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Association of Historical & Fine Art Photographers

RESTORING AND RETOUCHING PHOTOGRAPHS

Juliette Soester

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EDITORIAL

We must apologise for the lateness of this issue of the journal, which has been brought about by a number of unexpected changes within the committee.

Jerome Perkins, your previous editor, has had to relinquish hs post due to personal commitments. Both George Nichol, your Secretary, and Brian Tremaine, stalwart committee member, have taken early retirement from their jobs - George is about to live in a villa in France, and Brian is busy converting his garage.

In the interim, the committee have asked us to edit and produce the journal.

We have taken this opportunity to redesign the cover and improve the general layout and typeface. An ISSN number has also been acquired to ensure that the journal has an official presence in the reference books and the world's bibliographic databases.

This issue contains an up-dated "Notes to Contributors" as a first step to establishing a house style and to assist those writing for the journal.

Your contributions are needed for future issues, especially short articles, reviews, notes on methods and techniques, and information on any forthcoming events that may interest Fine art and Historical Photographers. The journal can only grow if it gets regular contributions and feedback from its readers.

Editor Terry Dennett
Production Dave Lambert

PHOTOGRAPHING THE 1989 RESTORATION OF THE PORTLAND VASE

Trevor Springett British Museum

The Portland Vase, the finest example of Roman cameo glass in existence, is one of the most famous objects in the British Museum's collection. The main body of the vase is made of dark blue glass overlaid with a decoration of carved white glass, which produces a striking high contrast effect. During 1985 the vase was inspected by the Museum's Conservation Department and found to be in an unstable condition - it had previously been restored in 1948 and the adhesive used had become brittle and 'yellowed' with age.

A report was presented to the Director and Board of Trustees who decided that the restoration should commence in the summer of 1988. Mr Nigel Williams, Head of the Ceramics and Glass Section of the Department of Conservation and I held a series of meetings at which he explained how the vase was to be restored, the timescale of the project and his photographic requirements. I was also informed that a BBC History and Archaeology film unit would be present to record the restoration for a programme in the Chronicle series. As June approached Mr Williams and his assistant Miss S Smith researched the two previous repairs carried out by J Doubleday in 1845 and J W R Axell in 1948. Hardly any information about the 1845 restoration was found, only a watercolour of the fragments and a photograph of Doubleday with the repaired vase. There appeared to be no written or photographic record of the 1948 repair.

From a technical point of view the project was similar to the majority of the conservation work

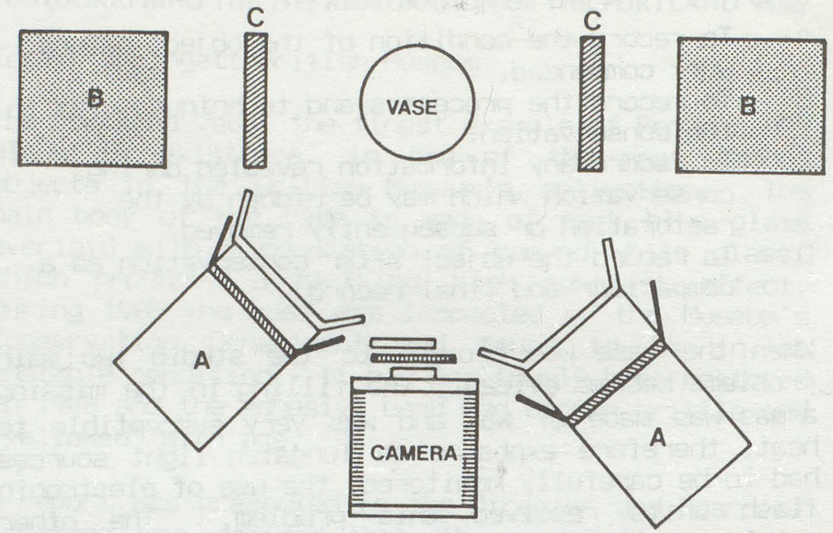
normally carried out. The photography fell into four main stages:

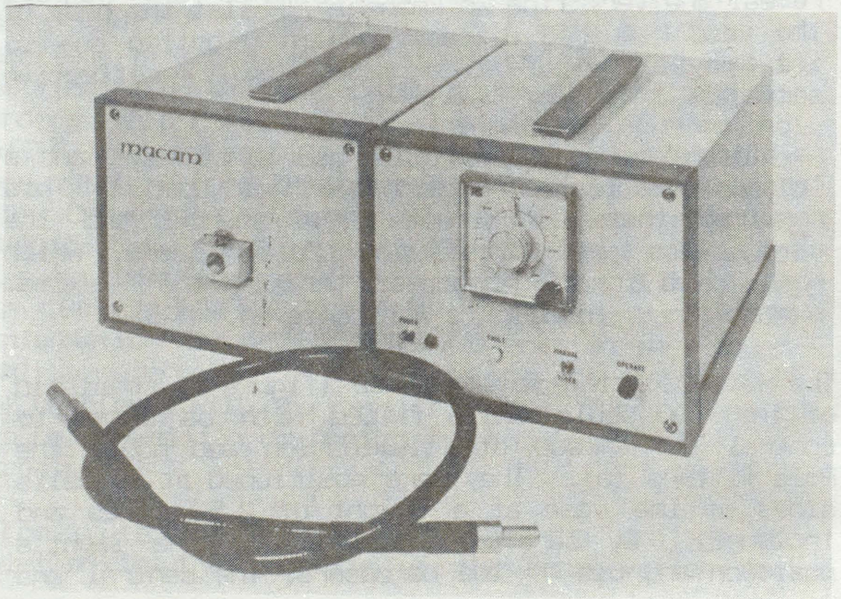
A To record the condition of the object before work commenced.
B To record the processes and techniques used in the conservation.
C To record any information revealed during conservation which may be hidden by the restoration or subsequently removed.
D To record the object after conservation as a comparison and final record.

When the vase was brought to the studio two main problems became evident, the filling in the missing areas was made of wax and was very susceptible to heat, therefore exposure to Tungsten light sources had to be carefully monitored, the use of electronic flash units resolved this problem. The other problem was the actual nature of the vase, the carved white figures required direct lighting to reveal the very fine workmanship, whilst the body of the vase required diffuse ambient lighting due to its physical curvature and highly reflective surface.

As often happens a compromise had to be made, and a 'cross polarisation' technique was used. This required that all direct light sources and the camera lens were fitted with Pola filters, which were individually rotated until the maximum supression of highlights was achieved.

The main lighting for the vase (figure 1) consisted of two 500 Joule units fitted with barndoors to control the spread of illumination and house the Pola filters (a). They were positioned at opposite sides of the vase at a height of 2.5 metres and inclined. By careful adjustment of the light's position and use of the barndoors, the central and





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supporting figures were lit to reveal their fine carved detail. Another two 500 Joule units (b) were extended to their maximum height and 'bounced' off the ceiling to produce an indirect toplight.

The vase tended to reflect any background colour, this was controlled by using a mid-grey background paper which reduced the starkness of the white figures without introducing any colour change whilst leaving the main body as neutral as possible. Two matt black reflectors (c) were positioned at either side of the vase to reduce any incidental reflections which occurred.

After the general photography had been completed Mr Williams and I experimented with ways in which the vase could be lit internally to reveal more information about its structure and restoration.

An Ultra Violet light source (photo 1), normally usedfor the rapid curing of certain adhesives, with a spectral emission of 300-500 Nanometres was tested.

