ICOM COMMITTEE FOR CONSERVATION WORKING GROUP ON WET ORGANIC ARCHAEOLOGICAL MATERIALS NEWSLETTER NO. 25 NOVEMBER 1993

NEWS FROM THE COORDINATOR

I would like to start my term by thanking everyone for allowing me the opportunity of becoming the coordinator of our working group. As well, I would like to take this opportunity to thank Per Hoffmann, our outgoing coordinator who, I believe, has been an inspiration to all the members. I also believe one of the strengths of this group is that there is continuous growth in terms of research from around the world and the sharing of the information that comes from that research. As well, and perhaps more importantly, I think that as the years go by we are becoming friends, which again encourages the ease with which information is shared. For this, we also have to thank Per a great deal.

On a personal note I want to thank Per for all his support and encouragement over the past several years. It has meant a great deal to me. As I mentioned to him in Washington, D.C. he will certainly be a "hard act" to follow, however, I will certainly try and maintain the high standards which he, and previous coordinators of this group have achieved.

I would also like to take this opportunity to include part of a letter I wrote to Molly Horvath Carlson regarding our conference in Portland, Maine.

Dear Molly,

I wanted to write a note to you and your colleagues (both employees and volunteers) at the Spring Point Museum, regarding the Wet Organic Archaeological Materials Working Group Meeting that was recently hosted by your museum. Initially, I would like to say that it was a very professionally run conference, that is to say it seemed to go on without the proverbial "hitches", however, we all know in the "real world" for this to happen requires a great deal of time and planning from the organization committee. As well, the BBQ that was hosted by the museum, and run by volunteers was wonderful, and lots of fun also! It shows what a caring group of volunteers and employees that you have working for your museum.

On a personal note, Molly, I know that you have spent a great deal of your time and energy on the organization of the conference, and realize that it must have been terribly difficult not only dealing with the conference, but as well, with the uncertainty within the Museum. However, considering this, you should be even prouder of the job you have accomplished. In closing, I would just like to take this one last opportunity to say another thank you for all the members of the WOAM working group to all those who were involved in the organizing of the conference, both employees, and volunteers from the Spring Point Museum. Well done.

ICOM MEMBERSHIP

The proportion of people who are on the ICOM mailing lists to those who are actually members of ICOM, about (2:1) was discussed during the ICOM Committee for Conservation meeting in Washington, D.C. This is fast becoming a very important topic. Some of the recommendations made by the committee are that they will drop non-members from the ICOM mailing lists, increase registration fees for non-members at future meetings and finally, one that affects many of us, is the possibility of discussions taking place on limiting workshop working group membership to ICOM members.
Perhaps it is as good a time as any to become a member of ICOM!

RESEARCH PROJECTS

I have also enclosed the list of research projects and names of those who expressed interest in the projects when this was discussed during our business meeting in Portland, Maine. If anyone else is interested or has ideas for the various projects, they can contact those that are involved with the research. As well, if anyone is thinking of new research projects they can let me know and I will include them in the next Newsletter.

That is all for now and I hope everyone has a wonderful Christmas or Hanukkah, as well as a Happy New Year.

Tom Daley
Canadian Conservation Institute
1030 Innes Road
Ottawa, Ontario, K1A 0C8
CANADA

ICOM/WOAM, Maine - Conference Report

The 5th triennial conference of the ICOM Waterlogged Organic Archaeological Materials Working Group met in Portland, Maine from August 16th to 20th 1993. Hosted by Molly Horvath of the Spring Point Museum, South Portland, the conference attracted 54 delegates, representing over 15 different countries.

Delegates were made most welcome and comfortable at the Sonesta Hotel, where the conference was being held and where most delegates stayed. There was much to do and see in the city and its environs - a visit to the excavation of a site where parts of the skeleton of a woolly mammoth had recently been found; evening boat trips to watch the sun set over the islands in Casco Bay; an exhibition of paintings by the American painter Andrew Wyeth at Portland art gallery; and many excellent meals at local seafood restaurants.

Unlike previous WOAM conferences, the emphasis this

time was distinctly on the conservation of wood, other organic materials seldom getting a mention. Out of the 34 or so papers presented, there emerged a number of recurring themes: reports on new and spectacular finds, mainly boat projects; new treatments and alternatives to PEG waxes, especially sucrose; problems relating to long-term stability of treated wood, and reversal for re-treatment; research on and refinements to the PEG wax/freeze-drying technique, including a computer program to predict treatment duration; biocides and alternatives to their use; and a theme of increasing importance to conservators and archaeologists alike - the reburial of preserved wooden structures in situ, and the long-term protection of wet sites.

