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preserving materials from cultures other than one's own and how policies toward access and use of collections impact conservation. Both agreed to elaborate on these topics in future newsletter articles.

Following the presentations at the program session, we were elected co-coordinators. We then rushed to represent the Working Group for Ethnographic Materials at the coordinators' luncheon. Among the main themes discussed were: how to improve the relationship between conservators and the public, how to better integrate the Conservation Committee Working Groups with the ICOM organization, and how to encourage collaborative papers with curators.

As co-coordinators we hope to facilitate communication and participation among our dispersed membership. Sherry Doyal has background in upholstery conservation prior to working with ethnographic materials. Recently, she has worked for the Horniman Museum in London and is currently relocating to Exeter. Nancy Odegaard has a background in ethnographic and archaeological objects conservation and has worked with the anthropological collections at the Arizona State Museum - University of Arizona for almost 13 years. During the meetings, we became instant friends and now look forward to working together, with the Newsletter editors and with the membership.

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NOTE FROM YOUR EDITORS

Many thanks to those who took the time to send in a submission to this newsletter. You'll notice that Newsletter No. 14 lacks contributions for the Museum/Native Peoples Issues column. Also, the Material Culture column contains publication reviews, but no article submissions. We would like to maintain these as regular columns and are certain that these topics are relevant. Remember, the very existence of this newsletter depends on contributions from its readership. We look forward to hearing from you!

Both the informal working group meeting and the program session of the Ethnographic Working Group were very well attended and were also very productive. Our newsletter mailing list database has been updated from the meeting. Greta Hansen, newsletter editor, gave a summary regarding the status of the newsletter, after which there was lively discussion about the difficulty in producing the newsletter due to lack of contributions. A strong consensus thought that an established publication schedule for the newsletter would help alleviate the problem. We have decided to yield to this suggestion and establish, for now, an

FROM THE COORDINATORS

Please join us in thanking Chris Del Re for her efforts as coordinator during the last triennial period beginning after the Washington, D. C. meeting in 1993 through the recent 1996 Edinburgh meeting. At Edinburgh, Chris organized both an informal working group meeting and an interesting and informative program session. At those meetings, suggestions and new ideas were proposed and discussed regarding long-term growth and re-vitalization of the group. Having two opportunities to meet with colleagues and friends was both wonderful and helpful.

Working Group topics for the next triennial period included several suggestions. Tom Stone of CCI, Canada put forward an initiative to review old treatments used for the conservation of ethnographic materials. Nancy Odegaard proposed further consideration of cultural issues regarding the difficulties in

October and April publication schedule for the newsletter. In time, if contributions increase we would like to produce three newsletters a year. If you would like to submit a contribution to a particular newsletter, we must have your contribution two months before the month of production and mailing.

The role of the regional coordinators with regard to the newsletter was discussed. It was suggested that the regional coordinators be more active in seeking possible contributions for the newsletter. It was further suggested that the editors rely on the regional coordinators to obtain commitments from contributors and also ensure that contributions are provided by the deadline. Contributions, therefore, should be directed to your regional coordinator, who will then send them on to us. To assist you in determining who your regional coordinator is, please refer to the coordinator list at the end of the newsletter. This list also includes the number of subscribers in each region. Our subscription list now totals over 700.

There was also some discussion about including references in the newsletter that would be relevant to ethnographic conservators. In this newsletter, in the Material Culture column, we provide short reviews of several exhibition catalogs that we thought were very informative. Exhibition catalogs have become increasingly valuable reference sources, particularly for early technology. They also tend to include the most current research in a particular field. Also included are two relatively new periodicals mentioned at the Edinburgh meeting, that conservators have found very useful. We would like to continue to include such references in other newsletters, so please send us titles (and reviews if possible) of any references you have found useful.

One last issue was raised at the ICOM meeting. Someone thought it might be helpful to put the Ethnographic Working Group mailing list on line in an effort to increase communication between conservators. Because the mailing list

exists as a data base we could easily do that, but the concern for privacy in an electronic media was voiced. We would like to hear from the newsletter readership regarding this issue. Our phone and fax numbers and e-mail address are listed at the back of the newsletter.

TECHNICAL EXCHANGE

Some Applications of Laminated, Heat-Sealable Films for Collections Storage

Editors' note: While this article refers to modern aeronautic collections, we thought the described technique would have applications for ethnographic conservators.

If you have ever opened a package of Polaroid film, changed a toner cartridge in a copy machine, unwrapped a scalpel blade or a TV dinner, you are already familiar with these types of materials. During the past few years the use of heat-sealable, laminated films for the packaging of perishable materials, military hardware, medical supplies, electronic components and consumer goods has increased significantly. Laminated films protect against the harmful effects of humidity, gaseous pollutants, insects, dust and dirt, leaks, condensation, and light.

While there are no substitutes for proper storage conditions and storage equipment, laminated films can be a viable alternative for the special needs of some objects or for protective enclosures for objects stored in substandard spaces such as unheated basements, attics or warehouses. The films are particularly useful to the conservator in search of a practical, relatively inexpensive, packaging material. The films are available by the roll which allows for greater latitude when tailoring a package or bag to meet specific needs, especially for very large objects. In addition to the film material, other requirements for making bags are a tacking iron or heat-sealing machine and a little

imagination.