This unit is equipped with a flexible fibre optic which proved to be ideal for our requirements, producing a cool light source tolerable to the vase's wax filler. It was possible to illuminate the vase internally by carefully positioning the fibre optic inside the neck of the vase and 'paiting' the light onto the inner surface to produce uniformed exposure.

The camera lens was fitted with an Ultra Violet absorption filter and a time exposure of approximately one minute at f.16 produced the desired results for comparison with the photographs taken under normal lighting conditions (photo 2).

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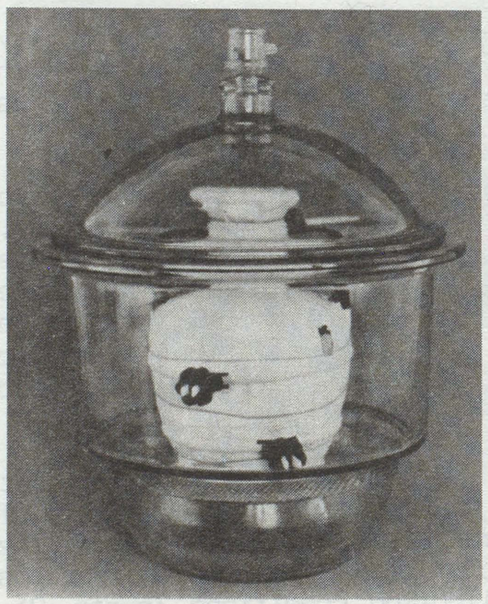

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The results obtained from the Ultra Violet photographs provided three important pieces of information.

A. The filler was clearly defined as non light transmitting areas, this gave precise information about the location and extent of the wax make-up.
B. The break lines were clearly defined revealing the shape of each fragment. Joints that refracted light indicated either an oblique break or areas of failing adhesive, which was allowing air between the sherds.
C. An indication of glass thickness was suggested by the amount of light transmitted through the vase.

The next stage was the dismantling of the vase, the most important photographically (there would be no chance of a reshoot).

The vase was supported both internally and externally with blotting paper, the inner mould being reinforced with super fine casting plaster. The old adhesive was softened by placing the 'bandaged' vase into a desiccator with a solvent saturated atmosphere for three days (photo 3).

The workshop was fairly large and spacious, but movement was limited once the BBC film crew had brought in their equipment and set the lighting.

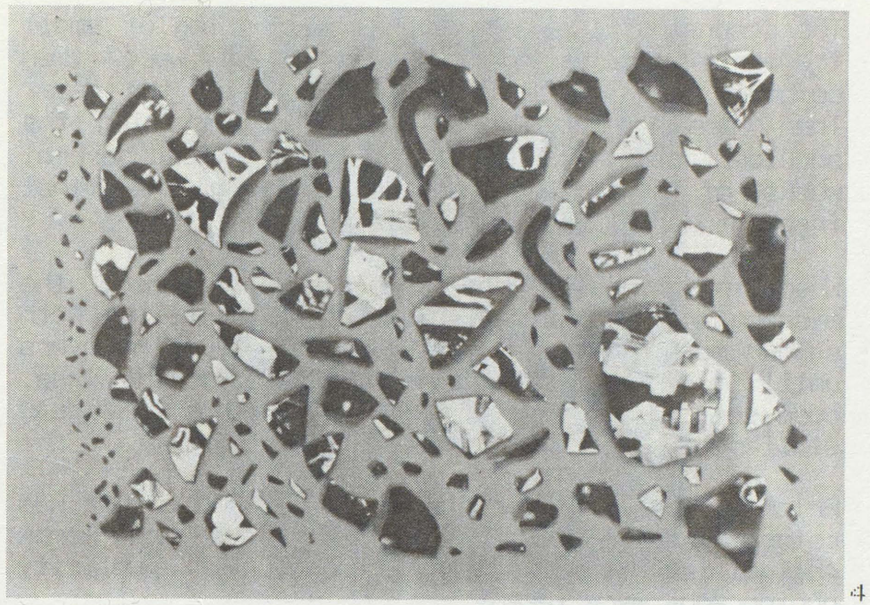
The cameraman had requested that electronic flash was not used, so the photographs were taken with their lighting, which consisted of three units 'bounced' off the ceiling to illuminate the work bench and two units lighting the rear of the workshop.

The task of 'taking down' the vase was very delicate and had to be carried out as a continuous uninterrupted process. With the assistance of a colleague, Mr Simon Tutty, black and white and colour photographs were taken throughout this unique, previously unrecorded process.

At the end of the day the vase had been successfully dismantled and lay in 189 pieces (photo 4). The photographs taken illustrated the various stages: general views showed how and where the vase was 'taken down' (photo 5), while close-up pictures highlighted the individual stages and techniques used (photo 6). The reconstruction, which was to take several months of painstaking work, was carried out in a workshop measuring 4 metres square with benches on three sides. A low matt black ceiling with a suspended grill housed fluorescent strip lights. Due to the lack of space in the workshop it had been arranged that I would take photographs before the film crew arrived.

The conservators worked at either side of the vase, so when setting the lighting care had to be taken to avoid their shadows obscuring the work area. Two 500 Joule flash units directed into umbrellas were used to produce an indirect source, the light reflected back from the wall 'filled in' the shadows and gave a degree of back lighting.

The first stage of the reconstruction was to remove the old adhesive from the fragments and wash them individually, the vase had probably not been cleaned since the previous repair. The effect was startling, the opaque white figures were much brighter while the dark blue glass appeared almost black. This produced a higher contrast ratio which had to be compensated for.



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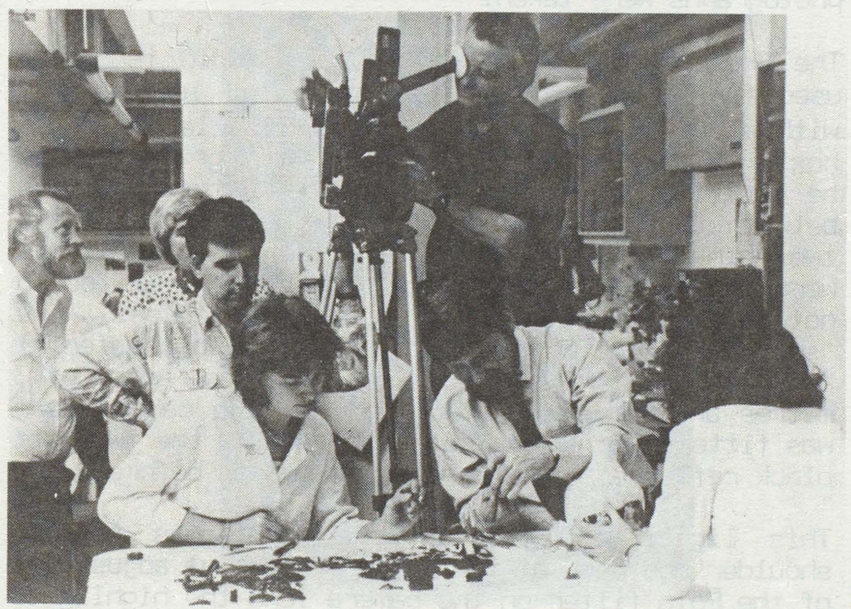

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The reconstruction began with the joining of small fragments into larger units, these were then combined to rebuild the lower half of the vase. Then came the harder task of reconstructing the shoulder, neck and rim of the vase. After several weeks of assembling and reassembling the final fragment was placed in position.

