

Canadian Conservation Institute

From the Director

We have had a gratifying response to our Newsletters 1 and 2 from readers across Canada, U.S.A. and abroad. The present mailing list is in excess of 2,000, reaching many specialists in the museum profession.

Since last January activities in our Institute have proceeded at a hectic pace. After one and a half years in existence the organizational plans are beginning to take shape. The headquarters staff are busily engaged in planning the Conservator Training Program to commence in early June in our Atlantic Conservation Centre in Moncton in the form of an introductory summer program. In the fall the ten conservator trainees, training coordinator, and staff will move back to Ottawa when the 3-year program will start in a comprehensive way. It is best described as an apprenticeship program with significant lecture content to complement the practical work. Further details of the program may be obtained by writing to Mrs. Brenda Wallace, Chief Training Co-ordinator.

Along similar lines to those described in Per Guldbeck's article on C.C.I./C.M.A. seminars, we are offering a full day of conservation sessions in the C.M.A. Seminar on Photographic Collections and their Care, 2-4 April in Ottawa.

The seminars organized by our staff are regarded as a very important part of the overall training responsibility in which the non-specialist museum worker is reached.

The Pacific Conservation Centre in Vancouver is well advanced in its fitting-out with equipment and specialized facilities. The staff have also been actively engaged in follow-up visits related to the conservation surveys carried out earlier.

Back at headquarters in Ottawa the

staff have been occupied with a variety of projects – often requiring travel across Canada. Mr. Roche has been actively engaged in special seminars on paper conservation in Vancouver, and consultations with archival institutions in the Atlantic Provinces; Mr. Guldbeck has offered advice to a variety of museums on ethnology conservation; Mr. von Imhoff has been involved in detailed work on the training program and has organized visits for his staff to Boston and Toronto; Mr. Bossard has consulted with the Montreal Museum of Fine Arts on the proposed conservation of a major early painting in a Montreal church. On the research side Dr. Hanlan and Mr. Myers have carried out special studies on silver objects in the Birk's collection in Montreal employing the portable EDX equipment which analyses the surface of an object without sample removal or any damage whatever. Drs. Sebera and Hanlan, Mr. Taylor and I are engaged in further studies on Indian Rock Art. In a visit to B.C. in January discussions took place with Dr. Bjorn Simonsen, Provincial Archaeologist, on proposed collaboration on studying the conservation and identification problem of numerous rock art sites in that province. It is expected that a Canadian Conservation Institute team will visit some selected sites in the early summer conducting a pilot study. Dr. MacLeod has been working on a variety of projects, including Technical Fact Sheets for distribution to museums. Mr. Marriner has carried out designs on mobile conservation vehicles for use by C.C.I. during surveys and in the important field work of the regional centres. Mr. Rogers has embarked on his M.Sc. researches on silver tarnishing and related problems – a project carried out under the auspices of the Canadian Conservation Institute with the collaboration of the Chemistry Department of the

University of Ottawa. The new librarian, Mrs. Geraldine Wallis has been appointed and we expect the library service to expand. Dr. Rosamond Harley will oversee the publication of Fact Sheets, Technical Bulletins and other special reports in addition to supervising the development of documentation systems and our library. N. STOLOW

C.C.I. – C.M.A. Seminars

A total of over one hundred participants recently took part in a series of three 3-day seminars entitled "Conservation of Collections – Recent Concepts." Fifteen staff members of C.C.I. took part under the direction of Dr. Nathan Stollow in cooperation with the Canadian Museums Association with Miss Marie Andrée Lalonde, Director of Training.



Artifact clinics were popular features of the evening sessions

De leçons «cliniques» ont agrémenté les séances du soir

In order to accommodate the great geographical spread of museums and similar institutions across the land, the seminars were held in three places: Ottawa, 2-5 December; Moncton, N.B., 6-9 January; and Vancouver 21-23 Jan-

uary. Those attending ranged from as far apart as Vancouver, British Columbia, and Igloovik, North West Territories., to St. Johns, Newfoundland, and represented an equally diverse range of interests and backgrounds. There were private conservators, museum volunteer workers, National Parks personnel, and curators from historic houses, forts, and branches of National Museums.