For many years, artifacts at the National Air and Space Museum's Paul E. Garber storage facility have been crated and stored in unheated warehouses. Poor storage conditions have resulted in various types of damage including corrosion, water damage from leaks, insect activity, accretions of dust and dirt, and damage to paints and fabrics. The storage problems resulting from many years of basic warehousing defy a simple fix, yet it seemed unreasonable to condemn new acquisitions to old procedures and conditions.

Many of the artifacts in the collection are metal, requiring a simple desiccated environment for their preservation. In fact, much of the historic hardware from the space program came in sealed metal containers with rubber gaskets, their interior environments conditioned with silica gel and pressurized with nitrogen. The containers had gas fittings and humidity indicators. Unfortunately these containers were not utilized as designed and objects inside corroded over time. During the Spring of 1993 the museum accessioned several large computer components once used to control military satellites from the 1960's to the 1990's. Prior to placing the components in storage at the Garber facility, the National Air and Space Museum's conservation unit fabricated large metal foil bags for each artifact using a heat-sealable film. The film is designated LF 6030 and its physical properties are listed at the end of this paper. A second clear film which is also a laminate with very low gas and water vapor transmission rates was used to create windows in the bags that facilitate environmental monitoring and artifact inspection. The clear material is more expensive than the metal foil and therefore not practical for the fabrication of large storage bags. The interior of the bags was desiccated using the formula of one kilogram of silica gel per cubic meter. Dial hygrometers were installed in each bag near the window for monitoring, and a humidity/temperature log book was established for each bag. In all cases the

relative humidity inside the bags was reduced below 20% when sealed. During the past three years the relative humidity inside the bags has gradually increased to approximately 50%, probably due to slow leaks. During this period there was a major leak in the roof of the storage building but the storage bags were strong enough to withstand the weight of large pools of water that formed on top of them and the artifacts inside remained quite dry. Surrounding crates were naturally wetted. The dust and dirt layers that have accumulated on top of the bags also attest to their protective qualities. Recently the bags were slit open in order to replenish the silica gel. The slits were then fitted with zip-lock polyethylene bags that will facilitate future access. Once again the relative humidity inside the bags was significantly reduced by the silica gel and remains stable. Our experience with laminated films demonstrates that the materials are a viable storage option for objects in poor storage conditions.

In addition to creating dry environments, laminated films have other useful museum applications. Some materials such as rubber and certain plastics degrade because of inherent chemical properties, and presumably, the presence of oxygen. Initially it was thought the bags could be used to create nitrogen storage bags for spacesuits which contain a rubber bladder and many synthetic materials. Subsequent research by Dr. Mary Baker of the Smithsonian's Conservation Analytical Laboratory indicated that such materials could deteriorate even in the absence of oxygen. For the time being we have opted for cold storage for the spacesuit collection.

We also experimented with the fabrication of bags for the purposes of retaining various gases. The bags were constructed using the metal foil film with the clear film used to construct the windows. A simple Leur valve was installed in one side of the bag by punching a hole with an ordinary paper punch and inserting the valve through the hole. The valve was locked in place with a nut and a rubber gasket. A

pin, similar to those used to inflate footballs was used to evacuate the air and to inflate the bags with various gases. Laboratory grade nitrogen which was used to inflate the bags was passed through a bubbler to bring the relative humidity of the gas to approximately 50% RH.

In theory, such bags could be modified into individualized fumigation chambers. The infested artifact would be inserted into the bag and the bag sealed. The selected gas, such as argon or carbon dioxide, would be introduced through the Leur valve. Following fumigation the bag would be cut open and the artifact removed. Because the films are expensive, the bag may be reused for smaller objects. Other preservation applications for the film enclosures include isolating objects with oxygen scavengers or pollutant absorbers like potassium permanganate or activated charcoal.

Material Specifications

Nylon/Foil Barrier film:

Designation LF 6030 (MIL-B-131)
Four layers: 60 gauge Nylon,
Polyethylene, .0003 Foil, .002
Polyethylene with a total thickness of .005
Water vapor Transmission rate: less than
.02gm/100sq in/24 hrs
Oxygen Transmission Rate: less than or
equal to .01/cc/sq M/24 hrs
Puncture Resistance: 17-1/2 lbs
Suggested Heat Seal: 400 F 40 psi/2
seconds

Clear Material:

Designation MIL-B-22191 Type I
Four layers: Polyester, Polyethylene,
Aclar, Polyethylene
Water vapor Transmission Rate: .03g/100
sq in/24 hrs
Puncture Resistance: 6.3 kg

Both films were purchased from:

L. F. and P., Inc.
(Laminated Films & Packaging)
3560 Lafayette Road
Portsmouth, NH 03801
Tele: (603) 436-6374
Fax: (603) 436-0152

Prices: LF 6030 - 36" x 200 yards @ \$247.11, 48" x 200 yards @ \$329.48
MIL-B-22191 - 36" x 50 yards (not normally available in roll form, call for quote)

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Below are some useful technical publications.