When the adhesive had completely hardened, the missing areas (that had been wax) were filled with colour matched resin. This was built up in layers until it corresponded to the contours of the vase, once set it was then shaped and polished to appear similar to the original glass.

Prior to going back on display the Portland Vase was returned to the Department of Greek and Roman Antiquities where final record and publicity photographs were taken.

The Greek and Roman photographic studio is often used for cross polarisation work, and is equipped with a 6000 Jule generator pack and a large 'soft-box'. The lighting for the final photographs had to be modified to allow for the 'new' high contrast between the blue and white glass. When lit by the two main lights (fig 1a) large areas of highlights were created on the body of the vase, these could not be suppressed to an acceptable degree. The 'soft-box' was fitted with a sheet of Pola material and positioned in front of the vase at a height of 3 metres and angled at 45 degrees. The camera lens was fitted with a Polarising filter and the two matt black reflectors (c) were positioned as before.

This lighting restricted the highlights to the shoulder and neck of the vase, by careful adjustment of the Pola filter on the camera lens the highlights

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were used to accentuate the shape of the shoulder and neck of the vase (photo 7). The photographs taken became part of the record of the 1989 restoration of the Portland Vase. Throughout the process there was a demand for publicity material to illustrate newspaper and magazine articles, Mr Williams required photographs for his book The Breaking and Remaking of the Portland Vase. Lecture slides and study material were also needed for the Ceramics and Glass Section of the Conservation Department.

The photographs taken with transmitted Ultra Violet light provided useful information about the structure of the vase. This technique will continue to be used and developed when inspecting glassware in the Department of Conservation.

DATA SHEET 1

HISTORICAL PHOTOGRAPHIC & PAPER SIZES

SIZES OF MOUNTS.

ENGLISH.

Name.	Inches.
C.D.V. midget ...	1⅛ by 2½
Victoria ,, ...	1⅞ ,, 2¾
Cabinet ,, ...	1⅝ ,, 2¼
Promenade ,, ...	1¾ ,, 3½
Boudoir ,, ...	1¾ ,, 3¾
Carte, C.D.V. ...	2½ ,, 4¼
Salon	2¾ ,, 4¾
Cabinet	4½ ,, 6½
Promenade	3½ ,, 8½
Panel	7½ ,, 13
Boudoir	5½ ,, 8½
Imperial	6½ ,, 10
Malvern	3½ ,, 6½
Salon	2¾ ,, 4¾
Royal	5¼ ,, 10¾
Large Panel ...	10½ ,, 17
Grand Panel ...	13¼ ,, 23

AMERICAN.

Name.	Inches
Minette	1¼ by 2¼
Petite	1¾ ,, 3¼
Milieu	1¾ ,, 4⅛
Quadra	2¾ ,, 2¾
Carre	3 ,, 3
Longa	2¾ ,, 6½
Card	2½ ,, 4¼
Victoria	3½ ,, 5
Cabinet	4½ ,, 6½
Promenade	4¼ ,, 7¼
Panel	4 ,, 8½
Boudoir	5½ ,, 8½
Imperial	6½ ,, 9¼

SIZES OF PHOTOGRAPHIC PLATES.

Name.	Inches.	Other Sizes, Quoted by Inches.
One-sixteenth plate ...	1¾ by 1¾	7½ by 4¾
One-ninth ,, ...	2 ,, 2½	7¼ ,, 5
One-sixth ,, ...	3¼ ,, 2¼	8 ,, 5
Quarter ,, ...	4¼ ,, 3¼	9 ,, 7¼
One-third ,, ...	5 ,, 4	10 ,, 8
Half ,, ...	6½ ,, 4¼	11 ,, 9
Old half ,, ...	6½ ,, 4¼	12 ,, 10
Stereo ,, ...	6¾ ,, 3¼	15 ,, 12
Whole ,, ...	8½ ,, 6½	18 ,, 16
Extra whole-plate ...	10 ,, 8	20 ,, 16
Lantern ,, ...	3¼ ,, 3¼	22 ,, 18
Panel ,, ...	12 ,, 7½	24 ,, 18
Boudoir ,, ...	8 ,, 5	24 ,, 20
Special cabinet plate ...	6½ ,, 4¼	26 ,, 22
Double half ,, ...	9½ ,, 6½	30 ,, 24
		36 ,, 28

SIZES OF PAPERS, CARDS, MOUNTING BOARDS, ETC.

Name.	Inches.
Special lithographic...	39 by 38
Antiquarian	53 ,, 31
Double imperial ...	44 ,, 30
Double elephant ...	40 ,, 27
Double Royal ...	40 ,, 25
Super royal	27 ,, 19½
Royal	24 ,, 19
Leviathan	44 ,, 35
Emperor	68 ,, 48
Colombier	34 ,, 23
Elephant	33 ,, 27

Name.	Inches.
Imperial	31 by 22
Atlas...	34 ,, 26
Demy	20 ,, 15⅝
Medium	22 ,, 17⅛
Double foolscap ...	27 ,, 17
Crown	20 ,, 15
Foolscap	17 ,, 13½
Cartoon, rolls, 27, 54, 60 wide.	
Blotting-paper ...	22 by 17
,, ,, ...	24 ,, 19

SIZES OF BOOKS, ILLUSTRATIONS, DIAGRAMS.

	Inches.
Super imp. 4to (quarto)	15½ by 13
Royal ,, ...	12½ ,, 10
Demy ,, ...	11⅛ ,, 8⅞
Crown ,, ...	11 ,, 8
Royal 8vo (octavo)	10 ,, 6½
Medium ,, ...	9⅛ ,, 6
Demy ,, ...	9 ,, 5⅝
Crown ,, ...	7½ ,, 5
Post ,, ...	6¾ ,, 4⅜
Foolscap ,, ...	7 ,, 4¼
Duodecimo (12mo)	7 ,, 4
16mo	6½ ,, 4
Royal 24mo	5⅛ ,, 3¼

SIZES OF PORTRAITS.

	Inches.
Head	24 by 20
Three-quarter ...	30 ,, 25
Kit Cat... ...	36 ,, 28
Small half-length	44 ,, 34
Half-length ...	50 by 40
Bishop's half-length ...	56 ,, 44
Whole-length... ...	94 ,, 58
Bishop's whole-length	106 ,, 70

RESTORING AND RETOUCHING PHOTOGRAPHS

Juliette Soester.

Two thousand one hundred and thirty nine, the year 2139, that is a hundred and fifty years from now. I wonder what condition the photographs that are being produced now will be in, in 150 years' time. We know the results of the past 150 years and I greatly respect the pioneers of those first processes: Nicephore, Niepces, Fox-Talbot and Daguerre whose images have remarkably survived the ravages of time. But, there are many that have not and that is where I come in. From disappearing Daguerrotypes, tatty tintypes, cracked and curled canvases I try to recreate our past for future generations.