The lecture topics were balanced between the scientific and the conservation staff in order to present information from the viewpoint of both theory and practice. Probably the Number One topic, not only specifically discussed, but implied as well in the other lectures, was the problem of adequate environmental control for collections. A glance in the daily papers at the temperature differences on a winter's day between places such as Vancouver and Yellowknife will often show a spread of up to 80°F, plus corresponding differences in humidity levels.

Caring for collections in older buildings which normally have few controls for humidity and which have uneven heat distribution can be a nightmare for the conscientious curator. The C.C.I. staff dealt with these conditions – photochemical damage from natural or artificial light, degradation of materials from dryness or excess humidity, and biological damage from improper storage conditions. They showed graphically and with instrumentation how these conditions may be monitored and measured in order that proper controls may be set up.

Conservators from the fields of polychrome sculpture, paintings, fine art on paper, archaeology and ethnology, followed up the scientific lectures with discussions on how to care for collections on a practical basis. Subjects covered were first aid methods, improving storage conditions and eliminating hazards to the artifact and the curator, safe packing procedures and recent packing materials, conservation of metals and organic materials, plus considerations in choosing adhesives.

Conservators and scientists touched on the magnitude of the problems a museum faces in the event of a natural disaster such as the Venice flood or Hurricane Agnes, and outlined procedures for coping with them. Since natural disasters usually affect a whole community or region, museum people might often find themselves obliged to undertake salvage unaided or with untrained person-



The Progress in Conservation exhibition was shown in Moncton and Vancouver

On a présenté à Moncton et à Vancouver l'exposition intitulée le progrès de la conservation

nel. At the Moncton meeting it was thought for a while that there might be an opportunity for practical demonstrations of emergency methods since astronomers had predicted a high tide of historical dimensions for the Atlantic Coast. Fortunately the tidal bore at Moncton was not noticeably higher than usual, to the relief of all – except possibly for the scientists who had been proven wrong in their predictions. Coupled with the non-appearance of the comet Kohoutek, this year would seem to represent a giant leap backward for science.

Because of the amount of information, much of it specialized, that was crammed into these sessions, liberal use was made of hand-out sheets of summaries, supply lists, and bibliographies in order to prevent writer's cramp on the part of the participants.

The C.C.I. – C.M.A. held a number of informal receptions, dinners, and coffee breaks which not only lent an accent note to the seminars, but also helped to initiate discussion groups and freer exchange among the staff and participants. It is generally recognized that many people who feel diffident about speaking out at a formal meeting feel less constraint about talking to a speaker over cocktails or at a coffee break. Thus these occasions are a vital part of any meeting, enabling museum people from various regions to become better acquainted with one another and to find out among other things that they are not alone in their particular set of problems – financial or curatorial.

Of particular value to the seminar speakers was the use at the Ottawa meeting of a videotape camera which filmed sections of their lectures and demonstrations. At a "post-mortem" showing a

few days later everybody had a chance to see and hear themselves and to run a self-evaluation on their method of presentation.

Many people felt keenly the lack of time, and would have liked to participate in longer question periods and more discussion sessions and clinics. But, because of the pressure of time on many people who took time from their own busy schedule at home, it was necessary at this group of seminars to compress information into as short a time as possible. It is hoped that at future seminars sessions may be broken into special-interest groups for those interested in a specific topic.

An untold number of man-hours was spent by the staff in preparing lectures, audio visual materials, and in packing and setting up equipment and displays. But the reception and cordiality shown to the staff by the regional groups made the task rewarding, plus the enjoyment of meeting old friends and making new ones. We at the C.C.I. look forward to future visits and conferences in the hope that we will be of practical assistance to those across the country who need conservation help. PER GULDBECK



Videotape was used at the Ottawa meeting to record the lectures for later self evaluation

Enregistrement sur bande magnétoscopique des conférences prononcées devant les participants de la réunion d'Ottawa en vue d'une auto-appréciation ultérieure

Conservation Queries

● *My museum is setting up a display of some 19th-century Acadian tools on a wall display – they will not be enclosed in a case. Museum is in a damp climate. What treatment should be applied prior to setting up the display?*

If the tools are of 18th- or early 19th-century blacksmith manufacture and have not been buried or continually exposed to rain and snow, the iron and steel will normally be in relatively good condition. This is because during the heating periods necessary to form the tool, the metal picked up a certain amount of carbon from the forge fire. This resulted in a thin protective surface layer which gave old wrought iron its characteristic blue-black colour. As long as this surface remains intact, it inhibits rusting to a remarkable degree under normal conditions, and no special treatment or coatings are necessary.

