Canadian Conservation Institute

C.C.I. Activities

Three of our staff, John Taylor, Rob Myers and Ursus Dix, returned from a very interesting tour of Indian rock painting sites in the Similkameen valley, British Columbia, in June, just too late for a report to be included in our August Newsletter.

The expedition took place 17–21 June to initiate a British Columbia pictograph project and was carried out in conjunction with the B.C. Archaeological Sites Advisory Board. Mr. Gordon Hansen of the Board also went on the trip and a photographer, Mr. Carl Spritz, was present part of the time filming episodes for inclusion in a colour and sound feature on archaeological sites in B.C.

Since most of the pictograph sites in the Similkameen valley region near Princeton are located on Indian reservations, the party first met the Upper and Lower Band councils to discuss the project, which is to study causes of deterioration of the paintings and to register them as archaeological sites. In spite of delays incurred through having to search for sites that had been incorrectly plotted on existing maps and the discomfort of working in temperatures of 98°, examination, sampling and photography of 12 representative sites took place. There are 25 known sites in the area. Examination of samples and further study is now taking place in Ottawa.

Ms. Susan Nash was also in British Columbia throughout July taking part in the dig being conducted on the Indian reserve at Musqueam by the Department of Archaeology, University of British Columbia. The Musqueam site is located in a low-level, marsh area and a quantity of waterlogged material, such as baskets and fishnets, is being excavated, together with primitive stone artifacts and a mass of shellfish. Susan Nash has been participating in the dig and advising on field conservation techniques.

John Taylor and Rob Myers examining a rock boulder with pictographs on an old Indian trail on the Similkameen River

Sur un ancien sentier indien, près de la rivière Similkameen, John Taylor et Rob Myers examinent un rocher portant des pictogrammes

Mr. Roy Graf was asked by the Art Gallery of Ontario to inspect a watercolour by J. M. W. Turner which has been causing the curators some concern. Mr. Graf has had a number of similar inquiries from other art galleries concerning conservation of works of art on paper.

Staff who have delivered lectures in various parts of the country include Mr. Rob Myers, who spoke to the Microbeam Analysis Society at Carleton University, Ottawa, on 23 July on 'An investigation of natural deterioration of aboriginal rock paintings by scanning electron microscopy and x-ray microanalysis'. Mr. Per Guldbeck attended the Provincial Museums conference at Vancouver on 18 September and spoke about conservation problems. Dr. Nathan Stolow addressed the Association for Preservation Technology meeting in Halifax during September.

A great number of C.C.I. staff at headquarters have been travelling to Moncton to take part in the training programme currently being conducted at the Atlantic Conservation Centre. Altogether there has been a tremendous input into the programme. Guest lecturers have also contributed; during August Mr. William Maxwell spoke about relining techniques and recently-designed hot tables and Mrs. Elizabeth Phillimore discussed the conservation and restoration of Canadian paintings.

R. D. HARLEY

Newsletter

No. 5 November 1974
Canadian Conservation Institute
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K1A 0M8

Conservation Queries

• *Now that we know that epoxy is the wrong kind of glue to use for mending baskets, the other things we have are Lepage's Bondfast and Ambroid Liquid Cement. Are these harmful glues? Could you recommend another type of glue that would be inexpensive and safer to use?*

Lepage's Bondfast, like other 'white glues', is a synthetic resin emulsion glue. It is all right to use except on metals (it is acidic and may cause corrosion). However, some conservators take exception to white glues because they can be difficult to remove once they have thoroughly dried. The Ambroid Liquid Cement is probably a cellulose nitrate or acetate glue which also should not be harmful to organic materials. Again, however, as a commercial product, it may contain impurities or have its composition changed without notice, so to be safe do a few test mends with each new bottle before applying the glue to your artifacts. Mr. Guldbeck, our Consultant Conservator, Ethnology, recommends Calaton CB, a soluble nylon with good properties for the mending you are doing. It can be dissolved in warm ethanol, methanol, or methylated spirits (about 60° in a water bath). About 5% solution is usual. When heating the mixture be extremely careful and work with ventilation. You can obtain Calaton CB from:
Canadian Industries Ltd.
I.C.I. Products Group
630 Dorchester West
Montreal, Quebec.