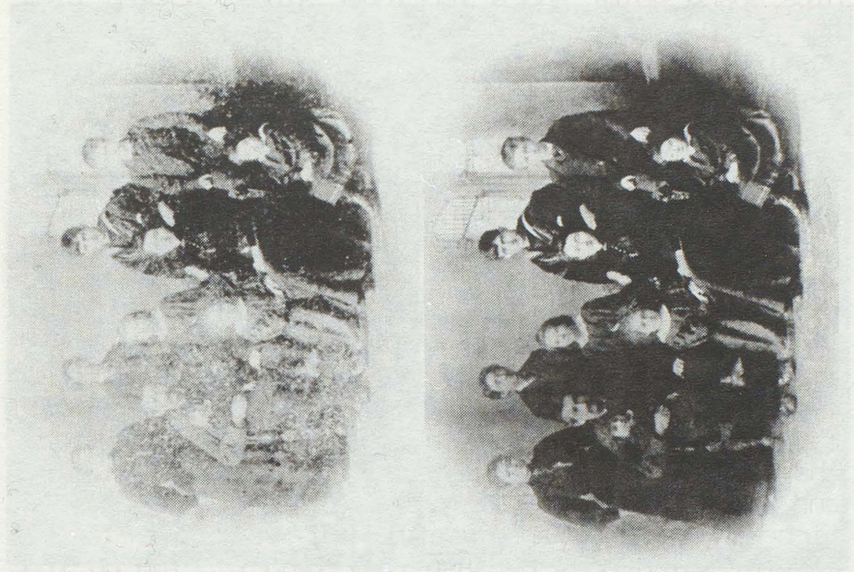
I learnt spotting and finishing photographs alongside learning to photograph. Later, at the age of nineteen, I had the urge to oil paint, mainly portraits, so I took myself off evenings to study at the Hammersmith School of Art. This has come in very useful, especially the Life Classes. When my children were young I did much finishing so I could be with them at home. It is only ten years ago that I started my restorations which from the outset proved very popular. I realised that there was a very special need to reproduced to a high standard and taht there were only a few who had the knowledge and experience to retouch negatives and to finish prints plus copying, printing, toning plus colouring and colour wash etc.

My methods are simple and fairly work-intensive. About a third of my work is restoration, the rest is portraiture, black and white and colour, functions, library and editorial, commercial, handcolouring, landscape, etc. Housewife! Actually what I really need is a wife and I am quite envious of you lucky fellows!

My work has two levels of restoration: the first is what I call a straight copy when the original is in fair to good condition. The second is when repairing has to be done or the contrast much improved. Then I copy and make what I call a "Master Print" on fibre paper and soft. I may also have retouched the negative first, I usually make at least two negatives and I leave one unretouched and unmarked. U use a Linhof 4 with a 6*7 cm roll film holder, mainly FP4 film but sometimes T-Max or Technical Pan films for special results. For FP4 I use ID-11 developer 1:1 or the appropriate developer for other films. I like to copy in batches so I can select the correct type of film or development to reduce for softness or increase for contrast. When copying I prefer not to use glass unless the original is so bent, cracked or unruly that it won't lie down, and I get plenty of those.

Some Daguerrotypes are now so faded that there is only a faint image left and I am not in favour of chemical treatment on any old picture. I have worked out a method of bringing out the image and that is simply to cut out a matt black surround around the lens so there is no reflected light and this works like magic. (Some of these beauties go back to 1850).

After the Master Print is made and dry the fun starts. Firtst I assess what needs to be done and by which method. Retouching negatives is practically a dead art in this country, so the medium and pencils I obtain from America. Dye, scalpel, masking tape and opaque are all necessary tools. The other tools needed are: 1 Razor blades, the snappy ones, not the bendy steel because they don't work. Nymph Ladies Blades are the best ones I can find now and I break them diagonally to get a



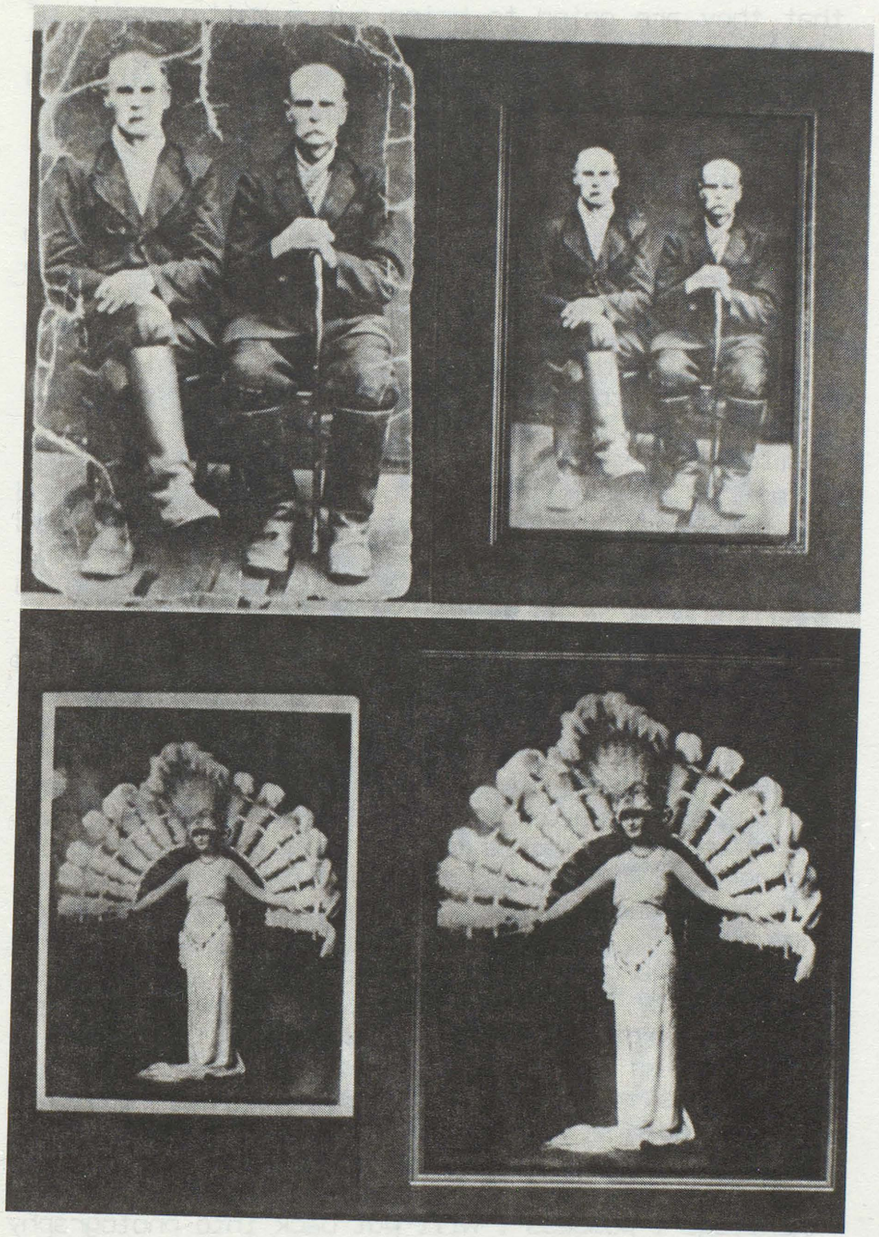
nice sharp point and a Thuringer stone to keep them sharpened. Several good sable brushes, the best quality you can possibly get, size 000 are absolutely crucial, up to size 6, I use all the intermediate sizes, fairly short haired brushes are best not long haired ones. For dyes, I use mainly "Spotone" now, the six colour set because they have all the intermediate colours and you can mix them all. They also have selenium and sepia colours. A very good 2 1/2* magnifier on a stand is vital, especially when your eyes start deteriorating, like mine, through constantly retouching. A good light angled over your shoulder and a comfortable chair, I have found some marvellous blue light bulbs, daylight bulbs, and i use those most of the time, they are better than flurescent. Cotton wool, water and a board to rest your prints on. An airbrush and airbrush colours are useful but you have to be careful which ones because they tend to clog up the airbrush if you are not careful and extrememe care needs to be paid to cleaning it after each use. The airbrush is most useful for backgrounds but I must admit that I tend to use brushes mainly as I can blend the texture to the original print.

