walk-in freezer container to allow for bulk fumigation of collections prior to them entering the main storage zones. Heaps of sails from historic boats have been washed and cleaned by **Maggie Myers** and **Nikki King Smith** and are now ready for storage. Conservation staff have been working with the curators and with **David Gilroy** who has masterminded and project managed the movements of hundreds and thousands of objects.

# The Gall of It All! The Life and Conservation of Iron Gall Ink

**The Final MIP Conference / 2nd International Iron Gall Ink Meeting**

**24-27 January 2006, Northumbria University, Newcastle upon Tyne, UK**

**Iron Gall Ink Workshops at the AICCM Paper, Books and Photographic Materials Symposium**

**19-21 April 2006, Te Papa Tongarewa Museum of New Zealand, Wellington, NZ**

Caroline Whitley, National Archives of Australia

In January 2006 I happily exchanged my summertime relaxation at the seaside, for three weeks delightfully spent in the chilly U.K. winter. The main purpose of the visit was to present a poster and to attend many enlightening oral presentations and workshops, at the *Final Metals in Paper (MIP) Conference/2nd International Iron Gall Ink Meeting* at Northumbria University in Newcastle-upon-Tyne. I also took the opportunity to visit several paper conservation labs and research facilities - The British Museum and British Library in London, and in Oxford, the Ashmolean Museum and the Oxford Conservation Consortium, where problems associated with the conservation and treatment of iron gall ink are currently being addressed.

Why do these problems exist? A brief synopsis of the history and character of iron gall ink, will help set the scene. From the late Middle Ages until the early twentieth century, iron gall ink became the favoured writing medium in the western world. In contrast to the carbon or sepia inks already in use, it was indelible and relatively permanent, obviously desirable qualities in an ink. However these qualities were also the source of its inherent problems. Hundreds of historic iron gall ink recipes and various methods of preparation have recently been documented. The ink was simply and typically made in the home, bottega or monastery from various natural sources. Plant galls provided gallotannins, combined with iron sulfate (often sourced from iron mines - with other possible contaminants e.g. zinc, copper) in water, beer, wine or urine (as available or preferred!). Gum Arabic was often added as a binder. For other ink qualities such as gloss, immediacy and variation of colour - pomegranate skins, Brazilwood or logwood were added. All ingredients were usually combined in an old iron bucket, and stirred with a stick or metal utensil. The solution was sometimes fermented, boiled up - or not, as local tradition

demand. *The potential for excessive use of one or more ingredients is obvious!* The blue/black-coloured ink compound is formed by chemical reaction between the gallo-tannins and iron ions. These typical excesses of unbound metal ions and the sulfuric acid formed during the process, are what make the ink corrosive, and can cause colour change from black to brown, often with significant fading over time. Poor storage and display conditions with fluctuating temperature, RH and light, exacerbate the hydrolysis and oxidation degradation processes.

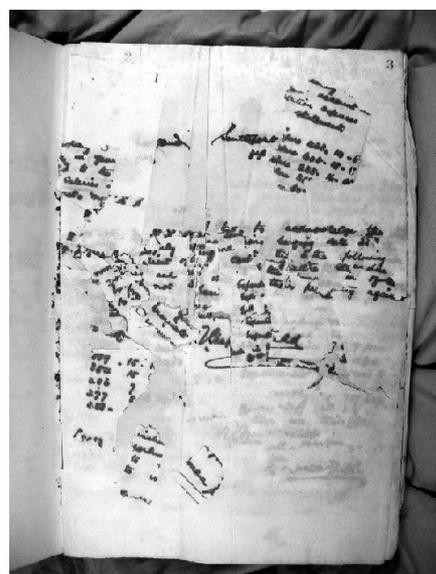


Figure 1. Iron gall ink corrosion. 19th century copybook. NAA collection.

By the late 19th century the corrosive nature of the ink was understood by scientists; many "ideal" ink recipes - often with soluble synthetic colorants added, were formulated for use in government, legal and business offices; the first conference concerning iron gall ink degradation was

convened by the head of the Vatican Archives - ink damage was characterized and treatment regimes discussed.

Many art galleries, museums, libraries and archives around the world hold collections of drawings, books, illuminated manuscripts, maps, as well as everyday letters, official files and indenture documents and fabrics, created using iron gall ink applied to paper, parchment or textile supports. These include invaluable works by such masters as Leonardo, Michelangelo, Guercino, Rembrandt, Bach, Beethoven, and van Gogh. Compared to the relatively small number of textile or parchment artifacts held in these collections, iron gall ink on paper originals comprise a far greater number, and while many remain in excellent condition some are in poor condition. Very serious concerns exist for the long term preservation of these precious works e.g. over 70% of Victor Hugo's original manuscripts are in danger of being lost to corrosion.

Over the last thirteen years, several European and North American collaborative research groups have been studying the problems associated specifically with degradation of iron gall inks on paper supports. Their approaches to conservation treatments remain realistically cautious and any new recommendations regarding treatment to preserve documents and artworks, are based on a fuller understanding of the physical and chemical characteristics of the ink. Initial results of their work were showcased at the *1st Iron Gall Ink Meeting* in 2000, also held at Northumbria University.

Since 2004, in addition to my regular duties as a Paper Conservator at the National Archives of Australia in Canberra, I have been working as assistant to Alana Lee, a Research Associate at the Cultural Heritage Research Centre, which is directed by Prof. Dudley Creagh at the University of Canberra. Our three-year investigation into the *Degradation of Iron Gall Inks on Parchments*, is part of an ARC (Australian Research Council) funded Linkage Grant, in which the University of Canberra, Australian National University, National Archives of Australia, National Museum of Australia and the National Film and Sound Archive are participants.

Concern for the ongoing preservation of several iconic, circa 1900 Australian constitutional documents written in iron gall ink on parchment and held in the NAA's collection, formed the basis for this research. We are studying the degradation mechanisms of iron gall inks on parchments, by looking at changes in the ink chemistry itself and degradation mechanisms of parchment's collagen structure. To the best of our knowledge, this project is the only in-depth study that has been undertaken to date, specifically relating to iron gall ink on parchment supports. Although paper

cellulose and parchment collagen are different physical and chemical structures, many similarities exist in their response to ink degradation. We have fortunately been able to learn much from our colleagues' research in the northern hemisphere, and they in turn have taken an interest in our parallel investigation.

Having been granted this wonderful opportunity to represent both the NAA and the ARC grant project at the conference, it was obviously the perfect forum at which to present a poster detailing our own research results to date, and to be able meet many of the researchers and conservators, several of whom we have been in regular communication. I had also recently received an invitation to present an Iron Gall Ink Workshop at the AICCM Book, Paper and Photographic Materials Symposium in Wellington New Zealand in April 2006. This became an additional impetus for me to learn all I could at the UK conference, to then be able to pass on to our regional paper conservators the latest knowledge and understanding about this very complex subject.

The *Metals in Paper* group funded by the European Commission DG-Research, started in 2003 with twenty one partners from European cultural and scientific institutions. They have held nine previous meetings bringing together and disseminating knowledge in the field of paper conservation, degradation and prevention of objects affected with metal tannin ink corrosion, deacidification etc. See website - [www.miponline.org](http://www.miponline.org)

This tenth and Final MIP Conference / 2nd International Iron Gall Ink Meeting brought together delegates from UK, Europe, North and South America and Australia - researchers, end-users, institutions, restorers, conservators, private companies and politicians. Via presentations, posters and workshops, the common work, adequate technological interventions, preventive conservation and active conservation were discussed. It also aimed to provide advice for legislation and standardized methods for a healthy public heritage.