The first paper of the conference certainly set the scene. This was a description of the discovery, excavation, conservation and display of the Missouri paddle-steamboat 'Arabia' which sank in 1856 with a full cargo of goods and merchandise for sale up and down the river. The story of how this fascinating and highly successful project was conceived, financed and physically achieved was inspiring, and an object lesson to us all - especially as it was achieved without the direct involvement of trained archaeologists, conservators or museum professionals.

We were also introduced to the 'Snow Squall', the largest clipper to be built in Portland, Maine. She was rediscovered at Port Stanley in the Falkland Islands being used to support a jetty, along with a number of other hulks. The 30 ft. bow section was salvaged in one piece and returned to South Portland, where we were able to visit her on display at the Spring Point Museum, being sprayed with water in a makeshift shed. Although a beautiful piece of maritime history, she seemed to combine every conservation problem imaginable - including an outer protective sheathing of copper. Like the 'Arabia' project, the 'Snow Squall' is a 'community project', inspired by local enthusiasm and drive, and is a good example of what can be achieved on a slender budget and with the skilled and sympathetic management of a volunteer force. We became aware, though, that the final success of the project now depended on major funding and a higher level of specialist input. We wish the Spring Point Museum every success in finding the sponsorship that it needs to continue.

One of the key papers at the conference was that presented by workers at the National Museum of Denmark who, over the past few years, have been refining the theoretical aspects of wood impregnation and freeze-drying. Having re-worked much of the published data on the many factors controlling the successful stabilization of wood, and carried out a range of supporting tests themselves, they have succeeded in combining the relationship of all these factors together in several pages of arithmetical equations. The authors themselves admit that these equations are not exactly 'user friendly', and so have entered the lot into a computer programme, called 'Difwood'. This enables one to work out the rate of diffusion of any water -soluble impregnant into any piece of wood, allowing one at last to have some control over treatment time. Used in conjunction with the PEGCON programme devised by the Canadian Conservation Institute, the conservator now has the ability to 'model' all aspects of a treatment regime, in advance. The Danes have also produced a subsidiary computer programme called 'Frezwood', allowing one to similarly 'model' the optimum conditions for successful freeze-drying. This work is a major step forward in our understanding and control of treatments to provide the optimum results.

The use of sucrose (sugar) as an alternative to PEG waxes was reported in a number of papers, and the results of co-ordinated tests with sucrose on similar samples in several laboratories given. Despite the scepticism of some laboratories, it would now seem that sucrose treatment can produce high anti-shrink efficiencies in treating wood of varying degrees of degradation. The sucrose process is certainly much simpler and less costly to apply than PEG waxes, and does not require freeze-drying to remove remaining water. The hitherto unsurmountable problem of sucrose solution disinfection seems to have been overcome by the use of powerful isothiozolinone biocides which can be de-activated and rendered harmless by the addition of sodium metabisulphate prior to disposal. The same problem of the disposal of toxic waste solutions prompted trials with copper/silver ion generators in heated PEG wax solutions. The trials were reported to have been successful, and the system claimed to be very cost-effective as well as environmentally correct. There was also an interesting paper on the potential of gamma radiation for the disinfection of wet wood in store.

Other alternatives to PEG waxes reported included Breox 50W PAGs, which come in the same grades as PEG wax, but are less biodegradable and less hygroscopic, and seem to offer good penetration into little-degraded timbers. These advantages are unfortunately outweighed, perhaps, by their expense and difficulty in availability. Another, and totally new method for treating highly degraded and very fragile wooden items, is through dehydration using cellosolve and petroleum solvents, followed by impregnation with a wax or resin of your choice. Treated samples were available for inspection, and the results certainly appeared excellent, although the treatment is limited to small items owing to the hazards of heating organic solvents.

On the analytical front, a simple method for quantifying the comparative proportions of mixed PEG wax grades in wood core samples was described. This appeared to be a useful (and cheap) alternative to HPLC, dubbed by some delegates 'high-priced liquid chromatography'. A new piece of equipment for measuring the degree of degradation in wood was presented. Called the Sibert Drill, the long, narrow drill bit is allowed to penetrate the decayed wood under constant pressure. Variations in the speed of penetration are recorded directly onto a revolving paper chart giving a 'profile' of the interior of the wood, and from which approximate density determinations may be made. The instrument requires further development to make it suitable for use across the range of densities found in waterlogged wood.

The need to be able to monitor the water content in treated timbers was raised more than once during the proceedings, and there was a description of a simple technique requiring only two stainless steel probes and a resistance meter. The merits of simplicity appeared to be outweighed by the

difficulties of consistency and reproducibility, however.