I like to first scrape the dark lines and the spots, not digging just scraping off the layers of emulsion with the razor blade then filling in with dye. The largest parts first and working down to the smallest. If you start on the left hand corner and work systematically around the print you will find three hours later you may have got carried away and done three inches perfectly but your time is up. So I usually do the large marks first and apply the dye in layers, keeping it fairly watered down wiping off and then building it up slowly, letting it dry and then building up again. If you do it in one fell swoop it's dreadful as it doesn't match the

surrounding area. I presume your work is confined to normal hours, mine isn't I work all hours and I love to sit down in the evening and do restorations, I find it very peaceful and relaxing and with a batch of Horrors from my clients I'm never happier, I really look forward to it, a cup of coffee, television or a record and my horrors. I can get lost.

My methods are to present my client with a beautiful sepia archival print, not obviously showing any blemishes but an improvement. Usually I say an improvement because often a superb original may be too large or too small and extra copies may be required and then I need to reproduce it exactly. Are there many who like to see their clients weep upon receiving their prints? I do, with emotion. I never cease to enjoy the work of repairing a tatty picture. Not all are photographs, some are sketches, some are watercolours or prints, some have eyes missing, shoes cut off whatever. I paint in the missing parts and the pictures then start to come alive.

Then I copy my masterprint, again it must not be too contrasty, then the final prints are made and developed in PQ Universal developer. My favourite paper is (Ilfrobrom Galerie) Galerie Matt, giving the highest level of image permanence as defined in the ANSI Standard PH4, 32 1974 (ANSI-American National Standards Institute), of course, used in conjunction with Washaid, as with all fibre papers now. I welcome this as it not only cuts down the wash time but it also cuts down waste and I am very keen on cutting down water waste especially as soon we are all going to be metered. (Ilfrobrom) Galerie also tones beautifully to my own recipe. I not only use Galerie, I use other papers like Elite. I hope



that they are going to bring out a matt version of Elite because I usually like to use a matt paper. I favour the old method of sepia toning and that is with potassium ferricyanide, potassium bromide, sodium sulphide, surely the most anti-social chemical, so good ventilation is crucial. Thank heavens it does not linger on one's breath like garlic! I have managed to obtain a bottle of now obsolete "thiodet" to test for residual thiosulphate which I have found invaluable. The ANSI Standard for Galerie being PH 4.8-1971. When selenium toning I have found that the manufacturers' washing time not only had to be stricly adhered to but even had to be increased so thiodet was a very useful chemical for me. I am very, very keen on making sure that my prints are archivally printed and washed. Recently Ilford asked me to do some field trials on a new paper and I found that both the matt and glossy versions were a fine paper to handle and tone.

A delightful aspect of my work is hand-colouring and colourwash. There is quite a difference between the two. Handcolouring is in more detail and colour wash is fairly large areas washed all over. I use a variety of dyes, watercolours, oils, gouache and photographic crayons. Some of my techniques are included in Britain's first book on 'Handtinting Photographs' ... materials, techniques and special effects by Judy Martin and Annie Colbeck. Sometimes I am asked to copy exactly the same colour at other times to change it, the main objective is delicacy and subtlety. So I many given to me have been garish and others incredibly lovely ... Almost a lost art, as in former days there were no colour photographs and the hand-colourist was an essential on the studio staff.

Like you, I am sure, I am continually striving to find ways of improving my work. By sharing what knowledge I possess I will put back into photography some of the pleasure that I take out.

THE ASSOCIATION OF HISTORICAL AND FINE ART PHOTOGRAPHERS

CONFERENCE 1991

COURTAULD INSTITUTE

THURSDAY 3rd OCTOBER 1991

PROGRAMME

9:30am	REGISTRATION & COFFEE
10:15am	PRIVATISING THE PHOTOGRAPHIC STUDIO WITHIN THE NATIONAL MARITIME MUSEUM James Stevenson Head of the Photographic Dept. National Maritime Museum.
11:00am	A PRESENTATION BY OUR SPONSORS...DE VERE LTD.
12:00	ANNUAL GENERAL MEETING OF THE ASSOCIATION.
	OPEN DISCUSSION
1:00pm	LUNCH
2:30pm	DEVELOPMENTS IN PHOTOGRAPHIC EDUCATION Sylvia Barnes Head of School of Photography Bournemouth & Poole College of Art & Design.
3:30pm	THE VASARI PROJECT David Saunders Scientific Officer of the National Gallery London
4:30pm	CLOSE.....CHEESE & WINE RECEPTION

PAPERS

PRIVATISING THE PHOTOGRAPHIC STUDIO WITHIN THE NATIONAL MARITIME MUSEUM

The body of the talk will cover the changeover of the Photographic and Photographic Sales section from being employed as Civil Servants by the Museum, to becoming part of the Museums Trading Co. This has necessitated changes in the marketing, work practises and employment conditions.

DEVELOPMENTS IN PHOTOGRAPHIC EDUCATION

This talk will outline the courses in photographic education and how they relate to our industry. There will be particular emphasis on new courses that are being constructed at the moment, and which will be of particular significance to the Museum and Fine Art world.

THE VASARI PROJECT

Visual Arts : System for Archiving and Retrieval of Images

This project was conceived some five years ago as the result of collaboration between the National Gallery's Scientific Department and the Department of History of Art at Birkbeck College, University of London. The participation of the scientific department resulted from an interest in using whole image recording techniques such as image processing to detect and measure long term colour changes in paintings. Birkbeck College was particularly interested in the possibility of using high quality digitized colour images as an alternative to slides, with their attendant problems of storage and deterioration and in the use of such images for didactic purposes.

FILM AND PRINT CONSERVATION - AN OVERVIEW

Colin Rattee

I hope today to give you a general overview of film and print preservation or conservation, and I'm going to emphasise conservation of the whole product, not just the emulsion, because recent evidence indicates that support of the image, the base, is just as vulnerable as the image itself.

Many people, including myself at times, consider the subject of conservation as fairly boring, the exciting part is of course producing the original, unique image, carefully made to convey at least a thousand words and intended to be a long lasting momento of the subject and to the skill of the photographer. It is unfortunate that many of us have not thought too much about the subject of conservation until it is too late or almost too late. And one reason for taking this subject seriously now is that probably in the next 10 to 15 years (not long in archival terms) much "imaging" will be electronic. The major camera manufacturers are gearing up to launch their electronic still cameras easily linked to desk top publishing and thermal colour printers. Already there are dye sublimation and lazer colour and black and white printers that will give prints with resolution that will stand critical examination up to about 8" x 10" size. Once the manufacturers start producing CCDs that have 5 or 6 or anything up to 15 million pixels - electronics will <u>really</u> be into photography.