• *How can I tell if an oil painting has been cleaned?*

Careful observation of the paint and surface layer can give you many clues as to whether the original varnish has been removed from a painting. Natural resin varnishes, often used by artists as coatings, tend to discolour, turning brownish-yellow with age. This discoloured surface coating disfigures a painting by changing the original colours and muting the perspective of the design. Therefore, these original coatings were often removed later and replaced by fresh varnish. Modern conservators usually use synthetic resin varnishes that will not discolour and will remain easily soluble.

By observing the white areas of a painting you can often tell if a work has been cleaned. If the areas that should be white appear yellow or brown, there are several possibilities to consider: (1) the painting has never been cleaned; (2) the original varnish has been removed but the newer coating has discoloured; (3) the painting has been cleaned but the oil medium in the paint layer has discoloured; (4) the painting is clean but is a copy done after an original which was obscured by yellowed varnish. If the white areas appear, upon careful examination, not to be covered by a yellowed varnish, there are three further possibilities: (1) the painting has never been varnished; (2) the painting has been recently cleaned with or without revarnishing; (3) the painting has been selectively cleaned. Often in the past, restorers wished to brighten a painting quickly and would clean only the light areas, for example, in a portrait of a man, the face, collar, cuffs, and hands would be cleaned.

Ultraviolet examination can give further information about the surface of a painting. Traditional resinous varnishes have a characteristic greenish yellow fluorescence under ultraviolet light. If the painting has been partially cleaned, as mentioned above, this will be evident. If a painting exhibits little or no surface fluorescence it may have a synthetic resin varnish or no varnish at all.

Microscopic examination can also indicate prior cleaning of a painting. Cracks or high impasto ridges in a painting will often collect varnish as it is being dissolved and removed. If the varnish in a crack or depression appears to have a much different character from the varnish on the surface, this would indicate a previous cleaning. Under magnification it is easier to distinguish between the paint and varnish layers and to identify where discolouration has taken place. Areas of recent filling and retouching under a varnish coating certainly indicate that the original varnish has been removed.

All examinations should take into account the amount of surface grime on a painting. For example, surface grime that contains smoke residue can affect a painting's original colours in a manner similar to a discoloured resinous varnish. Surface dirt can also obscure a painting's fluorescence under ultraviolet light.

If the work in question is painted on canvas, check the reverse of the painting. Cleaning often leaves circular stains on the fabric support. However, similar stains can also be caused by water damages or superficial cleaning, so this is not a positive indication that the original varnish has been removed.

With all these hints and careful examination, you should be able to determine if your painting has been previously cleaned.

RUSTIN LEVENSON

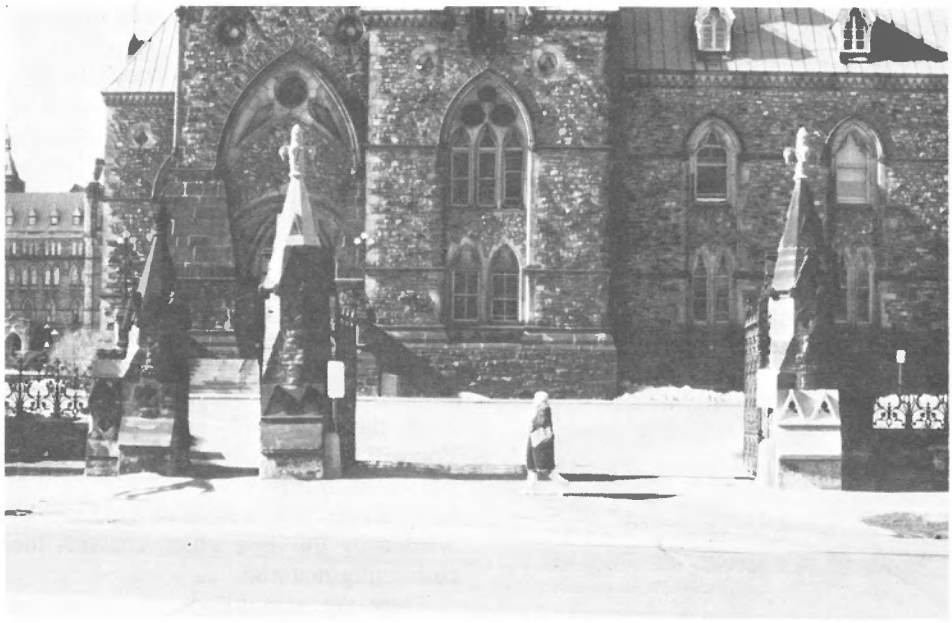
The Environment and Collections (Part 2)

The 19th and 20th centuries have seen the introduction of various chemicals into the environment in sufficient quantities to constitute a threat to works of art and cultural objects from air pollution. In urban and industrial areas air pollutants can react chemically with the materials of works of art promoting deterioration or instigating new processes of deterioration through new chemical reactions.