Problems relating to the presence of iron salts in wet wood were a continuing theme, particularly in wood from a maritime environment. The damaging effects caused by the long-term oxidation of iron pyrites was dramatically demonstrated, the only practical method of control being, it seems, control of relative humidity to below 60% RH. We were also warned, in similarly dramatic fashion, of the importance of removing iron salts, in particular ferrous chloride, from marine wood prior to stabilization to prevent disruptive reactions taking place once the wood was treated.

The final theme to pick out from the range of papers was that concerning the reburial of wood structures in situ, and the protection and preservation of wetland sites. This issue is of immense importance to both archaeology and conservation, yet has received comparatively little attention in the literature. This is probably because of the enormity of the problem, involving as it does a whole range of environmental, climatic and land-use issues beyond the power of most people to do anything about. Two papers at the conference, however, bravely ventured into this area and set out some of the theoretical criteria for reburial and site preservation as well as giving some interesting examples of soil chemistry data collected from current site monitoring projects.

Some of the most interesting papers cannot be so conveniently pigeon-holed in themes. Amongst these were some updates on the development of new lab facilities, such as at Tromso and York; and others reporting the results of long-term wood treatment projects, such as house remains in Oslo, and Gallo-Roman barges in Yverdon. Several papers one could only class as 'blue sky' research, which included a paper on the development of a system to enable the natural freeze-drying of waterlogged wood, deliberately taken to Australian Antarctica for the purpose. A further paper reported on extensive bio-assays on wood treated in a variety of ways, using termites as the test organism. Although fascinating, the mass of data collected was curiously inconclusive, but did indicate that termites won't eat sugar!

In the Group business session at the conclusion of the conference, a vote of thanks was given to Molly Horvath for organising the conference so efficiently, and to Per Hoffmann for leading the Group so energetically through two terms of office as Co-ordinator. Tom Daley was also thanked for his work as retiring newsletter editor, and Cliff Cook accepted the position in his place. Tom Daley was elected Co-ordinator for the next three- year period, with Per Hoffmann, Lesley Dean, Cliff Cook, Rise Taylor and Jim Spriggs as Assistant Co-ordinators. The Conference Proceedings are to be edited by Per Hoffmann, and published from the Deutsches Schiffahtsmuseum, Germany. During the discussion period, a number of topics were identified which would form the focus for research over the next three-year period. These included: revision and updating of the PEGCON programme; the establishment of a database for information monitored from 'in situ' preservation sites; the results of large-scale sucrose treatments; and research into the conservation of bark, cork, and painted wood surfaces.

The continuing success of this ICOM Conservation Committee special interest group, and high level of attendance at this conference, shows that there is still much interest in and a continuing need for reliable and cost effective treatments for waterlogged wood. As time goes by, there seems to be an increasing awareness of the value of wood and wood structures, both as sources of information, and as museum display attractions. There is also an increasing awareness (amongst the profession, at any rate) of the diminution of the waterlogged archaeological resource through changing land use and over-exploitation, and the now desperate need to do something to arrest the destruction. We shall no doubt see many more papers on this topic at future ICOM/WOAM conferences. In the meantime, watch out for the publication of the proceedings of WOAM '93.

received from:
Jim Spriggs
York Archaeological Trust

PROPOSED RESEARCH TOPICS FOR THE NEXT THREE YEARS

1) THE TREATMENT OF WATERLOGGED WOOD WITH A PAINTED SURFACE

André Bergeron
Centre de Conservation du Québec
1825 rue Semple
Québec, G1N 4B7
CANADA

2) REASSESSMENT OF OLDER CONSERVATION TREATMENTS FOR WATERLOGGED WOOD

Betty L. Seifert
Chief Conservator
Jefferson Patterson Park and Museum
10515 Mackall Road
St. Leonard, MD 20685
USA

3) CONTINUE THE RESEARCH REGARDING THE AGEING OF PEG

David W. Grattan
Canadian Conservation Institute
1030 Innes Road
Ottawa, Ontario
K1A 0C8
CANADA

4) REVISION OF THE PEGCON PROGRAM

David W. Grattan
Canadian Conservation Institute
1030 Innes Road
Ottawa, Ontario
K1A 0C8
CANADA
and
Clifford Cook
Parks Canada

Historic Resource Conservation Branch
1550 Liverpool Court
Ottawa, Ontario
K1A 0H3
CANADA

5) CONTINUE WITH THE STUDY OF IN-SITU CONSERVATION AND THE MONITORING OF SITES. AS WELL, FORMING A DATA BASE OF ANY MONITORING OF SUCH ENVIRONMENTS THAT IS BEING DONE AROUND THE WORLD. DEVELOPMENT OF A MANUAL WHICH COULD DETERMINE ASSESSMENT OF THE BURIAL ENVIRONMENT AND THE STABILITY, IF REBURIAL IS DESIRED.