Figures 2 and 3. Burt Hall. Conservation School, Northumbria University, where conference workshops were held

Postprints *The Iron Gall Ink Meeting 2000* is an excellent overview of recent developments in the study and conservation of iron gall ink and paper. It is available by emailing: [jean.brown@northumbria.co.uk](mailto:jean.brown@northumbria.co.uk). Cost £35 pp&p. Postprints of the *Final MIP Conference / 2nd Iron Gall Ink Meeting January 2006* should be available from the same source in the near future. Please contact me ([carolinewhitley@naa.go.au](mailto:carolinewhitley@naa.go.au)) if you would like any further information about the content of the papers given at the conference or contact details for any of the iron gall ink researchers.

Before and after the conference I visited four conservation labs, in the company of my host Alison McCrindle, fellow NAA paper conservator currently on leave and residing in London. At the British Museum, Caroline Barry, head of paper conservation introduced us to her contract staff in their crowded old paper lab; a new wing with several lab facilities is currently being built. We watched treatment work on papyrus, books and paper and viewed some very lovely Rembrandt etchings. The BM research facility is a rabbit warren in the bowels of the building. Janet Ambers, an archeological scientist, introduced us to several research staff and their current projects (they are waiting for any invitation to visit us in Australia/NZ!). She showed us many analytical devices including accelerated light, temperature and RH aging chambers, a SEM, Raman and a beautiful new XRF machine. In Oxford I met Katerina Powell, book conservator at the Oxford Conservation Consortium. This facility was established in 1991 to perform book and paper conservation work for several of the Oxford University colleges and the Bodleian Library. She had recently sent my colleague, Alana Lee, some unidentified samples of flaking ink from an 11th century parchment manuscript book that she has been slowly repairing, and which Alana identified by Raman examination as iron gall ink.



Figure 4. 11th century book –iron gall ink on parchment.

Katerina was also treating and rehousing into archival paper folders hundreds of folded parchment deeds, which are still stored in 15th century archival boxes - wooden with sliding lids, and just beautiful.



Figure 5



Figure 6



Figure 7.

Figure 5,6 and 7. Original 15th century archival storage boxes and parchment deeds, rehoused into archival envelopes and replaced in the storage boxes

The Ashmolean Museum is undergoing major renovation and many exhibits were not on view. Allie Greathead is the one full time paper conservator and she has only one other part-time staff. They have lobbied for a new lab over the last seven years and are now housed in a smallish, but well equipped lab. The other specialist labs are still under construction, and will unfortunately be located in a new wing, separate from the paper lab. The Ashmolean holds one of the finest collections of Raphael's drawings and an important collection of Michelangelo drawings which have been lent to the BM for their current Michelangelo

exhibition. They are eagerly awaiting any new developments regarding latest treatment options for degraded iron gall ink works.

Vicky Humphrey, ex of Artlab in Adelaide, is now the Head of Conservation at the British Library. The library used to be part of the British Museum complex in Bloomsbury, but now has its own wonderful building at St. Pancras, London. Vicky and her team have raised large amounts of money from private donations to fund the building of a new wing – the British Library Centre for Conservation, which has been under construction since August 2005. The centre will be the new home of Book Conservation and the British Library Sound Archive's Technical Section. See <http://www.bl.uk/about/collectioncare/blcc.html> for more details.

Vicky organized an excellent day of meetings and tours for us, knowing our focus was iron gall ink. We were there for over eight hours, and given a guided tour through three of the specialist paper labs, meeting staff and viewing many objects undergoing treatment, including a 9th century goatskin, a 14th century Islamic recipe book, a book belonging to and inscribed by Shakespeare and a 16 metre Indian paper scroll. My particular favourite was being able to get very up close and personal with more drawings and letters by Michelangelo. The book conservators have developed and are excited by a new papier-mâché technique for creating new strong, but lightweight moulded spines for repairing old books, basically creating a discreet, false hollow back structure, onto which remains of old leather spines may be attached. It means the repaired books will have much greater structural integrity, an excellent aid accessed by the public.

The BL has recently placed a moratorium on performing any more treatments on iron gall ink until they have made a thorough assessment of the latest research findings, as presented at the conference. David Jacobs, Senior Conservation Officer, who specialises in the conservation and exhibition of oriental and western illuminated manuscripts, is creating a manual for internal use by the paper and book conservators, as an easy to use, hands-on guide for standardizing future treatment options and procedure. Paper conservator Gayle Whidby is working with a small team, documenting and surveying their large collection of iron gall ink items, using the ICN Condition Rating System for iron gall ink corroded paper objects, established in the Netherlands by Birgit Reissland et al in 2000. See the ink corrosion website for more information - <http://www.knaw.nl/ecpa/ink/>

We lunched in the BL cafe with several staff members, including Barry Knight, Head of Research with whom we

had fascinating talks about various collaborative research projects in which the BL is involved - all details on their website. John Mumford, Head of Book Conservation then whipped us away by cab, back to the old book studios at the BM. The 19th century studios are still in use for paper, book, photographic and philatelic conservation. Amidst the treatment work, equipment is being dismantled, sold off for scrap or moved to the new Centre for Conservation, as working or museum pieces. John then sat us down in his office with cups of tea and proceeded to spend hours showing us his latest baby. The BL is leading a major collaborative project along with St Catherine's Monastery in the Sinai, Leipzig University Library and the Library of Russia to reproduce the 4th century AD Codex Sinaiticus in digital form. The Codex is in four parts, each housed in the above locations. The BL website describes it as:

"a treasure beyond price.... the Codex is one of the two earliest Christian Bibles. (The other is the Codex Vaticanus in Rome.) Within its beautifully handwritten Greek text are the earliest surviving copy of the complete New Testament and the earliest and best copies of some of the Jewish scriptures, in the form that they were adopted by the Christian Church. As one of the earliest luxury codices to survive in large part, the Codex forms one of the most important landmarks in the history of the book."

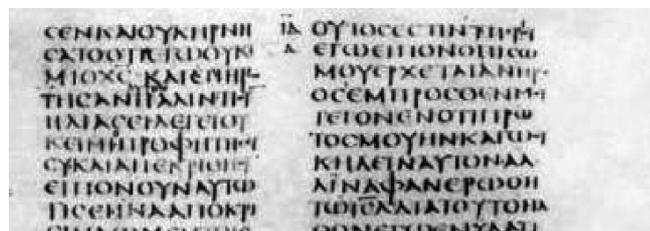


Figure 8. St John's Gospel, 'Codex Sinaiticus', c.AD 350

John and his staff are constructing a huge Documentation Model database for recording the condition and any treatment of the Manuscript and binding, in each of the four locations. The Documentation Model will also record scribal and codicological information. Analysis will help with the identification of the parchment and inks and in establishing the condition of the parchment. The model will also record information to help in with the digitization process. The Project will create a 'virtual' re-unification of the parts of the manuscript held over the four sites and will offer access to a worldwide audience.

Three months later, at the AICCM Book, Paper and Photographic Materials Symposium in Wellington in April, Alana presented a paper and poster on our research to date, and I presented two iron gall ink workshops. In the theory sessions I provided an overview of the history, chemistry, degradation, characterization and treatment options for iron gall ink, and Alana directed the participants

to make up an historic ink, they wrote on various paper types with the fresh ink using quill and nib pens, performed the Fe(II) ion test and after visual examination of originals, did the ICN condition rating for ink corrosion - an excellent tool when surveying the condition of iron gall ink collections. Each participant went away with lots of reference and reading material.