Pollutants that concern the museum world are divided into three types: gases (e.g., sulphur oxides, hydrogen sulphide, nitrogen oxides, ammonia, ozone), aerosols (suspensions in air of acidic droplets), and dirt, usually coated with tarry organic materials. The sulphur oxides are generally produced by industrial processes and domestic heating sources; hydrogen sulphide comes primarily from biological decay augmented by Kraft pulp production and other man-made sources; nitrogen oxides and tarry organic materials arise primarily from transportation.

The most damaging of these pollutants are the sulphur compounds. In the air or on the surface of some materials sulphur compounds can be converted to sulphuric acid and then react chemically with the materials of works of art to destroy their integrity, reduce their strength and change their appearances in a variety of ways. Materials such as limestone, marble, fresco, mortar, and brick contain calcium compounds which can react with sulphuric acid to form gypsum, a white material which is not only more soluble than the original calcium compounds but is also twice the molecular volume. As with the freezing of the water in stone this increase in volume creates pressure on surrounding material leading to scaling and flaking of surface layers, while the greater solubility leads to faster corrosion of the work of art when exposed to moving water. The appearance of gypsum on the surface of a work of art by surface reactions or by migration from the interior is another form of efflorescence spoiling the appearance of the object. Similar formation of soluble salts with scaling, corrosion and efflorescence can occur with nitric acid and hydrochloric acids formed from nitrogen oxides and chloride in the atmosphere.

In materials like paper, textiles, wood, canvas paintings, leather, vellum and parchment, sulphuric acid destroys the basic structure of the material leading to loss of strength and greater fragility; a modern industrial atmosphere can reduce



The disfiguring effects of urban dirt often go unnoticed over the years until cleaning is started

Souvent, on ne s'aperçoit de l'action destructrice de la saleté accumulée avec les années sur les œuvres d'art qu'au moment du nettoyage

textile strength by 90% compared to that of a rural unpolluted atmosphere. Sulphur oxides can also promote metallic corrosion, particularly if present in combination with dirt. Studies have shown that corrosion of stainless steel for instance is doubled by exposure to as little as 0.2 parts per million of sulphur oxide and dirt. Corrosion of most alloys has been found to be almost linear with sulphur dioxide concentration in a ten-year study done across Canada. Sulphur dioxide and sulphuric acid can also affect the colour of some artists' pigments.

Hydrogen sulphide, even at very low concentrations will rapidly tarnish silver objects and discolour lead-based pigments, such as white lead.

Dirt, particularly dirt coated with tarry organic material, provides excellent reaction centres for the formation of corrosive acids and allows for longer contact times due to its adhesive properties, thus radically increasing the destructive effects mentioned before.

Air pollution is thus not only of great concern from a human standpoint but also from the conservation standpoint. It has already been stated that works of art begin natural aging and deterioration almost as soon as they are created. Such deterioration from moisture and temperature is now augmented by deterioration from air pollutants in urban and industrial centres and it becomes important to control levels of sulphur dioxide and dirt in the galleries as well as relative humidity and temperature. While many heating and air conditioning systems have dry filters which will remove dirt, the acidic gases are best removed by washing the air with a water spray, or passing it through special chemical filters. Fortunately, many museums and galleries in Canada are situated in areas of negligible gaseous pollution, and need only concern themselves with providing good filtration for dust and dirt, but institutions in large cities such as Halifax, Toronto or Vancouver should be aware of the added dangers from the acidic gases and try for additional protection when feasible.

Ultimately the best method of dealing with these pollutants is their removal at the source, not at the entrance to the museum, and it is hoped that man will soon be able to achieve this effectively for his own sake as well as for the sake of his cultural and historical heritage.