However, if the objects are to be exhibited under conditions of high humidity plus possible salt content in the air, some coating will be necessary. They may be divided into three general classes:

- A. chemical protection;
- B. oils and greases, waxes;
- C. varnish-like coatings.

A. Chemical protection may consist of specially formulated paints containing lead or zinc chromate. They are primarily used for large objects like cannon, anchors, or cast iron fences. Because of their colour they are in turn covered with a coat of black paint to simulate the original iron colour. Commercial chemical rust-removers based on phosphoric acid will clean off rust and deposit a protective phosphate coating but will change the colour of the metal to an unpleasant grey-green which must be covered by a coat of black paint. Because of the resulting "painty" new look the object acquires, these methods are not generally considered satisfactory for small objects.

B. Oils and greases in varying combinations have long been used quite satisfactorily by civilian and military organizations for long-term storage of iron and steel under adverse conditions. However, because of the obvious messiness of these coatings, they are not generally satisfactory for exhibit purposes.

One type of oil which is quite useful although not always available in small

towns is silicone oil. It often comes in aerosol cans, can be sprayed on, then wiped off with a dry cloth, leaving a non-greasy protective coating.

Waxes can be applied, and when applied as a thin layer will not have an objectionable shine. Some of the newer microcrystalline waxes are excellent for this purpose but are not generally available in retail quantities. Nevertheless, a good grade of paste furniture wax rubbed on and lightly buffed afterwards will offer substantial protection. Care must be taken not to get it into deep interstices or they will show up as opaque ochre-coloured areas.

C. Varnish-like coatings (for example Krylon Spray) can offer suitable protection, depending on their composition, but most of them suffer from the defect of being shiny and altering the object from the way in which it would normally have appeared, and for this reason are not generally used for work tools.

P.G.

● *Where can our museum buy bubble pack for packing works of art and lining storage shelves?*

Bubble pack or "Air-Cap" is composed of two layers of polyethylene film permanently laminated together. One of the layers is embossed with rows of cells; the air that is trapped in these cells during lamination gives the material its cushioning properties. Smith Packaging Company (a Division of Sealed Air of Canada Ltd.) produces Air-Cap in Canada. They have added an additional element to the construction, a barrier coating on the side of the polyethylene film that keeps the air from leaking out of the cells.

The main office of Smith Packaging is at 111 Eastside Drive, Toronto, Ontario (telephone 416-231-9261). There are also distributors throughout Canada; some are listed below:

Quebec (Que.), Claire Lumber Co.;
Montreal (Que.), Dover Pad Limited;
Smith Packaging Co.;
Ottawa (Ont.), Can. International Paper Victoria Limited;
Halifax (N.S.), Can International Paper Victoria Limited;
Edmonton (Alb.), Merlund Plastics;
Calgary (Alb.), Hilroy Envelopes;
Regina (Sask.), Lewis Stationery;
Saskatoon (Sask.), Printing Papers;
Winnipeg (Man.), Superior Envelopes;
Vancouver (B.C.), Smith, Davidson & Lackie Co.

The price for Air Cap from Smith Packaging depends on the size of the air cells and the thickness of the polyethylene film: single thickness, small bubbles (C-120) \$36.50/1000 sq. ft.; single thickness, medium bubbles (T-120) \$40.55/1000 sq. ft.; double thickness, medium bubbles (T-240) \$52.85/1000 sq. ft.; single thickness, large bubbles (D-120) \$50.10/1000 sq. ft.; double thickness, large bubbles (D-240) \$61.75/1000 sq. ft. Air Cap comes in 48 in. rolls: 3000 sq ft. in a roll with small bubbles, 1500 sq. ft. with medium bubbles, and 1000 sq ft. with large bubbles.