Figure 9

Both of the trips were wonderful and rewarding. For the opportunity to represent the NAA and the ARC grant project at the UK conference and during the lab tours, I would like to wholeheartedly thank the Archives, Dudley Creagh and the ARC Linkage Grant. Many thanks also to Alison McCrindle and Dr Andrew Wilson for their offering such generous hospitality to me whilst in London. Thanks also to the Wellington Symposium organizing committee for inviting me to present the workshops and pass on information that I have gained. I hope this will help our conservation community make more informed decisions about the life and conservation of iron gall ink.



Figure 10

Figures 9 and 10. Participants - preparing ink and condition rating ink corrosion on originals.

# AICCM Symposium 2006 - Conservation of Paper, Books and Photographic Materials

## 19-21 May 2006, Te Papa Tongarewa Museum of New Zealand, Wellington, NZ

Katy Glen, The Centre for Cultural Materials Conservation, The University of Melbourne

The AICCM Special Interest Groups of Book & Paper and Photon have held a symposium every two years since 2000, allowing conservators to present papers on current research or projects as well as attend workshops on particular topics. This year the symposium was organised jointly with NZPCG and held at Te Papa Tongarewa Museum of New Zealand in Wellington from April 19-21. Many conservators from Australia made the trip across the Tasman to attend the very well-organised, superbly-catered event and to explore this picturesque, waterfront city.

**Professor Kit Cuttle**, Senior Lecturer in Architectural Technology, National Institute for Creative Arts & Industries, University of Auckland, delivered the keynote address. Professor Cuttle is researching the reduction of exposure levels of highly light responsive objects without reducing light levels, and maintaining the visual satisfaction of

museum visitors. He is leading a research study funded by the Getty Conservation Institute to investigate whether it is possible to illuminate an object to a prescribed illuminance (such as 50 lux) with a satisfactory object appearance but with a significantly reduced irradiance than would occur with a conventional light source (such as a tungsten-halogen lamp). The aim of the study is to provide a range of practical light sources that meet the museum visitor's expectations for good viewing conditions while exposing the exhibited materials to minimal levels of incident radiant power. He talked about a light source with three narrow wavebands of light that can match the level of viewing satisfaction, such as colour rendering, given by a conventional tungsten-halogen display lamp at the same illuminance but with 30-40% less irradiance. Viewers compared two identical artworks in adjacent galleries. Using visual assessments of people was considered crucial

to the outcome of the testing as the human eye is the arbiter for colour rendering – to date the 3-band source has been preferred by the subjects in the experiment. The research is a work in progress but the preliminary conclusion is that a practical light source could be developed that would provide visual satisfaction equal to that provided by incandescent lamps but expose objects to significantly less irradiance, thus reducing their rate of degradation while on display. There were also musings about what we might consider to be an acceptable rate of damage, opening the discussion into a more theoretical plane. Professor Cuttle made the point that a good visual experience is essential, otherwise there is no point exhibiting objects in the first place, however there is no avoiding the fact that the absorption of photons provides activation energy for chemical change, and thus damage. Kit Cuttle has published an article on this research in the JAIC vol.39, no.2, 2000, which can be accessed online.



Te Papa Tongarewa Museum of New Zealand, venue for the Symposium

The next three papers focussed on particular artists and examined their materials and techniques. **Ute Strehle**, paper conservator at the Auckland Art Gallery, spoke about expatriate New Zealand artist, Frances Hodgkins. Ute's study began in 2002 and involved a technical examination of the paper and paints Hodgkins used in order to benefit curators and conservators working with her art. Hodgkins was primarily a watercolourist but from the 1930s took up oil and gouache, which she tended to apply very thickly and rework, sometimes applying up to 19 layers. Due to oxidation and hydrolysis the paint tended to become inflexible and structural problems such as shrinkage and cracks occurred, sometimes just a few years later. SEM, Raman, FTIR and gas chromatography were used to identify pigments. Discovery of the use of lead pigments in some works means that the custodians are now aware of the problems of exhibiting objects in areas of high hydrogen sulphide. James Newman was found to be the main supplier of paper and paint. Treatment involved consolidation using repeated applications of methylcellulose in ethanol.

**Rose Peel**, Senior Paper Conservator at AGNSW, presented a paper on Margaret Preston. Rose has done a lot of research into Margaret Preston's materials and techniques and co-curated a major retrospective of the artist last year. Rose talked quite generally about Preston's influences, including Japanese ukiyo-e, and also Aboriginal

art, for which the artist was a passionate advocate and is a factor that has contributed to the ongoing significance and controversy of her work. The relationship between colour and music was another theme, with pitch and timbre relating to luminosity and tonality.

**Sam Shellard**, paper conservator at the Queensland Art Gallery, presented a paper on the conservation treatment of The Cafe Balzac mural. This is a collaborative triptych by

Mike Parr, Colin Lanckley and Ross Crothall, which is to be a centrepiece at the opening of the Queensland Gallery of Modern Art this year. The mural was commissioned for a restaurant in 1962 and was acquired by the Gallery in 1988, so was filthy and discoloured after over 20 years in a restaurant - cooking oils and tobacco residues were detected when the grime was analysed. The work is a collage, made from lots of different materials with different aging characteristics including foil, labels, magazine pages, cardboard and newsprint. UV analysis determined the presence of an early PVA adhesive used as a coating. Treatment involved cleaning and consolidation and was a result of collaboration between paintings, paper and objects conservators, as well as consultation with one of the artists. Mould spores were removed by dry cleaning and gel poultices were used for cleaning some of the darkened areas which improved them slightly. Another aspect of the project is a Visual Restoration Project which involves sourcing original material used and, with the help of digital technology, reconstructing the appearance of the original printed material. This will allow visitors to compare the reconstructed original with the deteriorated original, with the assistance of an interpretative panel explaining the deterioration of the paper components.

**Fiona Kemp**, paper conservator at the NGA, gave an entertaining paper about the preparation and display of unconventional works of art on paper at the Gallery. These included *Leaf Litter* by Fiona Kemp, composed of gouache paintings on banknotes - 183 separate pieces installed using magnets, a display system chosen after the failure of double-sided tape led to constant monitoring and repair during exhibition. Another was *Red Rain*, by Dadang Christanto - 1965 ink drawings on joss paper that form a canopy on the ceiling, from the centre of each hangs a piece of red wool. Dibond panels (aluminium with a PE core) were used to fit into a grid support structure on the ceiling. The Symposium audience responded with incredulous gasps at Fiona's image of the state of the piece

when it arrived at the Gallery - a brown box with a tangle of wool. More gasping at the anecdote of a small child running into the hanging wool when the piece was installed and becoming tangled! Fiona emphasised the need to assess works on a case-by-case basis and to consider de-installation, storage and re-installation as part of the overall preservation plan for such objects. Careful thought, a flexible approach and imagination are often required.