GEORGE deW. ROGERS

Criteria for Packing Works of Art for Travelling Exhibitions

For an intelligent discussion of the criteria for packing for travelling exhibitions, it is useful to begin with an understanding of exactly what we expect of the shipping container. The shipping container should:

(1) protect an item against mechanical damage resulting from shock and vibration encountered during shipment and storage;

(2) protect the contents, insofar as possible, against deterioration resulting from non-mechanical factors such as climate, fungus, pests and other environmental conditions;

(3) provide handling facilities for loading and storage and, in many cases, provide sufficient protection to act as its own warehouse for long periods of time;

(4) protect the contents against pilferage and the predictable results of idle curiosity;

(5) provide spaces externally for identification and for origin and destination markings;

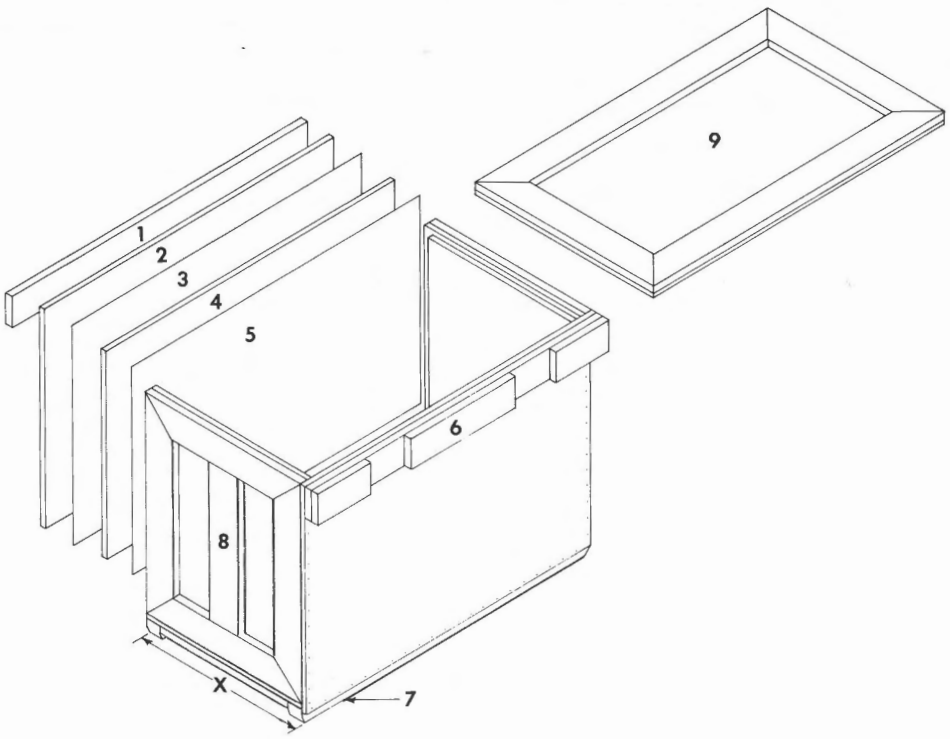
(6) provide for ease of repacking using the same material and packing devices.

Armed with the knowledge of what we expect of the shipping container, let us formulate some criteria which may be generally applied to the packing procedure.

The first step in making a decision about the packing of an object for travel is to ensure that the object can withstand the rigors of transportation, assuming adequate packing. The person best equipped to do this is a professional conservator. This person's examination will indicate whether conservation or consolidation of the object is required before travel, whether special precautions need be taken in its packing, and, most important, whether or not the object should travel at all. A proper examination will also serve as the basis for a complete condition report.

In order to protect the object against shock we must begin with a strong exterior container. This container should be constructed of waterproof plywood for the major components and clear white pine (or wood of equal strength) for the cleats. For a suggested design see Figure 1. As a rough and ready reference for wood thicknesses and nail sizes based on approximate gross weight see Tables 1 and 2.

Cases should be designed so that they may be handled by two people and so that they will fit through standard doorways.



Packing crate design:
(1) batten;
(2) plywood back;
(3) vapour barrier – e.g. Domtar 30/30/30, water-proof, Duplex Kraft (staple to plywood, then tape completely around edge with 2" tuck tape);
(4) Ten Test – 1/2" thick;
(5) unbleached cotton or linen stapled to Ten Test;
(6) blocks required when positive closure devices used;
(7) 2" × 2" strip, chamfered at ends;
(8) ends of box require extra batten, as shown, if X exceeds 2';
(9) top may be screwed on or attached with hinges and positive closure devices.