Chris Caple
University of Durham
Department of Archaeology
46 Saddler Street
Durham, DHI 3NU
ENGLAND
and
Michael Corfield
English Heritage
23 Savile Row
London, W1X 1AB
ENGLAND

6) INITIAL WORK HAS BEEN DONE ON THE CONSERVATION OF WATER-RESISTANT MATERIAL SUCH AS BARK, BASKETRY AND CORK. MORE RESEARCH ON THE CONSERVATION TREATMENTS OF THESE MATERIALS IS REQUIRED, PARTICULARLY CEDAR BARK.

Judith Logan and David W. Grattan
Canadian Conservation Institute
1030 Innes Road
Ottawa, Ontario
K1A 0C8
CANADA

7A) FURTHER RESEARCH INTO THE CELLOSOLVE DRYING OF WATERLOGGED MATERIALS.

Clifford Cook
Parks Canada
Historic Resource Conservation Branch
1550 Liverpool Court
Ottawa, Ontario
K1A 0H3
CANADA
and
Thomas Daley and Tara Grant
Canadian Conservation Institute
1030 Innes Road
Ottawa, Ontario
K1A-0C8
CANADA

7B) DEVELOPMENT OF OTHER SOLVENT DRYING METHODS WHICH ARE LESS DANGEROUS THAN CELLOSOLVE.

Poul Jensen
The National Museum of Denmark
Department of Conservation
Lyngby, DK 2800
DENMARK

7C) PARALLELS WITH THEO SKINNER'S WORK TRYING TO DETERMINE WATER CONTENT USING THE CELLOSOLVE METHOD. EXPERIMENTS WITH SOLVENT REPLACEMENT TO SEE WHAT THAT DOES TO SHRINKAGE.

Theodore Skinner
National Museums of Scotland
York Buildings, Queen Street
Edinburgh
SCOTLAND

8) FURTHER WORK IN THE STERILIZATION OF WET WOOD USING GAMMA-IRRADIATION AND ITS EFFECT ON CONSERVATION.

Quoc Khoi Tran
Atelier Regional De Conservation Nuclear
Grenoble Nuclear Research Center
P.O Box 85x
Grenoble , 38041
FRANCE
and
Stephen Pointing
University of Portsmouth
King Henry Building
Portsmouth, P0I 2DY
ENGLAND

9) COLLECT DATA ON THE BEHAVIOUR OF LARGE TIMBERS TREATED IN SUCROSE. ALSO, TO INVESTIGATE WHY FLAT OBJECTS ARE DEFORMING DURING DRYING AFTER SUCROSE TREATMENT.

Per Hoffmann
Deutsches Schiffahrtsmuseum
Van-Ronzelen-Strabe
27568 Bremerhaven
GERMANY
and
Poul Jensen
The National Museum of Denmark
Department of Conservation
Lyngby, DK 2800
DENMARK

10) REHYDRATION OF DRIED OUT WATER-LOGGED LEATHER. TO COLLECT MORE INFORMATION OF WORK DONE BY OTHERS IN THIS AREA.

Rise Taylor
Tromso Museum/ University of Tromso
Lars Thoringsvei 10
N-9006 Tromso,

NORWAY
and
Kristiana Strakvera
The National Museum of Denmark
Department of Conservation
Lyngby, DK 2800
DENMARK

11) TO STUDY THE REACTION OF INSECTS TO SUCROSE TREATED WOOD, IN PARTICULAR, ANTS.

Uwe Noldt
Federal Research Center for Forestry
Institute of Wood Biology and wood Protection
Leuschnerstr. 91
Hamburg, 21027
GERMANY

12) WORK ON THE FREEZE DRYING OF WATERLOGGED ARCHAEOLOGICAL MATERIAL WITHOUT ANY PRE-TREATMENT.

Lars-Uno Johansson
Conservation Institute of National Antiquities
Box 5405
Stockholm, S-11484
SWEDEN

13) IMPREGNATION RATES OF LARGE TIMBERS WITH PEG.

Ian Panther
York Archaeological Trust
Galmanhoe Lane
Marygate
York, Yorkshire, Y03 7DZ
ENGLAND

14) A STUDY OF SPONGY WOOD SAMPLES THAT HAVE BEEN TREATED WITH VARIOUS CONSERVATION METHODS.