**Analiene Treacy**, Senior Conservator of Paper and Photographs at the Australian National Maritime Museum, looked at the technique of 'reforming' as an effective method of regenerating aged and degraded varnish layers. This is a technique that has been used in paintings conservation as a vapour method to soften layers, but has not yet been adapted widely to works of art on paper. The example she used was a late 19thC varnished Pre-Raphaelite watercolour on paper that had been lined onto canvas and stretched onto a wooden stretcher. It was a painted copy of an oil painting by Edward Burne-Jones. The media was difficult to determine at first due to the crazing and swelling of the varnish, which was found to be a natural resin. GC-MS of the media layer found sugars most common in gum arabic. Linseed oil was found in the varnish layer, and may have been added to natural resins to increase elasticity. The work was sprayed in dilute amounts over a long period with a solvent. Some areas appeared too matte so a MS2A varnish was applied. The result was a vast improvement in the aesthetic appearance of the work.

The morning of the second day was devoted to photographs and featured several well-researched papers. **Angeletta Leggio**, Conservator of Paper and Photographs at Museum Victoria, spoke about the history of Kodak Australia's manufacturing plant. In October 2004 Kodak closed its manufacturing plant in Melbourne, after almost 100 years of production of photographic materials in Australia. Museum Victoria expressed interest in collecting some of the material left behind, so staff and ex-employees of Kodak went through the pallets that had been set aside, to identify material and its significance. Angeletta spoke about the history of Baker & Rouse in Melbourne, the partnership that eventually merged with Kodak in 1905, and the joys and challenges of working with the Kodak volunteers who obviously had a lot of emotion and loyalty associated with the material. It was almost with a tear in her eye that Angeletta reported this shift in photographic technology away from silver halide, which signifies the end of traditional photographic production in Australia as it has been known.

**Tania Riviere**, Paper Conservator at the National Archives, spoke next about 'Men with Beards', otherwise known as *The First Parliament of the Commonwealth of Australia: The*

*Ministry and the House of Representatives* - a large composite object comprising 71 individual platinum prints and text panels adhered to a backing board and cloth backing, and framed. While the photographs appeared to be platinum prints there were a few anomalies - localised bleaching in minimum density areas and a bronzing sheen in maximum density areas. This led to the analysis of the materials. XRF was used to identify the elemental composition of the surface through a radioactive source, with the elements first calibrated into the device. A hand-held instrument was used, supplied and operated by a man accustomed to analysing soil. Platinum and iron were found, and no silver or palladium, confirming the prints as platinum, however the nature of the anomalies remains unclear. Further work involving the measurement of density will be undertaken.

**Ruth Oliver**, Project Conservator - Photographic Media at the Alexander Turnbull Library, presented a paper on the use of saliva for the cleaning of photographs. Ruth is very concerned about the use of saliva and her interest in studying the topic was prompted by the variety of reactions to its use by conservators. She's also interested in cultural responses and community preferences, which she found were also very varied. After constant cringe-worthy references to 'oral cavities' and 'oral bacteria,' I think members of the audience began to understand why! The concern is that saliva is complex and variable and is affected by the hygiene of the person administering it. Dehydration, smoking, ingestion of sweet and acidic substances all cause variations, usually a drop in pH, whereas bad breath and gum disease result in increased levels of hydrogen sulphide. There can also be non-adhered oral bacteria and the remains of food in the mouth. Recommendations included hydration, cleaning of the teeth and tongue, allowing 45 minutes after eating to cleanse debris and restore equilibrium pH, testing the pH and refraining from use if bad breath or gum disease are present. Clearing is necessary because proteins darken with aging and enzymes may reactivate. Deionised water reduces the amount of residue but doesn't deactivate it, while ethanol does deactivate, but the enzymes can still reform and reactivate. Ruth then spoke about the SLUGS formula - an acronym for Saliva-Like Unsoiling Gainful Solution, a synthetic alternative to saliva, developed in Geneva, which contains di-ammonium hydrogen citrate, hydrogen carbonates and phosphates. Ruth did some comparative tests and found that both passed the PAT test but only if cleared. Density readings were undertaken to quantify cleaning and determine whether image material is being removed. The results suggest that both are probably acceptable, however the tests were not statistically significant. Research is needed on the longterm effects caused by reactivation of enzyme residue and the possible damage caused to the gelatin by protease.

**Pip Morrison**, Conservator of Photographs at the NGV, spoke about the research she undertook while studying at George Eastman House in Rochester, New York. Her project investigated the effect of solvents on silver dye bleach materials, otherwise known as Cibachromes or Ilfochromes. With no current standardised methods for testing solvents on photos and obsolescence of these materials looming, the study seemed very pertinent. Deionised water, ethanol, toluene and acetone were tested on samples by immersion and using cotton swabs. Analysis to determine the effect of the solvent on surface gloss was undertaken using a micro-goniophotometer, dye migration was measured using image analysis software, and changes in density and colour balance were also monitored. Results indicated that ethanol caused lots of cracks and deionised water caused rapid and noticeable colour change. Acetone seemed to affect the dyes after a long time while toluene caused no change at any point.

**Lydia Egunnike**, Senior Conservator at the State Library of Queensland, also presented her research undertaken while studying at George Eastman House. Lydia's project investigated the technological evolution of opalotypes and developed the main variants and deterioration mechanisms as well as preservation guidelines and effective identification tools. She examined a variety of opalotype collections and also made a set of new opalotypes using the methods and materials outlined in historic photographic journals. Elemental analysis was conducted on historic and contemporary glass - high lead and arsenic was found in the early glass whereas the newer glass had a higher silica and feldspar content. There are two main types of opal glass - pot opal and flashed opal, and the emulsion can be collodion iodide, albumen chloride, collodion chloride, carbon transfer or gelatin bromide, with use specific to certain periods. Identification tools can include date and provenance, image subject and style, presentation, type of glass, type of emulsion, finishing methods such as hand colouring, process artifacts such as fingerprints and flow marks, and deterioration. Problems can include desiccation due to hand colouring, emulsion cracking, discoloured varnish and broken glass. Lydia's work has resulted in a book entitled *Opalotypes: Their Evolution and Care* and she hopes to continue her research with a focus on treatment options.

The third day of the Symposium was devoted to workshops, including ones on iron gall ink (see Caroline Whitely's review), cyanotypes and paste papers. *Print, paper, book* was held at the Wai-te-ata Press at Victoria University, a short cable car ride up the mountain. **Dr. Sydney Shep** provided an introduction to historic and contemporary letterpress printing and an opportunity to delve into the amazing collection and resources of the Wai-te-ata Press. The practical component of the workshop involved setting

some type in a compositor, inking it up and then printing. Our printed sheet was awash with simple errors, mostly letters in the wrong orientation, demonstrating the care required when printing letterpress.

**Alan Bekhuis** presented the workshop, *The Image Object*. Comprehensive information on the history and construction of miniature case art for daguerreotypes and ambrotypes was provided. Alan has a business making new cases where the originals have been lost or damaged beyond repair. He doesn't restore original cases, or treat the actual images, instead clients from all over the world send him the exact measurements. He uses traditional 19th Century methods to create the cases and adheres closely to the 1854 illustrated catalogue of E. Anthony, the only period account of daguerreotype case construction. We were able to examine the many samples of cases in different stages of construction and talked about sources of materials.

Overall the Symposium was a great success, which everyone seemed to enjoy. Congratulations and thanks to the NZPCG organising committee. I would also like to thank The Centre for Cultural Materials Conservation for supporting my attendance at the Symposium.