RUSTIN LEVENSON

Basic Care of Paintings

One of the primary functions of a museum is the preservation of its holdings. The term preservation comprises all measures taken to prolong the life of the object. During display, handling and storage, the museum object is in the care of personnel who are not specialists in conservation. By applying certain basic preventive measures museum staff can contribute substantially to the preservation of our art treasures.

Basic Construction

In order to preserve effectively, a knowledge of art materials and their properties, and of the environmental factors affecting the object is essential. Aside from contemporary art, where everything is possible, the structure follows mainly a traditional system.

Support: The traditional support materials are wood panel and canvas. Later on cardboard and wood-fibreboard came into use. In addition, ivory, metal and paper were quite common.

Ground: Most supports are primed with a ground layer in order to give a uniformly absorbent surface and to fill the irregularities. Grounds are made up with pigments (e.g. chalk, gesso, ochre) and binding medium (drying oils, glues, acrylics).

Paint Film: Paint is made up from colour; that is, pigments and binding medium. The binder is supposed to dry and to bind the pigments to the ground or the support and hold them in place. The name of the painting technique is usually related to the binding medium: oil colour – pigments in drying oil (e.g. linseed, poppy); tempera – pigments in

yolk of egg; watercolour — pigments in gum arabic; encaustic — pigments in wax; acrylic — pigments in acrylic resin.

Causes of Deterioration

Among the causes which make these materials deteriorate are:
changes in humidity in the environment;
changes in environmental temperature;
excess of light;
atmospheric pollution;
faulty technique by the artist;
mishandling by the owners.

Handling

Always ask for help in carrying a large or heavy painting; do not carry it alone. Never carry more than one painting at a time; use dollies or picture trucks wherever possible.

When carrying paintings by hand the paint surface should always face the handler. At all times one should avoid direct contact with the surface and the back of a painting.

The picture frame forms not only a protective edge for a painting but also a part of its aesthetic value. Especially, if it has been selected by the artist himself, it is an authentic part of the picture and has historic value. Therefore, one has to be careful with the frame too. Use padded blocks wherever you put your painting down on the floor or the table. If it becomes necessary to stack them against each other use corrugated cardboard or foam rubber for separation.

Reframing

If a stretcher or a panel is not securely held in its frame, the picture should be reframed.

First check the paint surface with a 100–200 watt hand lamp. If any paint separates from the ground or the support ask a conservator to fix the paint layer.

Lay the picture on padded blocks face down and remove the painting from the frame. Remove all nails and tacks carefully and throw them away.

In order to protect the painted edge from rubbing against the rabbet of the frame, line the rabbet with velvet or felt tape, or, for a painting on canvas, attach wooden or aluminum strips to the tacking edge.

In case you have to key out a canvas painting, remove all stretcher-keys and drill small holes into them. Replace the keys in the slots. To protect the canvas from accidental hammer blows, slide cardboard behind the key while you tap

it down. Insert cord through the hole of each key and staple the ends to the stretcher so that the keys cannot be lost.

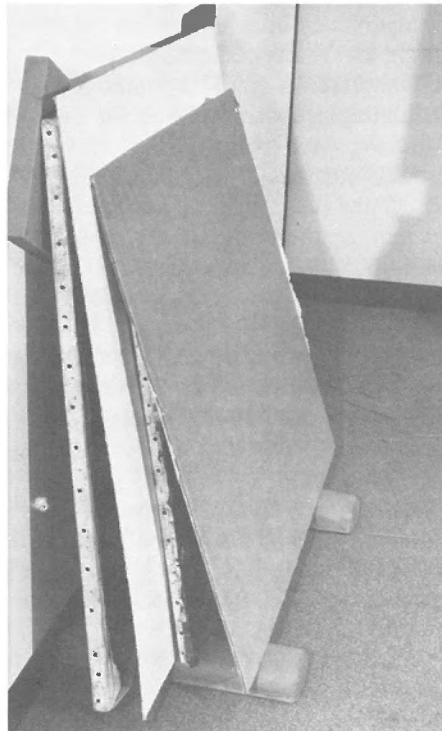
Replace the painting in the frame and fix it with brass or aluminium mending straps or steel springs screwed on with stainless screws. Avoid nails.

In the case of wooden panels make sure that the panel is not fixed too tightly and has space to move, but also make sure that the painting cannot move sideways in the frame. Do not screw anything into the panel.