Storage of Natural History Collections: A Preventive Conservation Approach, Volume One

C. L. Rose and H. H. Genoways, editors
ISBN: 09635476-1-5
Society for the Preservation of Natural History Collections
University of Iowa
Iowa City, Iowa 52242-1379

Contributions from more than 30 authors who are experts in museum design and collections conservation present a holistic approach to the storage of natural history materials.

Storage of Natural History Collections. Ideas and Practical Solutions, Volume Two

C. L. Rose and A. R. de Torres, editors
ISBN: 0-9635476-0-7
Society for the Preservation of Natural History Collections
University of Iowa
Iowa City, Iowa 52242-1379

This volume includes 113 articles on practical storage ideas for everything from vertebrate teeth to ethnic costumes to large fossils.



A Support Solution for a Top-Heavy African Sculpture

Many of us are familiar with the problem of securing top-heavy artifacts, or artifacts with a small, unstable base. This African sculpture of the Mekonde tribe, from the University of Alberta Museum's collection in Edmonton, exhibited this problem. It is carved of ebony wood and is brittle with age. It measures approximately 60 cm high and is very narrow for its height. In some areas the wood is as thin as 1 cm in diameter. The base is especially small, making it very prone to tipping. The sculpture could easily topple if museum visitors leaned against the display pedestal or case. The top portion of the sculpture was broken and abraded, evidence that it had tipped over several times in the past.

The mounting method described below combines aesthetics with functionality: it is quite discreet, yet it works very well to secure and stabilize the sculpture. Essentially, it consists of a Mylar strip over the base and secured underneath a platform that is cut to fit the contour of the sculpture's base. The illustrations give the step-by-step instructions on the mounting method.