*Print, paper, book workshop* – Katy Glen in action watched by Dr. Sydney Shep at left and other workshop participants



Samples of materials for cased images, *The Image Object* workshop

# 10th Paintings SIG Symposium: Insights and Intuition

## 4-5 May 2006 Queensland Art Gallery, Brisbane

MaryJo Lelyveld and Alexandra Ellem, The Centre for Cultural Materials Conservation

On the 4th May, 32 conservators from across Australia and abroad converged on Queensland Art Gallery to attend the 10th AICCM Paintings Group Symposium. The balmy Brisbane morn' (air temperature of 25°C and water temperature of 21°C) proved conducive to a congenial atmosphere of casual catch-up prior to the nitty-gritty of presentations.

The conference theme of *Insights and Intuition* offered scope for a range of topics covering many issues in conservation: conservator experiences in the Asia-Pacific region, individual artists' and artworks and their materials and techniques, the conservation of institutional collections and materials analysis.

The welcoming address from Doug Hall, the Director of Queensland Art Gallery, outlined the hopes for the redevelopment of the QAG (to be completed in 2007) to act as a long-term centre of excellence for SE Asian Pacific region. **Caroline Fry** and **Sabine Cotte** discussing their experiences in treating an iconic Vietnamese easel painting and Tibetan thangkas, respectively, further highlighted the need for cultural diplomacy and the provision of conservation expertise within the SE Asian Pacific region.

Research into the analysis of materials and their deterioration were taken up by:

- **Maria Kubik** who has designed a portable imaging spectroscopy tool able to analyse pigment types in-situ under normal lighting conditions as part of her PhD
- **Deb Lau** analysing the phenomena of crystalline, white bloom on painted films which was found likely to be related to the migration and accumulation of polymer components (e.g. free fatty acids) on the painted surface
- **Liz Hinde** presenting her masters thesis research on the fading behaviour and possible approaches to colour-matching of fluorescent paints

Presentations outlining the treatment of individual paintings or collection works included: icons from Brisbane's ACU and Abbey collections; artists' materials and techniques were addressed in discussions of the analysis and treatment of Eugene von Guerard's (NGV) paintings and examinations of Max Meldrum's works; issues related to interpreting and presenting paint layers on war artefacts; approaches to and difficulties associated with the cleaning of the mixed media Balzac Mural; and a review of the Clifford Possum Project.

The Symposium wound up with a panel discussion reviewing the focus and sustainability of the Paintings Symposium. There was general agreement that the Symposium presents an important opportunity for paintings conservators to meet both formally and informally to exchange information and experiences. Concentrating the meeting into two days was deemed preferable to enable higher attendance and to maximise the experience. The Symposium was a great success with many thanks to **Gillian Osmond** and the QAG team for their blood, sweat and tears.

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### Next Issue

We are in search of a feature article for the September Newsletter so if you have been working on a project of interest to members and wish to submit it for publication, please contact the editor as soon as possible. We hope to bring reviews of a number of recent international symposiums and conferences and are interested in hearing from anyone who attended *Modern Paints Uncovered* held at the Tate in May; or will be attending the 5th IPC Conference to be held in Edinburgh in July. We welcome reviews of conferences, symposiums, workshops and publications; technical notes; and research articles. Please contact the Editor in advance to confirm your proposed submission to the Newsletter.

# Sustainable Storage?

## Western Sydney Records Centre - Stage 6

Elizabeth Hadlow, Senior Conservator, State Records NSW

In late 2005 the Hon. Bob Debus, N.S.W Attorney General and Minister for the Environment and Minister for the Arts opened the latest storage facility at the Western Sydney Records Centre (WSRC). The facility is the most recent and largest extension for the Government Records Repository (GRR), which manages the commercial storage of semi-active records for government agencies. The GRR is part of State Records NSW. Bob Debus had a particular interest in opening this facility as it encompasses two of his key portfolio areas under the one roof – environmental sustainability and heritage care. Perhaps it also displays the idea of sustainability and efficiency in government? – combining as many portfolios as possible under the one minister!



Loading bay Stage 6

The design of Stage 6 – initially intended to resemble Stage 5 in that the size was similar and was to be on 2 levels - was motivated by the types of box primarily used by Government to store records as well as strong OH&S considerations. However, in the past shelving height and design has caused a number of manual handling issues and it is hoped that the design of the shelving in the new building will mitigate some of these. The shelving design is not radically different – it is static enamelled-metal shelving – but the height is reduced dramatically, requiring only a small step stool to gain access to the top shelves. The building was designed to accommodate this change in shelf height and is 3 levels instead of the 2 levels used in all other facilities at WSRC. I should also note that the stark white shelving colour is a dramatic shift from what was traditionally used at State Records NSW – ranging from the garish orange, through lime green and dull beige. This is a change that most are very happy about!

The main difference between this new facility and those of the past are the environmental considerations – both the ability to maintain the internal environment of the building and the impact on the natural environment. Energy efficiency and the reduction of green house emissions have become an important part of designing government



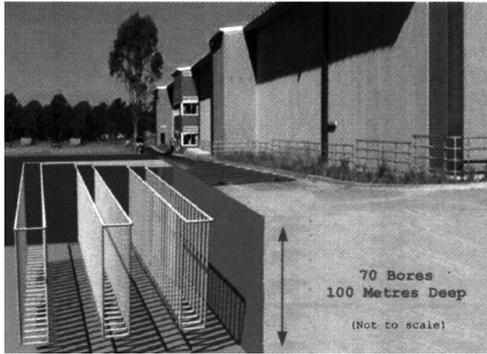
Stage 6 shelving

buildings. The other big change was to move away from minimising the upfront storage cost per box to maximising box numbers stored with minimal ongoing running costs. This may seem like a small difference, but when you look at the difference in the upfront costs of Stage 5 (approx \$5 million) to Stage 6 (approx \$18 million), you can begin to see the change in attitude and approach that has taken place over the past decade. These upfront costs reflect an inverse expenditure in running costs – Stage 6 costs about half as much to run as Stage 5.

Lifecycle modelling was undertaken for all mechanical systems within Stage 6 to ensure that maximum environmental advantages and cost benefits would be achieved over the life of the facility. The environmental control system chosen was a geothermal loop air-conditioning system, utilising the earth as a heat sink and heat source. Along with the choices of insulation and energy efficient lighting that is motion sensor activated, this has the potential of saving 485 tonnes of greenhouse gas emissions and 4000 kilo-litres of water every year and is the largest floor-space conditioned by a geo-exchange system in Australia. If the air-exchange rate is any indication, Stage 6 has proved more efficient than anticipated – initial hopes of 0.75 exchanges per hour have been improved to 0.5 exchanges per hour.

The geothermal air-conditioning system relies on seventy 100 metre bores in a vertical closed loop arrangement, comprising pre-pressure tested high density polyethylene tubing with thermally conductive grout. The earth around these tubes is at a constant 17-19°C throughout the year. Circulation of water through the tubes provides the heating and cooling system for the air-conditioning system. The benefits of this type of system compared with a standard air-conditioning system are:

- Savings in energy and water consumption
- Eliminating the potential risk of Legionella
- Reduction of plant room space
- Lower maintenance costs



Aircon Stage 6

We are also obviously hopeful that the internal environmental conditions will be stable throughout the year providing satisfactory conditions for the storage of archives. Control of air from external sources is by rapid roll door from the co-joined Stage 5 and a combination of air-curtain and rapid roll doors at the loading dock. The controlled air within Stage 6 has positive air pressure, meaning that air is pushed out when the building envelope is compromised.