Within these limitations the boxes should be as large and heavy as possible since this tends to minimize handling damage. Be sure to provide handles for lifting and positive closure devices such as 'Cam-Lock' closures for the top. Two skids of 1 1/2 inch lumber running parallel to the long side of the case should be affixed to the case bottom. This protects the case from direct contact with damp surfaces.

The next step is the preparation of the object for packing. Paintings on canvas should have protective backs of compressed fibreboard or tempered cardboard prior to packing. All canvas paintings should be slackened in tension before packing by adjustment of the keys or other stretcher devices. Both paintings and other objects should be wrapped in an acid free tissue paper before cushioning.

The type or amount of cushioning required to protect the contents of the case from shock and vibration is very difficult to determine even for an expert in the field. A large amount of information about the object and its mode of transportation is required to produce a suitable package with confidence. In the absence of such knowledge the packer is forced to rely on his judgment and certain rules of thumb. Most cushion materials are specified in such a way that if you know the fragility factor of the object, the height from which it might be dropped, and the static stress, you can determine the required cushion thickness. Taking each one of these factors in turn, the explanation is as follows:

The fragility factor: normally given in g's, this is the figure obtained by dividing the maximum acceptable deceleration rate by the acceleration due to gravity. Put another way, it is the weight required to crush an object divided by the object's weight. This number is very difficult to obtain without testing the object to destruction, a highly unpopular way of treating works of art. A rough estimate is that most fragile works of art fall into the 20–50 g's range of fragility factors.

Probable drop height: the height from which one can expect the package to be dropped. For cases weighing in excess of 50 lb. this is normally around 30 inches. You will probably not build a case weighing less than this.

Static stress: the weight of your object divided by the area which contacts the cushioning material.

There are a multitude of cushioning products or materials available today and the initial selection for purposes of further study can be very time-consuming. Several suggestions for appropriate materials are Dupont 'Microfoam', 'Air Cap' (available from Smith Packaging Co. in Toronto) and 'Kimpac' (Kimberley-Clark). It is impossible to recommend any one product for all situations since their efficiency depends on the application. For example, the loose fill cushioning material 'Flo-Pak' (Free-Flow Packaging Co., California) is an excellent packing material for irregularly shaped objects exerting a static stress of between 0.2–0.6 pounds per square inch (psi). Its use is recommended for one-way shipments but not for travelling exhibitions since its effectiveness depends on overfilling of the external container and each time the case is unpacked there is a high probability of material loss resulting in reduced protection.

Paintings and prints are normally protected from shock and vibration by the

Table 1
Thickness of Plywood and Battens

		Size of battens (actual)	
Weight of contents (lbs)	Plywood thickness (inches)	Thickness (inches)	Width (inches)
0–100	3/8	5/8	1 3/4
100–200	3/8	3/4	2
200–300	3/8	3/4	2 1/2
300–400	1/2	3/4	3
400	1/2	7/8	3 1/2

addition of soft foam pads on all corners. The selection of pad thickness and 'springiness' should be made on the basis of the factors mentioned above. However, a rule of thumb is 1 inch pads for pictures weighing up to 10 lb. and 1 1/2 inch from 10–20 lb. Paintings and prints should be installed in the case vertically to help minimize stress on the surface. Do not forget when packing objects to pack the heaviest items on the bottom.

Table 2
Nail Spacing

Size of nails (inches)	Spacing (inches)
1 1/8–1 7/8	2
2 1/8	2 1/4
2 3/8	2 1/2
2 5/8	2 3/4
2 7/8	3
3 1/8	3 1/2
3 1/4	4

Protecting the shipment from deterioration other than that caused by shock and vibration is an equally difficult task. For most shipments the best that can be done is to line the case with a moisture barrier material, e.g. polyethylene, then add panels on all inside surfaces of a hygroscopic (moisture sensitive) material. These panels should be from 1/2–1 inch thick and suggested materials are 'Ten-Test' or 'Homosote' board. These panels should be covered with a closed weave cloth before installation to control dusting. If more precise relative humidity (RH) control is desired then the use of conditioned silica gel panels is suggested. You should consult an expert on their use. The Canadian Conservation Institute will supply further information on request.