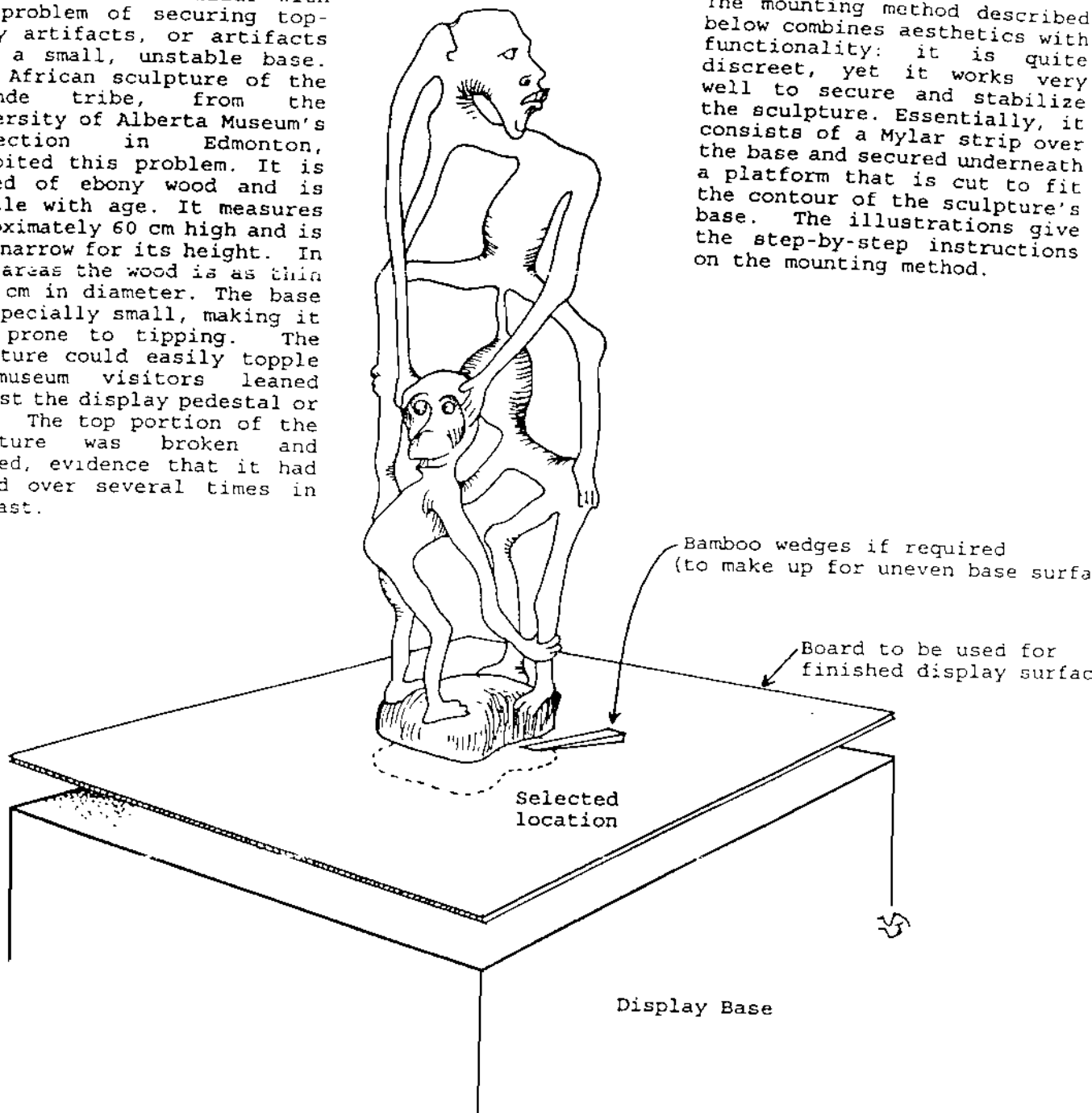


Illustration A

1. Trace the outline of the base of the sculpture onto the display board, i.e. matboard or polyfluted sheet (Coroplast, Corex). This board will be used in steps 10 and 11. Cut out the base outline hole. Trace this hole onto a matching piece of masonite which has been sealed with an acrylic varnish or shellac.
2. Cut masonite in half.
3. Pad the outline edge of the masonite using 3M double-sided tape and Nalgene (cross-linked polyethylene) foam. When installed, the masonite must fit the sculpture contours snugly.
4. Cut a thin Mylar retaining strip that will slip over the base of the sculpture and below the display platform.
5. Apply wide double-sided tape to underside of masonite halves in the line of the Mylar retaining strip. As an

- alternative to the double-sided tape, staple the tightened Mylar strip to the case surface in an area which will not be visible.
6. Screw down first half of masonite once the Mylar strip is attached.
7. Realign the second half of the masonite with the free end of the Mylar strip.
8. Pull Mylar strip tightly, slide over the double-sided tape and screw down the masonite. Trim excess Mylar.

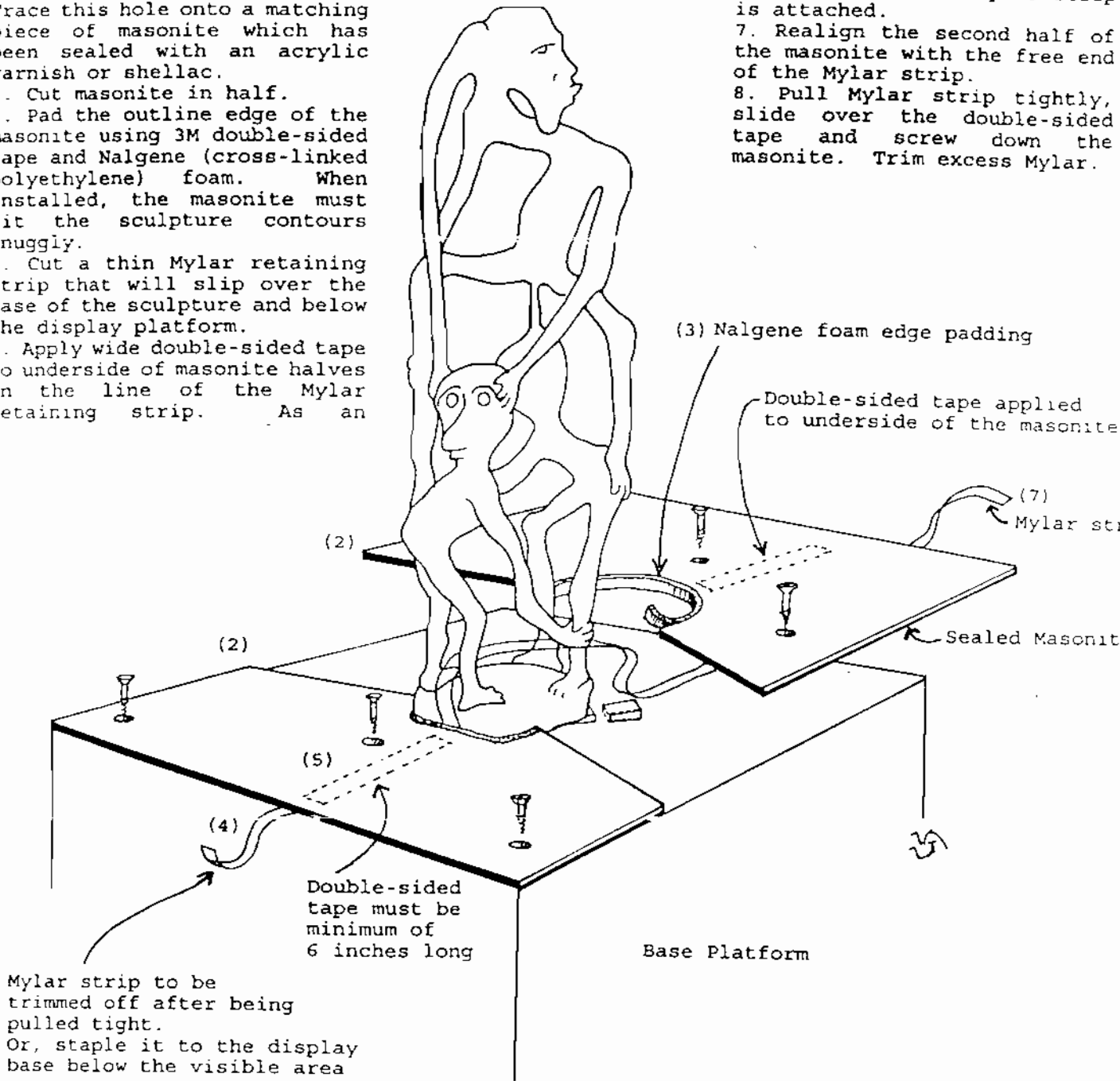


Illustration B

9. Take the display board marked in step 1 and cut the sculputre footprint hole 1 cm or more larger than the actual size.