Cover the reverse of your painting by screwing cardboard or masonite to the stretcher in order to prevent accidents from the rear. A painting should never travel without such backing.

Storage

Avoid small and overcrowded storage rooms. Try to keep everything stored off floor level. If it is impossible to avoid stacking against the wall, use padded blocks to prevent slipping and to provide a few inches space between floor and picture, which, in case of flooding, can save a great deal. Use foam rubber or corrugated cardboard between wall and paintings and between paintings stacked together.



Paintings stacked against a wall on padded blocks and protected with corrugated cardboard

Tableaux superposés contre un mur sur des appuis matelassés et protégés par des cartons ondulés

Much better are wooden or metal shelves in which you can slide your paintings vertically. Each compartment should accommodate one, maximum two, pictures and should be lined with corrugated cardboard on the sides and with carpet rest pieces on the bottom.

The best system, but also the most expensive, is made up of sliding screens of heavy metal mesh and metal frames. Paintings can be hung on both sides of each screen. Hanging on metal tracks, each screen can be pulled out and the picture examined without much handling.

Ideally paintings should be kept at about 55% relative humidity throughout the year and with moderate circulation of air.

Display

Wherever possible move pictures away from recognised hazards such as excess light (direct sunlight, spotlights too close) or excess heat (over fireplaces and radiators). Avoid entrance halls where the temperature changes every time the door opens. Do not overheat your exhibition areas; this will help you to maintain approximately 55% relative humidity throughout the year.

Avoid places where visitors may knock against a painting or where they may be tempted to touch the objects.

Have fire extinguishers either of the dry chemical type or carbon dioxide (CO₂) type near the exits.

Packing for Travel

Refuse all loans of paintings where condition or framing is not sound.

Remove hanging devices other than flat type before packing. Check the attachment of the frame and the protective backing and improve it if necessary.

Wrap the framed painting first in clean tissue, newsprint or kraft paper, followed by polyethylene film. Glassine paper may be used directly on unframed paintings, provided it is not wrapped in an air-tight fashion.

Have a strong crate made according to the size and weight of the object. Nails can be used in the construction but the lid should always be attached with screws. The inside of the crate should be lined with waterproof paper or polyethylene sheets stapled in place.

Protect the carved parts and the corners of the frame with cushions. Fix the cushions with masking tape or staples only on the back of the frame, never on

the front. Cushion the interior of the crate to hold the picture in place safely.

Apply hand holds even to medium-size crates to invite the truckers to carry the crate the right way up. Paint the outside with an outdoor paint, preferably white or other bright colour.

Reading List

C.K. Keck, *A Handbook on the Care of Paintings*, American Association for State and Local History, Watson-Guption Publications, New York, 1965.

C.K. Keck, *Safeguarding your Collection in Travel*, American Association for State and Local History, 1970.*

R.J. Gettens & G.L. Stout, *Painting Materials: a short encyclopaedia*, Dover Publications, New York, 1966.

A Primer on Museum Security, New York State Historical Association, Cooperstown, N.Y. 1966.*

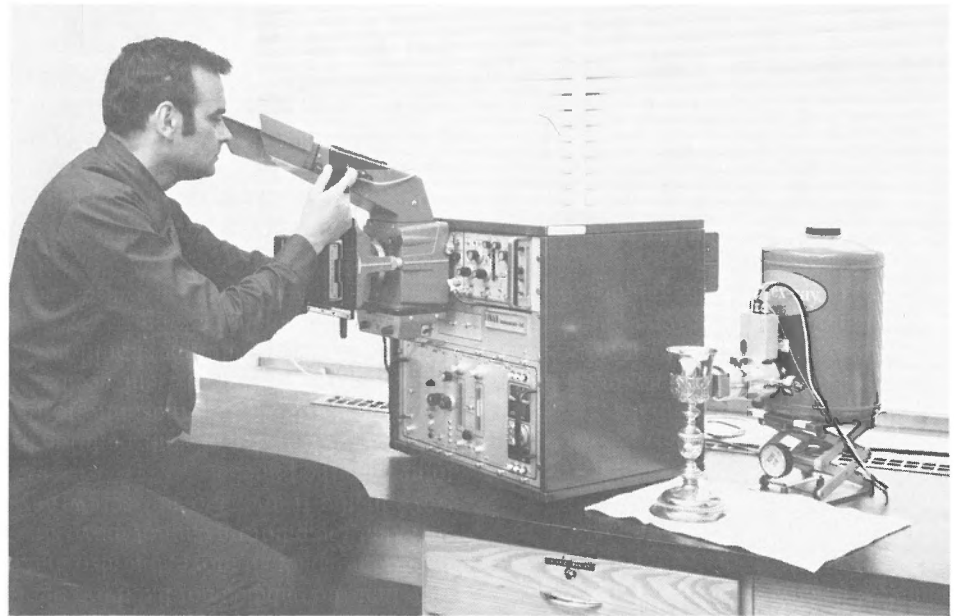
* May be ordered from the Canadian Museums Association.