The components of the building envelope have a very low U-factor – the measure of transferred heat loading to the building from external factors. The ceiling is lined internally with a sandwiched rockwool panel product similar to refrigeration installations. The walls are a tilt panel concrete/ air gap/ insulation/plasterboard construction – fairly standard. Windows are minimised – only occurring in the small office area – and are double glazed. The concrete floors are a post tensioned slab configuration – unlike other buildings on the site that have either wire mesh or wood boards – and this adds to the overall thermal mass. The building currently falls outside standard categories for energy ratings, so it hasn't been assigned a star rating, but we are hoping for one to be applied down the track. Incidentally the plans for Stage 7 are already being considered and it is anticipated that refrigeration panels will be used for both the ceiling and wall construction – it is anticipated that the savings in manual construction will offset the cost of the materials.

The fire suppression system chosen for the facility followed a thorough evaluation of various fire suppressant mediums and resulted in an individually tailored fire safety solution that has moved away from the more traditional systems (water-based) used in the other buildings at WSRC. Stage 6 is divided into 15 individual fire and smoke compartments as a passive fire protection measure. This is combined with a Total Flooding Gaseous System (inert Argonite Gas) which is triggered by a sophisticated detection system comprising laser point detectors that can detect a fire at the incipient stage. The gas is discharged through a network of pipes, via direction valves, to the fire affected areas. This of course removes one of the main destroyers of records during a fire – water. Unlike some other gas systems used in the past, this system is considered safe for human occupants of the building.

We anticipate that Stage 6 will be able to provide more stable environmental conditions than some of the other buildings on the site, but we are monitoring the conditions within the building to establish whether this is indeed the case. Many of the other buildings do not have sufficient insulation and rely heavily on air-conditioning to maintain a stable environment. The additional insulation within Stage 6 should make it far easier to control this internal environment. It is certainly a more pleasant building to be in – there is not the hum of air conditioning plant working overtime and the scale of the shelving is definitely less intimidating. Additional design features such as rain water tanks to catch run-off and landscaping providing ecosystems for fauna are trying to achieve a better interaction between the built and the natural landscapes.

We are all certainly pretty chuffed about our bright new shiny addition – I'm just hopeful that it lives up to expectations and that the expenditure and effort put into design reaps the



Eastern external wall

sorts of rewards that have been projected. On paper it certainly seems like its going to provide much better conditions for the long-term preservation of the archives. Initial data logger readings seem encouraging however we have not yet been through a full season cycle and would like to assess the building over a longer time frame before making any definitive statements.

- Storage capacity of Type 1 boxes 757, 296
- Total lineal metres of Archive shelving 137, 000
- Floor area 15, 351 m<sup>2</sup>
- Climate conditions 20°C ± 2  
50% ± 5%
- Floor dimensions 154mL, 33m W
- Gas suppression fire system Inert Argonite gas
- Length of geothermal polytube 15 kms
- Total cost of project \$18.64 million

Design information, specifications and photographs provided by:

- Department of Commerce – Project Manager
- Norman Disney and Young – Electrical, Mechanical, Hydraulic, Lift and Fire Engineers
- State Records NSW – client

Contact details for the above can be provided upon request.

# A Preliminary Investigation into Acrylic Glazing Breakdown

Caitlin Granowski, National Gallery of Australia

## Introduction

The National Gallery of Australia (NGA) has a vibrant travelling exhibitions programme which allows works of art from the National Collection to be seen in State and Regional galleries in Australia and in galleries in the wider Asia Pacific region. The NGA has approximately five travelling exhibitions touring in any given month and about 85% of all works travelling are works of art on paper. This includes prints and drawings, photographs, books and folios. Approximately 90% of the paper based works sent in these exhibitions are displayed in standard wooden frames with acrylic glazing.

Over the past few years the NGA has become concerned by what appears to be the breakdown of such glazing. Physical and anecdotal evidence suggests there are two to three distinct patterns of deterioration, one of which is directly affecting the works of art housed within the confines of the frame.

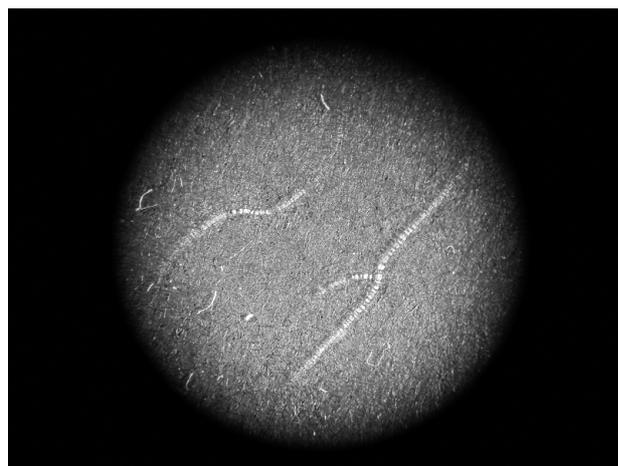
## Types of acrylic glazing deterioration

Communication with staff at other cultural institutions has provided various observed changes to acrylic glazing whilst in, or after, use. There have been reports of a spider-web like crazing across the surface of the sheet. This phenomenon may occur across the sheet which is in contact with the window mount leaving the area over the work free of crazing, however it has also been seen to affect the area of the sheet which is over the work leaving the area in contact with the window mount free of crazing.

A similar problem, though with a completely different effect, is what appear to be stress fractures across the body of the acrylic sheet. These generally are condensed along two sides and work their way to the middle, becoming fewer the closer toward the centre they are. The pattern suggests that flexion due to cutting or shock would cause such marks, but examination of the surface using a stereo microscope makes this doubtful. The 'fractures' are not linear, across the surface, rather they twist and change direction (see images below) forming 'Y', 'X' and feathery lines. Simple microscopic examination revealed an intricate system of lines, grouped and in isolation from each other. Examination by raking light showed a slight topography to the surface of one side of the sheet, which created a rippling effect in the light.



Surface of glazing photographed at x250 magnification



Surface of glazing photographed at x500 magnification

Another type of deterioration has an as yet unknown mechanism and results in deposits of a white particulate nature forming both on the inside of the glazing and the surface of the framed work. It is this form of deterioration, known colloquially as Acrylic Disease, which NGA Paper Conservation is particularly interested in as it has a direct, sometimes irreversible, impact upon framed works of art.

## Observation of "Acrylic Disease"

Some framed works of art on paper and photographs in NGA travelling exhibitions which have been glazed with acrylic have developed areas of a white deposit on their surface during the scheduled tour. When first discovered, it was thought that the works had suffered some sort of mould growth. The first to exhibit clear signs of this persistent white deposit were a group of large silver gelatine black and

white photographs by Yousuf Karsh (see images below). These works were unframed and both the surface of the emulsion layer and glazing were cleaned in situ before reframing and packing prior to exhibition at the next venue. Three months later at the final pack up, the white deposit was found to have reformed on the works.



Deposit on a glazed silver gelatine photo (in situ)



Deposit on the underside of the glazing  
(after the photo was de-framed)

On return to the NGA it was confirmed that the deposits were not mould at all. The effect on the work and glazing was carefully documented and samples from each surface were taken. It was noted that the marks on the work corresponded exactly to marks on the glazing. To the eye, the white bloom had a dense furry characteristic and was relatively easy to remove from both the surface of the work and the glazing. The process of taking samples for analysis revealed a different character - the deposit seemed waxy, clumping on the surface of the work and some times adhering itself to the acrylic, seemingly embedded in it. The surface of the works were cleaned using a swab dampened with 50/50 ethanol/water or a molecular trap (such as

Groomstik) but the surface of the acrylic posed a more difficult cleaning proposition as smearing was difficult to eliminate.