10. Cover this board with display cloth if desired. Tuck the cloth over the edges and adhere with double-sided tape or hot-melt glue.

11. Lower the board over the sculpture. The footprint hole may have to be oversized to fit over the sculpture. If too much of the mount masonite is visible, it should be covered with another interlayer of display cloth, cut exactly to size and pulled down over the sculpture.

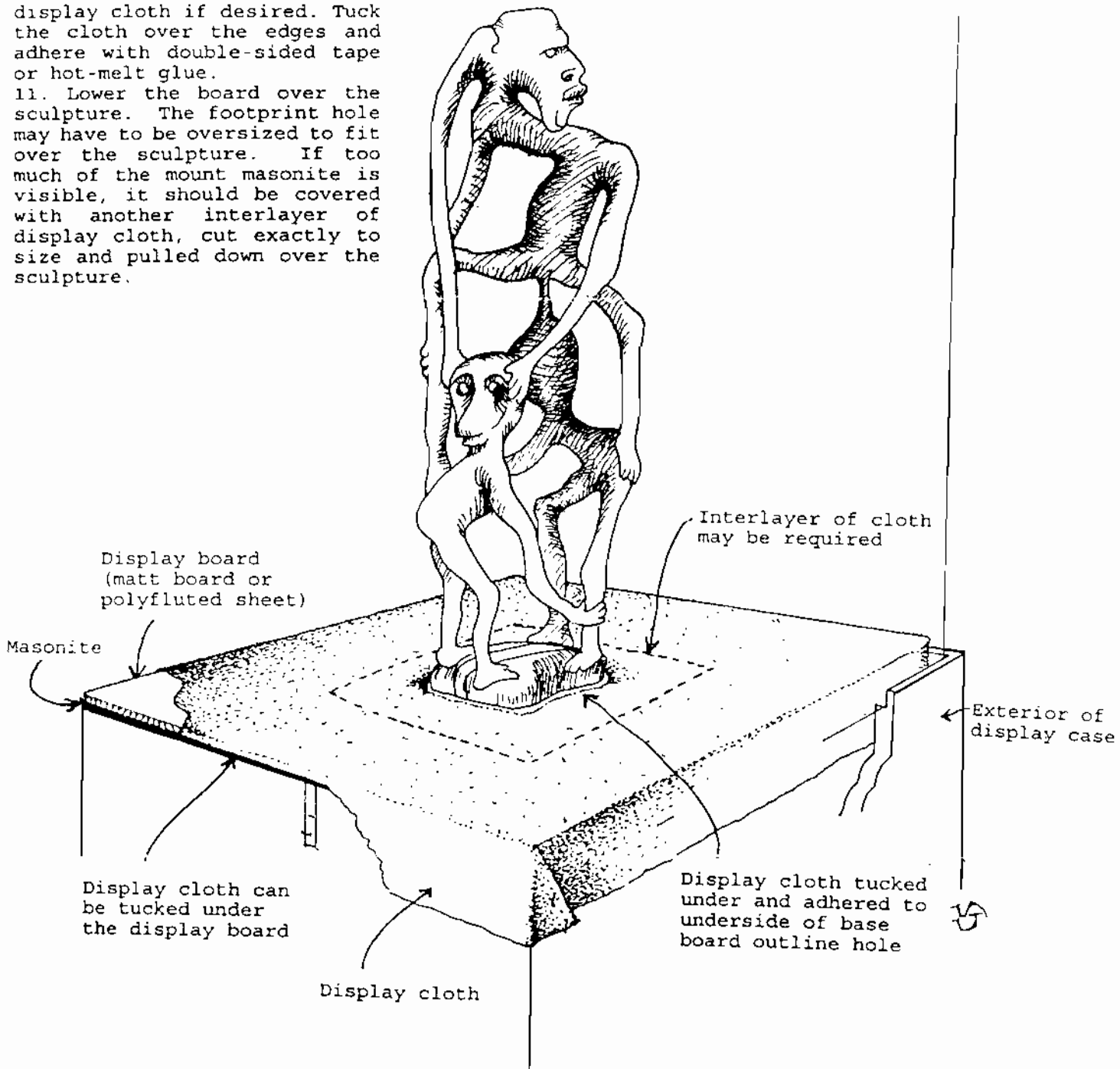


Illustration C

Carl Schlichting
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MATERIAL CULTURE

Editors' Note: We received no contributions for this column but the following are publications with information that may be useful to ethnographic conservators.