EMIL BOSSHARD

Technical Studies of Canadian Silver at C.C.I.

The traditional study of cultural artifacts by means of historical research and connoisseurship is becoming increasingly augmented by scientific examination and analysis. Frequently the historian or curator may have new lines of research suggested to him by such studies or have subjective appreciations validated. Often technical data will require re-evaluation of an object. In conjunction with research into materials for an important exhibition of French-Canadian and French silver to be held at the National Gallery in 1974, the chemical analysis of Church silver currently in the National Gallery collection was undertaken. It was felt that the establishment of composition would provide information on an aspect of silver and silversmithing of great importance in regard to workshop practices, availability of raw material and possible compliance with French guild rules in early Canada. The emergence of co-relations between composition and silversmith (or period) was also a possible result, as was the discovery of repairs, additions or mismatches.

Church silver has certain advantages for a study of this type because in general the silversmith used the best grade



Dr. J. Hanlan using the energy dispersive x-ray spectrometer (Photo: John Evans)

M.J. Hanlan utilisant le spectromètre à dispersion d'énergie par rayons x

of silver available and the pieces are in good condition, positively identified and well-polished. The National Gallery's particular collection was also convenient in that the main artists represented, François Ranvozyé, Laurent Amiot and François Sasseville, did most of their work from the years 1760 to 1864 in three different periods, including one of the most prosperous eras of silversmithing in Canada.

One major problem with a study of this type is the fact that no original Canadian silver was used because there were no mines discovered, hence all articles were produced from remelted silver objects, coins and scrap. Out of the melting pot came a whole range of alloys; thus no worker can be expected to exhibit any consistent fineness of metal or even the constant use of metal from a particular source. In view of this expected diversity we decided to limit their quantitative analyses to silver and copper only. Note was made for traces of lead and gold and other elements were observed.

All analyses were done using x-ray spectroscopy with an energy dispersive detector (EDX). Because of the great efficiency of this type of detector, compact and safe radioisotope excitation can be used and analyses are performed very rapidly. The main advantage, however, for museum applications is that

simple elemental analyses can be done on select areas of a precious or fragile object without the need for removal of samples. Very briefly, primary x-ray photons from, in our case, the radioactive isotope I^{25} , are directed onto a sample where they generate secondary x-ray fluorescence, the energies of which are characteristic of the elements present. This secondary radiation is detected, processed, and presented to the analyst for interpretation.

A silver object was analyzed by positioning it so that the area of interest was 3 mm. in front of the excitation source and the total spectrum count rate was then adjusted to about 2,000 counts per second using the collimator. Two readings for each area were taken in order to improve the statistical accuracy. From this, the copper (Cu) and silver (Ag) ratios were calculated and the % Ag was read from the specially prepared calibration graph. Finally the two percentages were averaged.

Because any x-ray fluorescence method only analyzes the surface (e.g. Cu K α excitation x-rays penetrate to a depth of approximately 0.03 mm. in a 95% Ag sample), it is most important that the surface be representative of the composition of the object as a whole. This is not always the case because in almost all alloys the effect of surface enrichment, or more correctly, surface depletion, of one or more components changes the surface composition with respect to the interior. The effect can be caused by oxidation or leaching out of a component or simply diffusion of one component through the matrix. The enrichment is not always apparent because in



A silver chalice by François Sasseville (Courtesy: National Gallery of Canada, Ottawa)

Un calice en argent par François Sasseville (La Galerie nationale du Canada, Ottawa)

general no pitting, corrosion or any other visible change takes place. Objects fabricated from silver were also typically whitened by a process known as blanching which leaves a silver-rich layer on the surface. It is important then, that these effects do not cause misleadingly high results for the silver percentage. There is evidence that the copper-depleted layer is less than 0.03 mm. thick. It was thus decided that with fairly constant polishing on a smooth surface, no enriched layer would exist.