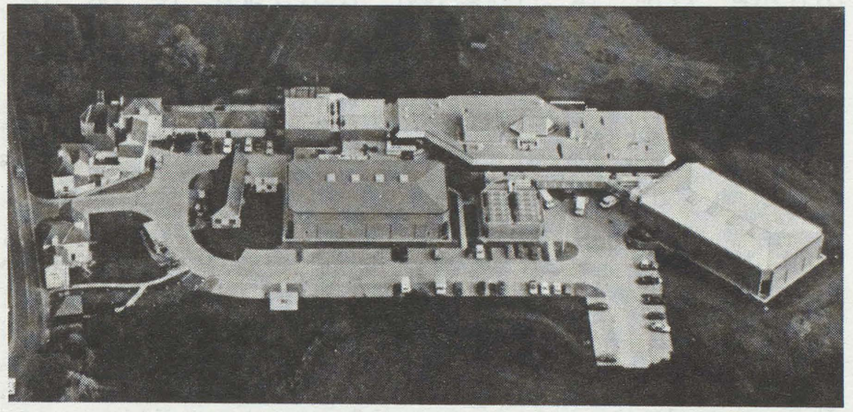
But that practically may be several years away so now is the time to put more effort behind the preservation of what I call the "wet and messy era" of chemical imaging. In the past 150 years we have exposed a unique visual collection of social change, invention, conflict and environmental concern. One wonders what would have happened if photography had not been invented, and now that we are appreciating

the value of those images we realise that they are not endowed with everlasting life and practical steps must be taken to preserve what is worth preserving. The debate as to exactly what should be preserved is one I am not entering into but from what I have seen in collections in the last couple of years I believe sensible selection has to be made. It was interesting to see in the British *Journal of Photography* recently a series of articles on archiving or as this gentleman calls it "archivalling". In a letter after the series had finished Edward Bowman questioned the need to archive these very vulnerable images. He was really saying "there are so many photographs around should we really be trying to preserve something that is so vulnerable to decay?" These (he said holding them up) are 55 year old nitrate negatives, in perfect condition, many of them have been worked on with pencil and the accompanying prints, 1930's type prints, are in very good condition, have kept very well but sadly of course they may not exist in a few years' time.

Consider this, over 100 million prints will be made in black and white and colour today. On this very day throughout the world a hundred million prints are going to be made, last year the total approached 50 billion prints. During the 1990's the annual total will exceed 60 billion. Negatives of course are also made!

I'll use as a basis for film and photographic paper conservation the work carried out at the British Film Institute. The BFI collect among other things, such curios as this (a print of an early peep show), but their main function in life is to conserve the nation's heritage in terms of motion picture film, this is done at the National Film Archive. The NFA,

50 years ago, started at Berkhamsted in Hertfordshire and it now looks like this (fig 1), the John Paul Getty Conservation Centre. Purpose-built facilities basically for copying, restoring and archiving motion picture film, about a 100 people work here at present. There is also a small stills photographic unit where we have about six million stills in the collection in London, not all of them in this sort of condition (shows example), but our job is to copy them and sell them to people who want copies.



Also we archive tape at the NFA - because much visual material is produced solely on tape now. To add weight to my comment that the archive world is now realising the value and importance of some of its assets it is sobering to realise that of all the titles produced in the cinema business in the heyday of the cinema 1898 to about 1930, the silent era, only about 17% actually remain. In other words for each 100 different titles of film that were produced during that time only 17 remain and are archived. In the US the figure is less, only about 1 out of every 100. Some of what remains is in very good condition and here is a frame still, a reproduction

from an original film about the turn of the century. Interestingly it was the firt 70 mm. film, probably because Eastman at one time refused to slit his original 70 mm. still film down to 35 mm. and so the French, the people who were actually using it at the time built a 70 mm. camera around it.

We have made frame stills of these films (nitrate), the film is in perfect condition because it has been kept well. Some of course is not so good and I'll explain the reasons for that later. As far as nitrate film is concerned the race is on to duplicate what remains because however well nitrate is kept it will eventually deteriorate and, of course, it is a significant fire hazard. When we were kids we used to go around the back of the cinema. If the projectionist had had problems with splicing and had thrown out the old bits and pieces of film we would gather up those bits and pieces, roll them up, in a tube, light one end to make something akin to a rocket! Nitrate based film will keep for a long time if it is kept under ideal conditions.

This example is not in terribly good condition, it is film that was brought up from the "Lusitania" and brought to the archive in a bucket of salt water. It's an old American 'B' movie of no particular value but we were able to get quite good frame stills off of it. Nitrate film and indeed any film, should be kept at a modest temperature perhaps up to the low 60's Fahrenheit but more importantly at a low relative humidity, 30-40% RH. I'll make a general statement here which I am going to repeat several times, I'm afraid that exposure to high humidity is the basic killer to photographic materials, high humidity and also pollutants that we're now getting to know more about. During the

last 2-3 years the National Film Archive has realised that much more work is necessary to determine the exact mechanism of deterioration. This has resulted in research programmes carried out with the academic institutions and sensitised goods manufacturers. About half a million cans of nitrate film are stored awaiting copying in vaults, at an old V-Bomber airfield in Warwickshire.

We test the film about every five years to determine the life that it has left. A fairly simple test, we measure the amount of nitric acid "gas" that is given off and when a certain point on its decay rate curve is reached it is copied. Of course we test all film at first to make sure that it is nitrate and that is again quaite a simple and well established test. Film for copying is brought to Berkhamsted and it's held in a transit vault. The vault contains about 24 little cubicles made of reinforced concrete, thick steel doors, and each individually monitored, ventilated and air-conditioned. Much material is in need of repair and, in some cases, cleaning. The original nitrte print is copied on to m,odern safety base, processed and assembled. When I say assembled this is the real trick as far as preserving the Nation's heritge of motion picture film is concerned. In many cases you haven't got a complete film to copy, you've got pieces of several versions and it's usual to go back to the original director's script and work from that (or the original editor's script). It's fascinating work. Finally the copied film is stored in one of the large storage vaults at Berkhamsted which holds about a third of a million cans of film

To conserve nitrate film images keep it under the recommended conditions and copy it because you can't really do anything else. Remember also that many stills negatives, as I have indicated from some of

these examples, are also on nitrate based films, particularly sheet film. It is very easy to detect which is nitrate and which isn't. The standard 'float test' is well documented.

To conserve safety film, diaceatate and triaceatate, etc, also adhere to British standards or the ANSI standards. But life is not quite like that, we are not always in control and one of our problems is that much of the film we have is donated film as is material which I'm sure you have in your archives and museums. We don't know its history and how it has been stored and treated, prior to receiving it.

A problem which has happened recently and in archive terms I'm talking about the last five years, is that of deterioration of diaceatate and triaceate base, the so-called safety films. Just because film is called "safety" does not mean that it is safe from deterioration. In most of these cases I'm talking about still film just as much as motion picture but I am using your motion picture examples. Safety film just means that it burns less readily than nitrate. The causes of deterioration are many - high humidity, pollution, mixture with other film bases, etc. This example shows acetate based film mixed with nitrate film and one has catalysed the other, to ut it simply if your acetate negatives are subjected to high humidity, heat, pollutants, etc., then you risk what we call the 'vinegar syndrome', and as I have shown, film that has been produced fairly recently cannot escape that sort of thing.

We're starting to learn more about polymer chemistry and this is one thing of course the photographer and the photographic technican had not really dealt with very much in the past. Polymer chemistry is beginning to tax our ingenuity somewaht, and we have to know a great deal more about the complete make up of the product.

It is all very well to say that you are putting an emulsion, which is vulnerable to deterioration onto a "plastic" base but that plastic base is a very complex product. You can have a subbing layer on the back to facilitate retouching, you can have an anti curl layer on the back, you can have anti halation layers on the back, you can have layers between the base and the emulsion to let the emulsion stick to the base. You can have other "doctors" that are put on when the manufacturer is not quite sure about the sensitometric characteristics of the film when he's produced it;. He doesn't want to waste it so he could put it through the "process" again and correct it. With many of these things which are done we don't know exactly what they are going to do to the life of a film. However, as I said, the main cause, the main trigger, is high humidity. If a triacetate based film is processed correctly, with correct washing, correct levels of residual hypo, and stored as per the standards recommended then it should last for several hundred years. I would recommend taht you study the latest ANSI standards, as many are being revised.