Tangible Visions: Northwest Coast Indian Shamanism and Its Art
by Allen Wardwell, 336 pages
ISBN: 1-885254-16-4
\$85 US (\$120 Canada; £60 UK)
The Monacelli Press
10 East 92nd Street
New York, NY 10128
Tele: 212 831-0226
Fax: 212 410-2059

The following summary has been excerpted from a press brochure. The 336-page study begins with a text that traces the origins of shamanism on the Northwest Pacific coast, describes the responsibilities of the practitioners, and discusses the iconography of the various items used in the performance of their rituals. This section is followed by an extensive catalog of the different carvings, and woven and painted costumes representing the spirit aids to the shamans. The text incorporates various shamans' firsthand descriptions as recorded by anthropologists, missionaries and other visitors in the nineteenth and early twentieth centuries. Five hundred objects are illustrated.

The Fine Art of California Indian Basketry
by Brian Bibby, 114 pages
ISBN: 0-930588-87-8
\$20 US
Heyday Books
Box 9145
Berkeley, CA 94709

This book is being published on the occasion of the exhibition *The Fine Art of California Indian Basketry* organized by the Crocker Art Museum, Sacramento, California. The catalog, with an introduction by guest curator Brian Bibby, has over sixty illustrations of baskets.

Commenting upon each basket are native basketweavers, California Indian artists in other media, and scholars.

Crowning Achievements: African Arts of Dressing the Head
by Mary Jo Arnoldi and Christine Mullen Kreamer, 192 pages
\$45 US hardcover, ISBN: 0-930741-42-0
\$27 US softcover, ISBN: 0-930741-43-9
Fowler Museum of Cultural History
UCLA
405 Hilgard
Los Angeles, CA 90024

This catalog has been published on the occasion of the exhibition *African Arts of Dressing the Head* curated by Mary Jo Arnoldi and Christine Mullen Kreamer. The exhibition has been organized and circulated by the UCLA Fowler Museum of Cultural History. The illustrated catalogue has extensive essays. From ancient Egypt to the present Africa, people have invested headwear and coiffures with heightened value. The nearly 200 hats, caps and crowns in this exhibition represent only a small sample of the headwear created and worn by African men and women. Whether reserved for ceremonial purposes or used on a daily basis, hats and hairstyles communicate important messages about modes of life and attitudes, values and beliefs that shape human experience.

Soft Cradles of the Central Plains
by Candace Greene
1992, *Plains Anthropologist: Journal of the Plains Anthropological Society* 37: 139:95-113.

This article addresses the use of the soft cradle as distinct from the cradleboard on the North American Central Plains in historic times. The soft cradle was commonly used primarily by the Cheyenne and Sioux. The characteristics of construction and decoration of cradles from these tribes are presented and their history and relationship to Arapaho interior frame cradles is also discussed. An

analysis of symbolism associated with soft cradles reveals that decorative elements gain meaning from their position on an object rather than from their specific form. Line drawings of component cradle parts and photographs are also included.

Other useful publications mentioned at the ICOM meeting include:

Journal of Material Culture
Sage Publications Ltd.
Bonhill St.
London EC2A 4PU
United Kingdom
Tele: 44-171-374-0645

This journal explores the relationship between artifacts and social relations. It is published three times per year.

Pima News
(quarterly newsletter of the Pacific Islands Museum Association)
available from:
Fiji Museum
Government Bldgs
Suva, Fiji
Tele: (679) 315-944
Fax: (679) 305-143

MUSEUM AND NATIVE PEOPLES
ISSUES

NO SUBMISSIONS

LABORATORY HIGHLIGHTS

A New Facility for Ethnography Conservation at The Royal Albert Memorial Museum

The Royal Albert Memorial Museum (RAMM), conceived in 1861 as a practical memorial to Prince Albert, Consort of Queen Victoria, was founded in 1868 in the cathedral city of Exeter, Devon, England. The Victorian Gothic buildings were raised by public subscription and originally housed an integrated Museum, Art Gallery, Library, Reading Room, and School of Art and School of Science, in recognition of Prince Albert's commitment to Education. The Library moved from the site in 1930, the School of Art is now part of the University of Plymouth (Exeter Campus), and the School of Science ultimately developed into Exeter University.

A 1995 survey of ethnography in the county of Devon defined ethnographic collections as those including "any man-made object originating from outside western Europe or western cultures. It therefore includes items from eastern Europe as well as the cultures of Asia, Africa, the Americas (north, central and south), the Pacific and Australia, but not the products of people of western European origin from these areas."¹

Devon has ethnography collections totalling about 20,000 items (exclusive of those in private hands); RAMM houses at least 15,000 of these. The seed for the RAMM ethnography collections was 399² items collected by the Devon and Exeter Institution between 1813 and 1825. The significance of the County's maritime tradition is exemplified at RAMM by material collected during the eighteenth century on the voyages of James Cook, George Vancouver and Captain Bligh (HMS Providence). Particular strengths of the collections are material from North America, Polynesia and northwest Nigeria. The RAMM ethnography collections are sixth in size in the United Kingdom ethnography collections of international

cultural significance. An example from the opening of RAMM collections is a mourner's dress from Tahiti, recent acquisitions include Uvol headdresses from New Britain.

Historically the ethnography section has been part of the Antiquities department but became a Curatorial department at the end of September 1996. This has been made possible by funding secured for the Ethnography Gallery Project through the RAMM Development Appeal. 73% of the Ethnography Gallery Project monies come from the National Lottery with the remaining 27% to be found locally. Major capital expenditures, such as quality exhibition cases, are being made in order to minimize future running costs.