This theory was supported by the fact that the unpolished areas, such as the interiors or bottoms of objects, and the relatively poorly-polished, heavily-pat-

terned areas always read higher in Ag than the smooth, polished exteriors. Since all analyses were done on smooth well-polished areas, we are confident that our results are representative of the composition of the object as a whole.

Over 40 objects in the National Gallery collection of church silver were analyzed. Most were in several parts, that is, base, stem, and cup as in a chalice, or were a set, for example, a chrysmatory, so that well in excess of a hundred analyses were performed. Objects from the workshops of F. Ranvoyzé (1739-1819), L. Amiot (1764-1839) and F. Sasseville (1797-1864) were sufficiently well represented that statistically relevant comparisons could be made between their work as regards the fineness of silver employed.

Ranvoyzé was the earliest silversmith of the three, and analysis of his work summarized in the table shows that 80% of the silver he used was above the 95% French standard. This is reasonable because he worked shortly after the changeover from the French to the English regime and there would be much of the original French silver available. Toward the end of his time, however, it appears that the availability and thus the quality of silver began its decline. Amiot, the second artist studied, worked during a slightly later period (although overlapping Ranvoyzé) and only 36.4% of his silver is above the 95% level. By the second half of the nineteenth century, during Sasseville's time, almost all of the available silver appeared to be below the 95% level, thus confirming the downward trend.

Sources of lower grade silver for admixture can be expected to have been sterling standard (92.5%) and American silver at 90%.

Further examination of our work also disclosed that the spread of results from

all analyses on a single object is over a very narrow range of from one to three percent. If analysis of some particular part of an object is completely at variance with the rest of the object then there is reason to look very closely for additions or repairs. It should be pointed out, however, that conformance or deviations from our results cannot be taken in itself as a test of authenticity. Deductions regarding adherence to guild rules, workshop practices, and assaying capabilities are at present only problematical.

Work presently under way in the Analytical Research Services section of C.C.I. includes an extension of this study for the fascinating area of Indian Trade silver. Preliminary results suggest a grouping into three categories, viz., a group near or above 92.5% silver, probably of Canadian manufacture, a second group at 90% silver imported from the United States and a third group consisting of German silver, that is a copper, nickel, zinc alloy.

It is planned to extend this work during the next two years into a more definitive study of Indian trade silver and also into the area of domestic silver, particularly that manufactured in the Maritimes and in Upper Canada.

The co-operation of Mr. Dennis Alford of the Museum of Man for his loan of Indian Trade silver, and the guidance of Mr. Jean Trudel of the National Gallery and the loan of calibration standards by Mr. Howard Clark of the RCMP must be gratefully acknowledged. For further reading see J.F. Hanlan, *Bulletin of the American Group*, International Institute for Conservation, 1971, vol. 2, 85-90, and *Developments in Applied Spectroscopy*, Plenum Publishing Corporation, 1971, vol. 10, 15-32; also the paper by V.F. Hanson presented at a seminar on the "Applications of Science in the Examination of Works of Art" in Boston, June 1970, 14-19.

J.F. HANLAN & R. MYERS

Summary illustrating the downward trend of the quality of silver over a period of about 100 years

	Number of analyses	% of analyses less than 93% Ag.	% of analyses 93-95% Ag.	% of analyses greater than 95% Ag.
Ranvoyzé (1739-1819)	15	0	20.0	80.0
Other artists of same period	4	0	0	100.0
Amiot (1764-1839)	22	13.6	50	36.4
Other artists of same period	8	25.0	62.5	12.5
Sasseville (1797-1864)	20	15.0	60.0	25.0
Other artists of same period	13	38.5	61.5	0

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 National Museums of Canada, Ottawa K1A 0M8