Unfortunately, if there is contact, even though processed correctly, with any form of pollutant and high humidity for any length of time a catalytic action will start and the degradation process could begin. In some cases it starts with a mould. We don't know how much high humidity is needed or for what length of time and we don't know the details of all the dangerous pollutants, but as I keep repeating, beware of humidities above 60% RH, avoid condensation like the plague, aim at humidity about 40%, try not to go above temperatures of about 60° F. High temperature, low humidity seem to be OK but it is not usual to get that combination in this

country. Also store your negatives in a clean air environment, avoid fumes from paints, varnishes, glues, laminates, some aerosols, cleaners, hairsprays, sulphur, formaldehyde, peroxides,ozone, etc. I'm sorry but the list is beginning to get fairly exhaustive. It's very difficult these days to know what won't affect the life of a film, particularly if it is catalysed via high humidity and oxidation and as a consequence, we have stopped our cleaners using aerosol sprays in parts of our work areas. If you are able to use emulsions coated onto a polyester support then there is evidence to suggest that this is much less susceptible to humidity and deterioration problems than the acetate ones. If you have any acetate safety base films which are starting to deteriorate, you'll know it by the vinegar or acetic acid smell.

There is still much to be learned in this area and there is still much folklore around so be careful and take plenty of advice. You'll note that I have said little about enclosures envelopes, etc. - because of rusty cans for example. Naturally it is important to have your photographic material enclosed in as neutral a place as possible and perhaps buffered, but the first priority is to get that environment correct. Some of the early materials themselves had other problems, nitrate is well known as I said earlier, as a fire hazard becoming brittle and then either becoming sticky or disintegrating into a powder. Glass plates become warped, they also become brittle and diaceatate base tends to shrink and the emulsion bubbles rather like this stills negative example. Now this we know has been subjected to high humidity. What we do in our stills lab is to make a contact print, retouch the contact print and then make available copies of that second generation print. The emulsion of this

(another example) particular crazed negative can be floated off and put onto a new support, glass or polyester. Not many people have the courage to do that, I'm afraid, I did it many years ago, I don't know if I would attempt it again now.

Kodak publication F40 "Conservation of Photographs" or their publication E97 "Photographic Retouching" make very useful practical reading when you are trying to do this sort of thing. Bear in mind that many different types of film base have been used, many different methods of manufacture, different emulsion constituents, coating and subbing layers. Excess moisture coupled with acid gas, nitric in the case of nitrate, acetic with modern bases, will catalyse and decay. With all the computations available it is no wonder there are problems and precise advice difficult to give.

Perhaps one associates more problems with prints because they are usually more evident, people handle prints more. The BFI collection in London totals six million film stills plus about half a million colour transparencies. It is, however, a commercial enterprise: we provide copies of our originals and thus have to tread a wary line between exploitation and preservation and that won't go down well with some people I know! We normally keep originals in the files for people to look at and select for copying. If prints are, because of frequent handling and poor processing and poor keeping, showing signs of deterioration, then we copy them. This example I think looks rather better than perhaps a modern black and white copy - the yellow stain gives it rather a "classic" look. But when they are deteriorating like this we copy for the everyday files and then conserve the original under more ideal conditions. We have to deal with prints

like this (shows example) because they have had something stuck on the back, the glue has deteriorated the front of the print. We have to try and "improve" images like that and (a Clarence Sinclair Bull original) - he has come back into fashion of course fairly recently and used to specialise in taking photographs of Jean Harlow. You have the standard print like this example which has been pasted on the back and the stain then percolates to the emulsion side. Some of our originals are already in a fragile conditio, these will be copied for the file, repaired and then archived. The old picture editors were dab hands at masking out unwanted backgrounds, they used to use an old form of "Tippex". Fortunately many used a non-waterproof opaque which can be washed off in tepid water with a dash of wetting agent of "PhotoFlo". Reproduction standards in those days were not very good. They probably didn't like the baked bean can on the right of this example and that's why it was masked out. The whisky bottle was, of course, acceptable as this is probably a poor struggling soldier at the front. Some of the originals were sepia toned and consequently quite stable. Some people, I have found, have difficulty in differentiating between a stained print and a sepia one. (As an aside I have often toyed with the idea of speia toning negatives and if anyone has any experience of that then I'd be glad to know). If there are many computations of film problems then there are certainly just as many for prints and it is very important to identify what you are dealing with. There were Printing Out Papers and Developing Out Paper and there were the earlier types of paper, salted, and albumen. Then the bromides and the chlorobromides, the press papers with or without fluorescent dyes, those with or without a baryata layer and the waterproof papers lacquered or with a

polyethylene layer, or as it is called, a resin coated membrance.

Modern day RC papers are not archivally stable because the whitener in them, titanium dioxide, reacts with the polyethylene and eventually crazes and although the manufacturers do put in antioxidants they do have a limited life. Many of the recommendations for the conservation of negatives also apply to prints but it seems to me that people tend to abuse prints more, stick things to the back - don't because eventually it will show through, they tend to file prints with other papers which hold contaminants, don't. Don't write on the back with a felt tip pen. If you must write on the back of print use a soft lead pencil. If possible remove from any backing, isolate into acid free folders and consider any appropriate restoration treatment and if you are going to chemically treat copy first!

I am not going to give details of restorative treatments here, mainly because it has been many years since I did any but in the Stills lab we are researching the subject and planning tests. Recommendations have been published over the years but try them out first on unwanted prints. Keep prints away from the pollutants, I have already mentioned for film and remember that mice like paper. We see a lot of collections that have been nibbled by mice and silverfish like gelatin, they are usually around when there is a high degree of moisture. Moisture, high relative humidity appears to do the most damage and the important thing to do to any collection is to stabilise the environment correctly. If you have only got limited money stabilise the environment before anything else.

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At the beginning of August 1989 an interesting week long seminar was held in Vienna and I've been asked to say a little bit about this. It was held at the Institute where the distinguished photochemist Josef Maria Eder once reigned - he is coming back into popularity now, everyone is trying to get his book that was published in English in 1945! The main tutor was a man called Jim Riley from the Image Permanence Institute in Rochester New York, part of the Rochester Institute of Technology, an independent organisation. This is an organisation devoted to determining the best way to preserve the photographic image. There are about six or ten people employed, they are funded by manufacturers, archives and government departments. It was not until I returned home and sat down to review my notes that I realised just how comprehensive a grounding the attendees, about 15-18 of them, had been given. At the end of the five days they should have been able to identify the materials they have in their collections, and know what to do about them in terms of conservation and restoration. Materials covered were obviously photographic but also photomechanical and in some cases it is very difficult to distinguish some photomechanical materials from photographic. Discussed were the components, image materials, binders, supports, etc from Daguerrotypes to present day resin coated based prints, essential knowledge, as I said if you are to store and treat these materials correctly. Both negatives and print materials were dealt with, there were only one or two gaps, these were mainly photographic paper materials produced by some of the European manufacturers. Storage conditions were well covered, the emphasis again on low relative humidity, causes of problems were also well covered - the inherent instability, environmental problems, faulty processing, washing etc and of course

residual thiosulphate and oxidisation. Again emphasis was placed on the fact that if you stabilise the environment correctly the deterioration process will stop or be significantly arrested. If you can at the same time remove the causes; poor enclosures, etc. then it makes sense to do so.