Museum projects at RAMM are team led. The ethnography re-display team includes: the Museum Director, Ethnography Curator and trainee Assistant Curator, Antiquities Curator, Museum Designer, Museum Services Manager, and Ethnography Conservators. There will be an ethics sub-group which will be composed of the ethnography curators and a conservator. This group will examine developments in policy in the UK and overseas for guidelines concerning the storage, treatment, display, and interpretation of First Nation Peoples' material culture.

The conservation department was established in the early 1970's primarily as a services department for the local archaeological field unit with only a small percentage of the conservator's time being spent on the museum collections. Since 1990 the treatment emphasis for the conservation department shifted from archaeology to include the full collections from Antiquities, Natural History, and Fine and Decorative Arts. The ethnography re-display project has enabled the Keeper of Conservation to expand the conservation staff because the project budget includes four years of specialist conservator's time.

About £151,000 of the total monies

available to the re-display ethnography project has been used to outfit, equip, provide consumable materials, and staff a new conservation area. The project is expected to take four years (inclusive of one year project lead time to date). The re-worked galleries will open in a sequence beginning with Mediterranean Antiquities and Egypt, followed by The Americas and finally the remaining ethnography gallery in 1999.

The conservation facilities previously included a bench fitted space 7.5 m x 6 m equipped with microscopes, an x-ray machine, airbrasive unit and basic fume extraction. The department shares a freeze drier with the Natural History department. The expanded facilities have doubled the bench fitted space; the new space being dedicated to the ethnography re-display project. A reference library, an office/meetings space and an area of enclosed storage for objects awaiting treatment have also been developed.

About 90% of the ethnographic objects at RAMM are distorted either because of long term display or over crowding in storage. New capital equipment includes a humidity/temperature controlled room for the conditioning of organic objects. The temperature is adjustable within the range 15 degrees C - 30 degrees C and the humidity is adjustable from ambient to 90% RH. Encapsulation equipment has been acquired to improve study/storage access to some material. Acquisition of a vacuum suction table is also planned. In addition, conservation funds are allocated for equipment and materials for display mounts because the conservation department supervises construction and participates in design of mounts.

The conservation department has maintained a minimum intervention treatment policy since 1990. In the past the 'prize' objects in the ethnographic collections were subject to interventive treatments which, in several cases, are now causing serious problems to object stability. Some old treatments are irreversible but, where reversible, it is

usually in the interest of the object to carry out invasive treatments. It is believed that this does not in any way compromise the Exeter Museum's 'minimum intervention' policy.³

Lastly, RAMM has a commitment to conservation training. Conservation staff are actively supported by their employers in lecturing to students outside the museum. Inside the department self-funded work placements are possible for periods of eight weeks or up to one year. Some students will be assisting the ethnography re-display project. The department values its links with conservation courses at: The Institute of Archaeology, University of London; The University of Wales, Cardiff; The University of Durham; De Montfort University, Lincoln; and the Staatliche Akademie der Bildenden Künste (Academy of Fine Arts) Stuttgart, Germany.

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References

1. Poole, L., *Devon Ethnography Project Final Report*, July 1995.
2. Donisthorpe, G. T., *An Account of the Origin and Process of the Devon and Exeter Albert Memorial Museum*, Exeter and Plymouth Gazette, 1868.
3. Hopper Bishop, A., *Conservation Department Statement in RAMM Heritage Lottery Fund Application - Ethnography: 1995*

ARTICLES

Conservation of a Tibetan Mandala

In Newsletter No. 12, July 1993, we canvassed for information about the conservation of ephemeral sand pictures, our interest being a Buddhist sand mandala created by Tibetan monks in the Linden-Museum Stuttgart. This mandala, unlike most which are ritually destroyed at the conclusion of the associated ceremonies, was permitted by the Dalai Lama to be preserved and accessioned into the museum's collections.

None of us had had any experience conserving such an object. The ICOM newsletter therefore seemed an ideal vehicle for us to reach ethnographic conservators we normally would have no chance to contact.

We received two responses, one from CCI, Ottawa,¹ and one from Bremerhaven, Germany². The response from CCI concerned the actual conservation of a Tibetan sand mandala at the Minneapolis Institute of Arts. Upon inquiry, we learned that the treatment in Minneapolis was confidential, and had not been carried out by the Institute's conservators, but "by a team of corporate scientists who volunteered their time to the project".

Since then we learned of the existence of a second treated mandala at the Horniman Museum in London³. This mandala had been consolidated at the London Tibet Foundation prior to coming to the museum, and repeated requests from the Horniman Museum conservators for information regarding which consolidant had been used, proved fruitless.

With this background in mind, readers of the newsletter may find of interest the conservation of the Linden-Museum mandala, given the pioneering nature of the work.

Construction of the mandala

Until the team of monks unpacked their

materials in the museum gallery we had no idea what materials would be used or what the museum would need to provide. The organization bringing the monks from India to Germany could tell us nothing other than that they "would need yoghurt" (in fact it turned out to be milk they required).