Soon after this occurrence, the white deposit was observed on a collection of Andy Warhol screen prints in an NGA travelling exhibition (see images below).



Deposits on Warhol screen print in situ (behind glazing)



Deposits on Warhol screen print in situ (behind glazing)

On one set of prints, the deposit was more difficult to remove. The prints with a glossy ink surface could be cleaned using a molecular trap, but those with a very matt ink appeared to have the deposit embedded. The surface of the acrylic was also difficult to clean, and careful examination revealed an etched effect to the surface of the glazing. At this stage a second common factor was noted for each case – at the point where the white deposit formed, the glazing had been in contact with the surface of the work.

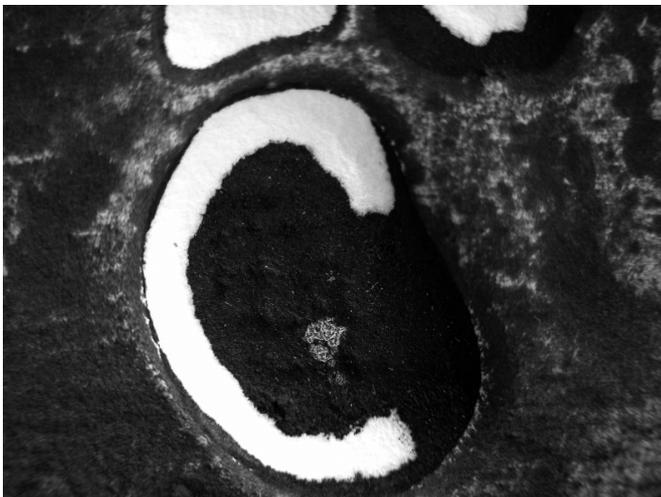
Since this episode, most of the works of art in one particular NGA travelling exhibition have instances of the deposit

developing on the window mounts of the works. Of the 90 works, 7 have been directly affected with deposits forming on the surface of the work. This exhibition has been travelling for about a year, but it appears that the deposit can form in a relatively short period of time as reformation has been seen to reoccur on cleaned works in the space of three months.

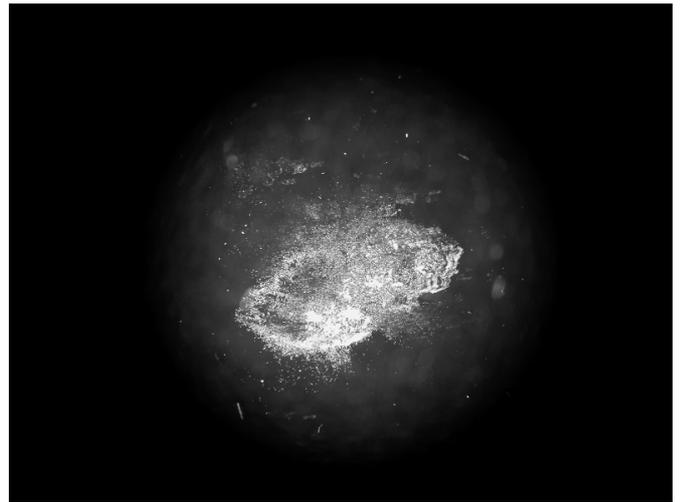
### Contributing factors for apparent breakdown

Initially, NGA Paper Conservation was puzzled by what may be causing this deposit. It seemed that the Gallery was the only institution which had experienced the problem and so glazing cleaning processes were examined. It was found that both Kunstoff (antistatic acrylic cleaner) and a 50/50 mix of methylated spirits and water, applied using an atomiser, were used to clean all acrylic glazing for every exhibition. The fact that the deposit only occurred on the framed works which were travelling for extended periods indicated that cleaning methods were not the significant contributing cause. Acrylic sheeting appears to be reactive to changes in relative humidity (RH) and / or temperature, as evidenced by the framers practice of cutting the glazing smaller than the frame rebate. This gap allows the sheet to expand without "popping" the frame. Climatic variation may be a contributing factor, however as some works affected had not left a climatically controlled museum environment, it is anticipated not to be a significant cause of Acrylic Disease.

Close inspection of the acrylic surface revealed clear signs of abrasion where it had been in contact with the window mount. The marks appeared as a stucco type pattern, regular and close together, indicative of some sort of vibration. This was not a great surprise as it seemed that recent supplies of acrylic glazing were notably softer than those of previous years. Anecdotal evidence would suggest that a change in material composition had occurred as the NGA in-house Conservation framer believes that the acrylic glazing he uses appears now less rigid than in past years and less easy to snap after scoring.



Deposit on Frank Stella work



Abrasion to Stella glazing photographed at 500x magnification

The supply of acrylic glazing to the NGA has varied over time as our frame manufacturer has chosen what he believed to be the best quality on the market at the time. He concurs with the belief that the general standard of acrylic glazing has changed over the years and noted a change in the material's properties. Recent batches of acrylic sheet have been difficult to clean, the surface is softer and easily marked, a sheet buckles under its own weight and its visual aspects may vary, including cloudiness. One sheet batch was inferior to the degree that the NGA frame manufacturer contacted the glazing supplier. He was told that they believed the substandard acrylic was not being made in Germany but elsewhere in Europe and that they were in discussions with Germany about the quality. Further to this, they said that it was not museum quality but a standard grade which he had been sent. The NGA frame maker changed suppliers but found that although the quality was better than the "bad batch", the acrylic still had diminished properties compared to the product in previous years.

Until recently, a prestigious New York cultural institution generated the only other report of a similar form of acrylic glazing deterioration. The report was of small deposits of white powder on the surface of works on paper, including the mounts. When this was first noticed, it was assumed to be mould, but upon further examination the powder was found to be "a powdered acrylic dust". These powder samples were tested and found to have the same melting point as acrylic glazing. When examining the sheet in question, it seemed to have deteriorated in a particular way. The areas of the glazing relating to the powder deposits appeared to have been "scooped out as if with a mini-melon ball scoop", rather than appearance of scratching which is what might be expected from the powdery deposits. They went on to say:

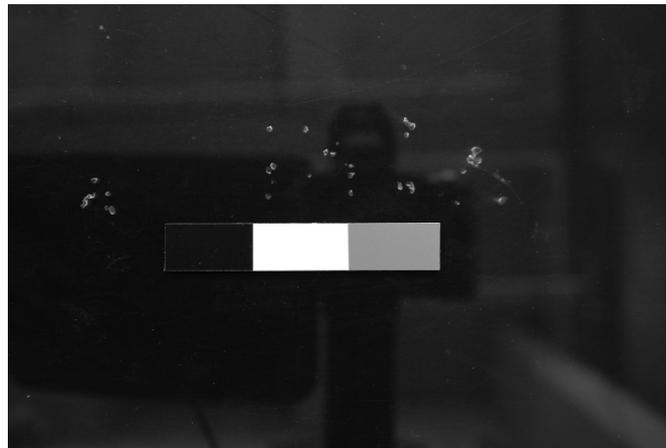
"We think, at this point, that there are two factors involved. The first is some interaction between the paper, the media and the glazing. We do not know what this interaction would be. Acrylic disease has been seen above plain paper, printed surfaces, photographic surfaces as well as watercolour and gouache. The reason we assume that there is some interaction is that the effect on the acrylic is this melon-scoop effect rather than a pattern of small scratches. The second factor is vibration. The first instances were seen on works that had been included in circulating exhibitions. Later on, a large work that had never travelled was found to have the same issue. We discovered that the work had been stored for years in our lower-most store room which is over a subway. Years of vibration from the train tracks seems to have caused the same result as travel. We see this mostly with truck travel rather than plane travel."<sup>1</sup>

The American institution found the deposits were simple to remove with a brush, revealing on occasion that the media underneath had been burnished or abraded. They discovered that the deteriorated areas on the acrylic can not be simply wiped clean, as the whitish deterioration was still visible proving that there is actual physical damage to the acrylic rather than an accumulation of dust. Moreover, they observed this phenomenon on acrylic glazing from various suppliers and with different ultraviolet (UV) filtering capabilities. They too wondered if their cleaning fluid for glazing might be to blame, but had no proof of this and it is unknown if they did any testing.