If you suspect that the container is destined for or will pass through an area where fungus or pests are a potential problem then spray the empty finished cases with a suitable fungicidal solution.

Handles on both ends and skids made from 2 × 2 inch lumber on the case bottom make up the recommended handling facilities. The use of positive closing devices as previously suggested protects against idle curiosity. Since the use of actual locks is difficult administratively, their use is not recommended. If some more substantial pilferage protection is required for your peace of mind it is suggested that the lid of the case be screwed down (*not nailed*).

Always stencil the international, fragile symbol (broken wineglass) on three faces, one end, one side and the top. Similarly, place address labels on the three faces mentioned above. Use a gummed label reinforced by a pressure-sensitive tape. This will allow the next institution to remove old labels and replace with the next destination without painting up the case. Ensure that the required case orientation during travel is clearly indicated by arrows painted on the case so that your careful packing will not be wasted. Finally attach unpacking and repacking instructions to the inside top of the case along with a copy of the condition report and all the other necessary documents.

This article is only a brief look at the subject of packing for travelling exhibitions and is expanded in a C.C.I. Technical Bulletin entitled *Packing and Shipping* by P. C. Marriner (in preparation). Other valuable sources of information are *Controlled Environment for Works of Art in Transit,* N. Stolow, Butterworths, London, 1966, and *Safeguarding Your Collection in Travel,* Caroline K. Keck, American Association for State and Local History, Nashville, 1970.

P. C. MARRINER

Photographic Processing for Maximum Possible Permanence

Concern about the permanence of photographic materials from either artistic or documentation standpoint has been shown only very recently on the part of museums and galleries.

Most photographers are familiar with results of improper processing and storage of photographs, and, to take one example, family albums make good study cases concerning deterioration of photographs. Generally, however, not much of the research done on factors affecting photo permanence has filtered down to the average photographer. Very good sources of information on this matter are *The Print* by Ansel Adams and *Procedures for Processing and Storing Black and White Photographs for Maximum Possible Permanence* by East Street Gallery, U.S.A.

In processing for greatest possible permanence, often called archival processing, most efforts are concentrated on prints having artistic value. Each print from a certain negative is a unique item and should be treated as an original. Photographic sections of museums and laboratories should have a different approach, because for efficiency reasons it is hardly feasible to obtain archival quality prints. In any case, most of the prints are used in reports, for meetings etc., and eternal life should not be expected.

For this reason the negative in the section files becomes of crucial importance for reprinting purposes either in the near or very distant future. There is an obvious parallel between this situation and the motion-picture industry. Master films are kept under ideal or near-ideal conditions and duplicates are printed for projection purposes.

In other words, archival processing of all the negative material produced by a photo section is highly important and not very different from standard processing.

First of all, it is very important to maintain processing, washing and drying within a couple of degrees Fahrenheit. Reticulation or increased grain size can occur and influence the chemical stability of the film.

After development an acid stop bath must be used and not merely water or an old fixer bath to stop development.

According to Ansel Adams and the East Street Gallery, the usual fixing bath should be split up in a two or three fixing bath system. For example, use two fixer containers, one for each bath. Agitate the film constantly in the first bath for four minutes, drain for a few seconds and agitate in the second container for another four minutes. Then rinse the film thoroughly for a few minutes in running water. Be very careful not to leave films longer in the fixer than the suggested time. Standard type fixer or rapid fixer can be used (two minutes each bath). For precise work, standard fixers have the disadvantage that powder from the fixer can contaminate the darkroom when drifting off into the air as it is poured into water. After rinsing the film a treatment in Hypo-Clearing Agent for two minutes must be given (Kodak HE-1) and a final rinse of fifteen minutes for roll films and twenty for sheet films. It is always well worthwhile to use a final rinse in distilled water to avoid drying spots and a treatment with Photo-Flo solution will not affect the archival quality of the film. Drying of films should be done in an anhydrator, available from Oscar Fisher in New York. This drying process is based on moisture absorption rather than heated air.

The ultimate in archival processing, of course, is toning, either selenium toner

for protective effect or gold toner (formula GP-1). Both techniques have no discernible effect on grain size or contrast according to tests carried out by the East Street Gallery. Gold toning is thought to be better than selenium. It is, however, more expensive and much more elaborate.