The monks arrived with about 60 kg of sand and small, angular pebbles about 3-5 mm in diameter. The natural colour of the material was white, and the pebbles had been coloured red, blue, green and yellow while the sand came in a wider range of colours. Later analysis⁴ showed that the sand and pebbles were calcium sulphate (alabaster). No binding media was discernable in the paints and their adhesion to the alabaster seemed to rely on adsorption.

For a working surface the monks used a base board about 4 meters square. This was made by the museum carpenter and painted to match the display furniture in the gallery.

The six monks worked for six days, creating a mandala 150 cm in diameter and, in its centre, up to 8 cm high. To create raised areas the monks mixed uncoloured sand with ordinary milk into a paste which hardened into a matrix upon which coloured sand could be applied. The design itself was created by sprinkling the coloured sands from metal tubes, controlling the flow by tapping the tube with a small stick.

Conservation of the mandala

The fact that the mandala was constructed solely from alabaster did not influence its consolidation. Instead, the crucial factors were:

- a. size of pebbles
- b. size of interstices between pebbles
- c. thickness of sand layers
- d. combination of sand overlying pebbles

After testing a small range of consolidants (Paraloid B 72, Mowilith LDM 7410 and

Mowital B 30), we selected 3% Paraloid B 72 w/v in acetone. In order to penetrate the thick layers of sand (ca. 5mm), we had planned to apply the consolidant with a pipette. Tests, however, had shown that the delicate surface design would be washed away with the weight of the drops of the consolidant. Consequently, the surface had to be fixed before consolidation could be undertaken. The entire mandala was sprayed with the Paraloid B 72 solution; after which the sand substrate was consolidated using pipettes. Even this approach had unexpected problems.

Our tests had not shown any tendency for the colours to run, and the initial spraying of the surface confirmed this. However, the red and green coloured pebbles discoloured the adjacent sand when the consolidant was applied with the pipette. The green pebbles turned the sand yellow and the red pebbles turned the sand pink. The blue and yellow pebbles were unaffected by the consolidant.

A second difficulty was that, given the few points of contact between each pebble, the Paraloid consolidant had insufficient strength to bind the pebbles together. Increasing the solution concentration produced an unacceptable gloss to the pebbles, so another consolidant had to be found. Mowilith LDM 7410 diluted down to 10% of its stock solution provided necessary strength without adding gloss.

Looking back on the project it was at times an exasperating exercise despite the success of the treatment. Our frustration focussed first on an absence of any information about the materials used in making mandalas in the literature, from curators, or from the monks themselves. Second, circumstances imposed a tight treatment schedule. We really needed more time to consider the special problems the mandala posed. It had to be moved into storage four weeks after the monks left the museum. This timetable precluded proper research and materials analysis. Additionally, some time had to be devoted to designing and fabricating a protective

cover for the mandala to protect it from handling by museum visitors. Keen public interest caused the museum to reconsider its plan to put the mandala into storage and it still remains in the gallery where it was created.

Other sand pictures

The Horniman Museum mandala is reported to be made of sand to which pigments have been added. In Switzerland a mandala used and destroyed in 1991 consisted of variously coloured quartz sand.⁵ In addition, in 1993 in a Stuttgart gallery, a Mexican artist created a death picture which consisted of building supplier's sand which was shaped into a mandala-like circle some 3m in diameter and about 25cm high. On this surface he used unadulterated powdered pigments to delineate skulls and a woman's face.

We remain very interested in this special area of conservation. If anyone can add to what we have learned, we would be very happy to hear from them.

Irmela Hartung, Beate Muller and Sabine Weik
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References

1. pers. com., 13.1.94, Diana Dicus, Ethnology Laboratory, CCI, Canada.
2. pers. com., 29.9.93, Peer Hoffmann, Deutsches Schiffahrtsmuseum, Bremerhaven, Germany.
3. pers. com., 9.6.94, Louise Bacon, Keeper Conservation, The Horniman Museum and Gardens, London, UK.
4. Analysis by W. Schmitt, Conservation Chemist, Landesmuseum fur Arbeit und Technik, Mannheim, Germany, 6.1.95.
5. pers. com., Dr. Martin Brauen, Curator, Volkerkundemuseum Zurich, Switzerland

and EMPA Eidgenossische Materialprufung-und Forschungsanstalt, Zurich, Report No 134 432.

The Ethnographic Conservation Newsletter of the Working Group on Ethnographic Materials of the ICOM Committee for Conservation is available free of charge to those with a professional interest in the care and research of ethnological collections. It is published twice a year with a mailing in October and April

Authors are asked to submit articles in English only. A Guidelines for Authors is available from the address below or from your regional coordinator. We request that contributions be provided in a typed format - typed in standard typeface, on 8 1/2 by 11 white paper, one side only, and double-spaced. Electronic contributions via Internet will also be accepted, but submissions must be sent in an E-mail message in ASCII text format ONLY and not more than 80 characters wide.

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Please forward contributions to the newsletter through your regional coordinator. All submissions must be received two months before the mailing date for inclusion - by August 1 for the October mailing and by February 1 for the April mailing

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