Chemical restoration processes were covered at the seminar, many people fight shy of these and quite rightly sometimes. Methods were mentioned to treat a faded negative and how to improve a "silvered" image. To protect against oxidation, poly sulphide or sepia toners recommended, also Gold or thiourea. Platinum and Palladium toners seem to be good and, of course, things like carbon transfer etc. give fairly permanent images. The first part of the week covered preservation of prints and then switched to negatives, detailing the various types of emulsion but more importantly the various supports. Polyester film is considered to be the best for archiving. at least the best currently available. Most materials for archiving are black and white but there is a vast amount of colour which may need to be kept and colour is a difficult area. At the Archive we make black and white separations for long term storage, one wonders if this is going to be practical long term. However, all the basic types of colour material were reviewed in Vienna. Colour materials suffer from similar deterioration problems to black and white but colour dyes are more sensitive to high temperature and light so the message was low humidity, low temperature and dark keeping. Remember this little formula, 5 to 6° C shift in temperature can mean a halving in perceptible dy density loss or retention as the case may be, in one or more of the colour film layers. A shift of 15-20% of RH has the same effect. Exposure

of most materials (there are exceptions) to light also has a deleterious effect, so if you are going in the wrong direction in three parameters then your colour materials will deteriorate rapidly. Some early colour materials were very dye stable; the additive screen plate processes, Autochrome, Dufaycolour, etc, and lately Ciba-dye bleach and, under certain conditions Kodachrome. As well as dye fading (which is usually unequal between layers), there is also a stain problem because of the multiplicity of layers that go to make up a colour film. There are in some cases more than 14 layers of emulsion makikng up a modern colour film.

Modern colour papers kept under recommended conditions will remain good looking, and by 'good looking' I mean anything up to a 10% dye loss, for many years compared to those sold 10 years or more ago. Colour negatives are more stable than they were but more difficult to assess, it is more difficult to hold up a colour negative and say that it has faded or it hasn't. The only way to ensure long life is to freeze them, not always practical! In many cases, it is difficult to print colour negatives, even if they have been kept reasonably well, after about 15 to 20 years because of dye loss in one or more of the layers. Generally the more recent the product the more long life has been .....into it.

Recommending what colour material for long life is hazardous, most manufacturers will, if pressed, give you a very good indication based on extensive test programes that most of them have been carrying out. Improvements are being made all the time. Ektachrome now stands up very well to frequent projection but dye fading will occur much faster than Kodachrome which, if only projected

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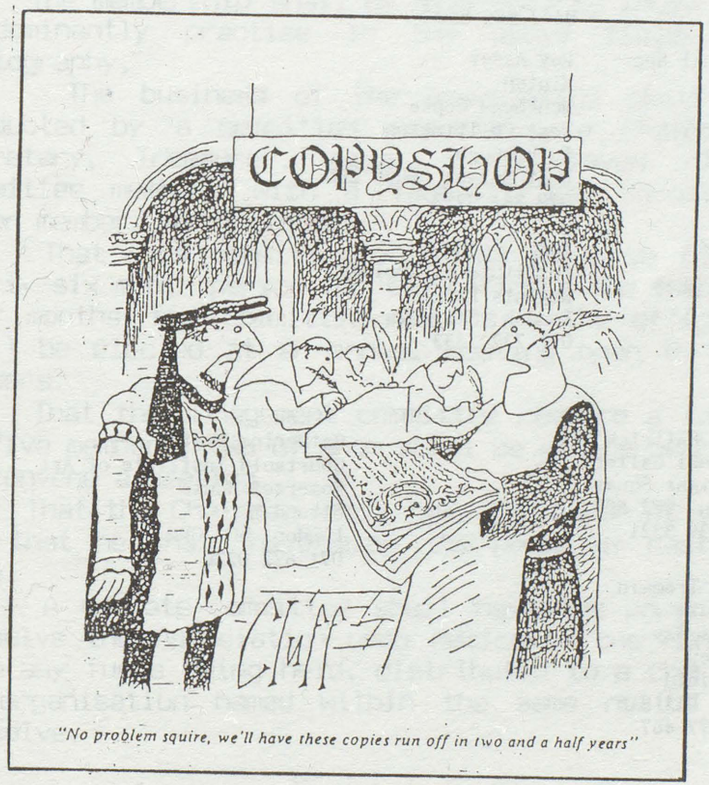
Len Robinson-Smith has contribruted this design . Can you improve it or suggest an alternative – all ideas to the Editor.

occasionally, has a very long life. Kodachrome is unique in that the dyes are introduced during processing and are not, as in Ektachrome or similar films, integral and coupled during processing. With all this opinion and data attendees in Vienna should have been able, at least, to produce a draft preservation plan, they should have been able to assess the environment and how to control it, give handling guidelines and formulate a disaster plan. Also how to identify nitrate and acetate negatives, duplicate deteriorating negatives, rehouse historical prints, identify prints requiring conservation, rehouse and stabilise plates, rehouse and inspect albums, scrapbooks, etc. No one was goikng to become an expert in a week and in my opinion much more practice, experimentation and scientific research has to be carried out, this is what we have concluded in the Archive recently. In the last couple of years we have carried out more real scientific research than we ever have done in the past. We all have budgetary constraints and that is where setting priorities are important. At the BFI we have totally reviewed our workig practices and storage conditions that we have been working to for the last forty or fifty years. And, in view of the latest evidence we have, tightened up our storage conditions considerably, we are now coming down from 50% rH to 40% rH, we are coming down 5° F in temperature and we are stabilising those conditions as much as possible because we think that it is the peaks and troughs, the instability of storage systems that is one of the problems. High humidity is the real killer plus modern day pollutants which we know little about. I believe it is a subject that we and the other professional photographic associations should pay much more attention to if what we are producing and have produced in the last few years, are going to

last over the next couple of centuries or so. We should be planning now how to preserve some of the best material that we are producing today so that it wil last for future generations to enjoy. Don't be too downhearted by what I have said, remember a lot of material produced in the early days of photography, 150 years ago is still around and there is no reason why with commonsense, practical advice, research and sensible planning why a lot of what we are producing now can't be available in 200, 300 ..... or ? years' time. Thank you.



"No problem squire, we'll have these copies run off in two and a half years"

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CONSITUTION

1 That the Association shall be called "The Association of Historical and Fine Art Photograhers".

2 That it shall exist for the furtherance of photography in the field of History, Fine Art, Archaeology, museum and gallery display and related fields.

3 To encourage the interchange of ideas and general support amongst photographers practising in these fields and to promote access to departments thereby increasing wider opportunities for experience.

4 The membership shall be available to those who predominantly practise in the above fields of photography.

5 The business of the Association shall be conducted by a committee comprising a Chairman, Secretary, Treasurer, plus up to seven other committee members with a facility for co-opting other members as required.

6 That this committee be voted to serve for a thirty-six month period for the officers and twenty-four months for committee members. The officers shall be elected at an annual meeting open to all members.

7 That the management committee require a forum of five members, two of whom shall be office bearers to convene a meeting.

8 That the Chairman shall have the power of vote and that he shall have also the power of casting vote.

9 A quorate committee shall have the power to dissolve the Association upon notice of one month, with any funds being held, distributed to a charity or organisation named within the same notice to dissolve.

AHFAP

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