### Sample analysis and discussion

The initial results from Fourier Transform Infra-red spectrometry (FTIR) analysis on the NGA Karsh samples were thought to be contaminated and thus inconclusive. A second sample was taken from the photograph and glazing, and analysed by FTIR and SEM-EDXA (Scanning Electron Microscopy- Energy Dispersive X-ray Analysis). Results from FTIR indicated pure poly methyl methacrylate (PMMA), and the SEM spectra revealed a sodium peak, which by all accounts seems strange. Postulations of an additive like silicon or a surface coating (such as UV) contributing to the problem were made, yet when the manufacturer was contacted, they implied that it is not possible for sodium to be leaching from their framing grades and that there had been no change in the recipe over the last few years. They did concede, however, that "acrylic is not acrylic" and that grades are different and manufacturers have different recipes. For example, an impact modified acrylic may produce a sodium peak - unlikely but possible. There was some discussion that if the basic recipe hadn't

changed then perhaps there may have been a percentage of recycled material used in manufacture; this was denied by the manufacturer.



Deposit on the Warhol glazing



Sample from Karsh glazing

Samples from an NGA Warhol work were taken and sent, along with a piece of the affected acrylic, to two independent international laboratories for confirmation analysis - an acrylic manufacturer in Germany and a cultural institution in Great Britain. Germany commented that the acrylic looked quite yellowish, particularly at the edges, something NGA Paper Conservation had noticed in many cases. They suggested that the reason for this could be a surface coating or a substandard plastic material. Germany analysed the acrylic sample and verified that it was not their product. Further to this, they stated that sodium could not be created by their museum glazing product line, and hypothesised that it was an external factor such as dirt or the work itself as the source of the deposit.

Britain used Raman spectroscopy on the NGA acrylic sample, comparing it with a standard reference acrylic

<sup>1</sup> Private correspondence July 2005

sample. They noted that there were some small differences between the two spectra which may be attributable to a UV coating or flame retardant in the NGA sample. It was also suggested that changes in the properties of the sample, undetectable to the eye, could cause additional bands in the spectrum. Examination of the affected areas of the sample appeared as:

"..pronounced fine-grained white deposits, [and] produced spectra with a very similar profile to that obtained from the unaffected areas of [acrylic]. This indicates that the whitened areas on the [acrylic] are composed predominantly of polymethyl methacrylate and not of an entirely different material derived from the artwork. Again, small differences are observable between the spectra obtained from the affected and unaffected areas of the [acrylic]. These differences indicate that although the affected areas on the [acrylic] are certainly derived from the polymethyl methacrylate, their composition is slightly different to the unaffected [acrylic]. Thus, the [acrylic] has undergone some kind of polymer degradation in the affected areas. However, the cause of this polymer degradation is currently unknown. Further analysis of the affected areas may be used to determine fully the changes that have occurred in the [acrylic] and to establish the cause (e.g. light or evaporation of materials from the artwork surface) of the changes."<sup>2</sup>

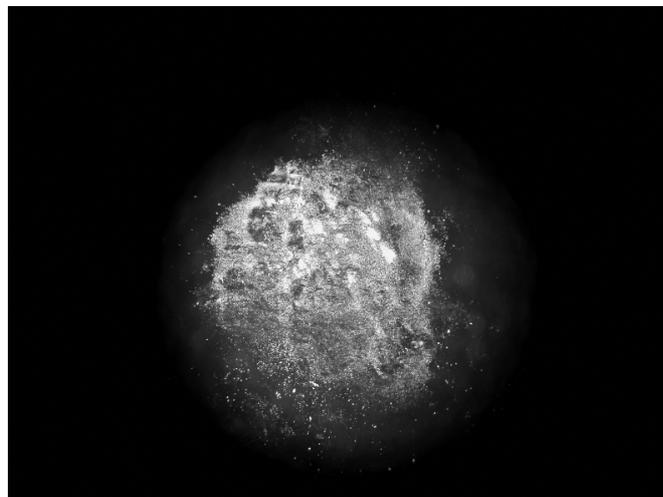
Currently, NGA Paper Conservation is working with a chemist at Oxford Brookes University (Oxford, UK) investigating this problem, and an honours year ANU chemistry student who is assisting with an attempt to simulate this deterioration.

## Conclusion

The mechanism for this particular degradation of acrylic glazing has not been categorically determined and is still not completely understood. The sealed frame microclimate is being studied internationally but is a relatively unknown quantity, and it may be that there is a reaction between the media, support and glazing. The NGA has observed this sort of glazing deterioration in conjunction with silver gelatine prints, screen prints, etchings, lithographs and oil paintings. Therefore it seems that it is improbable, although not impossible, that the frame microclimate is the catalyst for the deterioration; but may contribute to the rate. Required conditions which are thought to produce the deposit are vibration of some sort over an extended period of time, and surface contact between the glazing and window mount or work of art. It is suspected that vibration is a major

catalysing factor as evidenced by the American work developing Acrylic Disease whilst in storage above an underground train station.

Since beginning this study, many more works have been found to be affected by Acrylic Disease. A NSW Regional gallery's collection of deeply coloured Ciba chrome prints have been discovered with white deposits scattered across their surfaces. A commercially framed large work on paper, sent to the NGA in 2001 from America, has white deposits across its raised surfaces. Five oil paintings framed behind acrylic in gilt frames recently returned from travelling with deposits across the gilding, leaving the gilding burnished. There is now high turn over of acrylic glazing which is not an inexpensive consideration. Samples have been taken from the oil painting frames and large American print and are being analysed by NGA staff using facilities at the Art Gallery of NSW (AGNSW). NGA Paper Conservation expects that with further study and analysis an understanding of the reasons for Acrylic Disease development can be gained. With this knowledge, it is hoped that dialogue can be entered into with acrylic sheeting manufacturers. If anyone would like to contribute to this research, please contact staff in Paper Conservation at the National Gallery of Australia.



Abrasion to Stella acrylic under stereo microscope  
Photographed at 500 magnification

NGA Paper Conservation would like to thank David Wise for FTIR analysis, AGNSW for use of their facilities, Sally Stowe and the ANU for SEM/EDXA analysis, and David Jacobs and the British Library for Raman analysis.

<sup>2</sup> Chaplin, T. (2005) *Scientific Examination Report: Raman analysis of problematic Perspex sheet*, London: British Library

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