One of the advantages of selenium toner is that it can be incorporated in the Hypo-Clearing Agent and for this reason may be very efficiently applied in most darkroom work.

The most important thing in archival processing is that personnel keep track of the age of solutions and amount of sheets processed. An almost saturated fixer, for instance, will still clear an emulsion but not really stabilize it and there will be a considerable chance of stains and yellowing occurring later on.

Storage of Archival Negatives

Nearly all the negative filing devices now on the market and used by professional photographers are thought to be very destructive to silver-based film emulsions.

The other day I had a chance to see the filing system of a photographer whose work is very important from both artistic and historical standpoints. His negatives were filed in common office stationery type envelopes with a pH reading of 4.2 and this leaves no doubt as to what will happen to the delicate photo emulsion. Kraft type paper as well as the well-known glassine sleeve holders contain excessive amounts of sulphur and other chemicals, in addition to which the glue in the seams may cause other severe chemical damage.

Common cardboards, including boxes in which one purchases photographic paper, release a wide variety of chemical substances including sulphur gases and peroxides.

In fact there is only a small group of items in or near which photographs should be stored. They are listed below:
polyethylene
cellulose acetate
100% rag content acid free paper
stainless steel
metals coated with baked enamel
aluminum
glass or porcelain
two component epoxy paint

Generally, films should be stored in cellulose acetate or polyethylene containers if relative humidity can be controlled at all times to under 50%, otherwise a strange variety of partial ferrotyping may occur after a few years.

If strict control of relative humidity is not possible, acid free envelopes should be used such as the material made by the Hollinger Company in the United States.

W. BOKMAN

Methods of fabrication form part of the training programme; Robert Arnold practising wood carving

Les méthodes de fabrication font partie du programme de formation; Robert Arnold s'exerce à la sculpture sur bois

Personnel

We have been pleased to welcome three new members of staff. Mr. P. Vogel is at Headquarters in Ottawa as Consultant Conservator, Fine Arts; Mr. R. L. Brydon and Mr. F. Dix are Conservators at the Atlantic Conservation Centre, Moncton, N.B.

A brief account of their training and experience is given below:
Mr. P. Vogel, Consultant Conservator, Fine Arts – studied history of art in Cologne and Stuttgart and, 1958–1962, trained in conservation at the Institute for Technology of Fine Arts in Stuttgart. Also studied conservation methods of Byzantine and Russian icons at the Russian State Conservation Centre in Moscow. Subsequently, worked for the Duke of Hessen in Darmstadt, conserving medieval polychrome sculptures and altar pieces. Became Head of Picture Restoration Division at the National Library and Public Archives of Canada in 1966, and, 1967–1974, was conservator at the National Gallery of Canada.
Mr. R.L. Brydon, Conservator, Books and Paper – Studied book restoration in Edinburgh, Scotland, 1948–1958, moved to Canada and served with the Public Archives records conservation section, the Library of Parliament and before joining the Canadian Conservation Institute, was president of Brydon & Larivière Ltd.
Mr. F. Dix, Conservator, Fine Arts – Studied conservation at the academy of Fine Arts in Stuttgart (1968–69) and the Swiss Institute for Art Research in Zurich (1970–73). Worked as private conservator in Vancouver and also has training experience.

During July this year Dr. J.F. Hanlan left to take up a new position as Associate Professor in Conservation Chemistry in the Conservation Training Program, Department of Art History, Queen's University, Kingston. Not only had Dr. Hanlan been Chief, Analytical Research Services, from the inception of the Canadian Conservation Institute but he had also served in a similar capacity in the National Conservation Research Laboratory for five years previously. Since Dr. Hanlan's departure, Mr. J.F. Taylor has been Acting Chief of the Analytical Research Section.

Ms. Susan Nash left in August to take up a position as conservator, ethnology, at the Bishop Museum, Honolulu, Hawaii.

We wish to offer an apology to Miss Virginia Greene, Head, Conservation Laboratory, The University Museum, University of Pennsylvania, for a misunderstanding concerning a photograph included in the article by Ms. Nash in Newsletter 4 and for an error in spelling.

Dr. Rosamond D. Harley is editor of the Newsletter.

The column Conservation Queries is prepared by Mrs. Rustin Levenson to whom questions should be sent at the Canadian Conservation Institute
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Ottawa K1A 0M8