Janet Hawley
Historical Museum of Basle
Steinenberg 4
Basle, 4051
SWITZERLAND
and
Clifford Cook
Parks Canada
Historic Resource Conservation Branch
1550 Liverpool Court
Ottawa, Ontario
K1A 0H3
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and
Thomas Daley
Canadian Conservation Institute
1030 Innes Road
Ottawa, Ontario
K1A 0C8
CANADA

CONFERENCES AND WORKSHOPS

SHA Conference on Historical and Underwater Archaeology

This meeting is hosted by the Department of Archaeology, Simon Fraser University and the Underwater Society of British Columbia. It will take place from January 5-9, 1994 at the Hotel Vancouver in Vancouver, British Columbia, Canada. Further information can be received from:
SHA '94 Registration
c/o Department of Archaeology
Simon Fraser University
Burnaby, British Columbia
Canada V5A 1S6

PLEASE NOTE
Judy Logan has been elected to the Advisory Council on Underwater Archaeology (ACUA) of the Society for Historical Archaeology (SHA). As the only conservator on the Council, she will address issues pertaining to the conservation and curation of artifacts from submerged sites as well as work towards establishing a conservation committee within the SHA. The SHA is one of the largest archaeology associations in North America, and addresses all aspects of research in the field of Historical Archaeology.

WOAM members who are members of the SHA/CUA, or those who have concerns regarding the conservation of artifacts from submerged sites, are invited to contact Judy. (Her complete address follows the note on Wet, Water-resistant Plant Materials)

WORLD ARCHAEOLOGICAL CONGRESS

This meeting will be held in New Delhi, India, on December 4-11, 1994. Sessions will address various archaeological themes. Special air fares are being arranged. Information about WAC3 can be obtained by writing to Dr. Makkhan Lai, World Archaeological Congress,PO Box 112, H.P.O., Aligarh - n202001 India.

WETLANDS: Nature Conservation and Archaeology
Principles, Problems & Practice

This is an international conference to be held at the University of Bristol with the support of English Heritage and English Nature. It is proposed that the conference proceedings will be published. All papers will be refereed and must be received by the conference organisers by May 1, 1994. Registrations and requests for information can be sent to Rosalind Ladd, Gifford & Partners, Carlton House, Ringwood Road, Woodlands, Southampton, SO4 2HT, England, Telephone 0703 813461, and Fax 0703 813462.

HIDDEN DIMENSIONS:
The Cultural Significance of Wetland Archaeology

An international conference on the cultural significance of wetland archaeology will take place in Vancouver, British Columbia, tentatively in late April or early May, 1995.

The conference will integrate management, interpretation, and research of wetland archaeology with First Nations concerns and objectives; discuss current international issues in wetland archaeology; publicize the precarious state of wetlands and their cultural resources; promote wetland management, site preservation, and object conservation; and advance the development of partnerships between indigenous peoples, archaeologists, and management agencies.
The program will feature scientific sessions, public forum sessions, and workshops, as well as social events and tours. For further information, contact:
Kathryn Bernick (program organizer) or Ann Stvenson (conference coordinator), UBC Museum of Anthropology, 6393 NW Marine Drive,Vancouver, British Columbia, Canada, V6T 1Z2, Telephone (604) 822-6530, Fax (604) 822-2974, and E-mail: stevenso@unixg.ubc.ca

The Challenge of Underwater Heritage
Protection v. Public Access

This colloquium aims to increase underwater heritage awareness. It will provide a forum to identify and debate measures in order to develop solutions for protecting the resource, while allowing for adequate public access and presentation. This event will take place on **February 25-27, 1994** at the Canadian Museum of Civilisation in Hull, Quebec, Canada. For further information or a registration package, contact Fred Gregory at (613)824-8330 (Voice or Fax)

TECHNICAL NOTES

Problems and Progress: The Adhesion of Waterlogged Wood Treated with PEG

This research was carried out at the Institute of Archaeology, London, for an undergraduate dissertation completed in 1992. Full copies can be obtained from the Institute.

Past Failures:
Treated objects exhibiting adhesive failure from both the Musuem of London and the Mary Rose Trust were examined to determine the reasons for the failure to join. In most cases a variety of factors were involved: the unreactive surface of the treated wood, environmental conditions and innate join stresses. One case however, highlighted the problem that a number of adhesives are not resistant to PEG, the glycol acting as a solvent. In this instance the adhesive, cellulose nitrate, had been softened by the migration of PEG into the join. FTIR analysis of the failed adhesive showed alterations in the spectrum due to interaction with the PEG used.

New adhesives:
Research indicated that adhesives making use of Van der Waals forces and hydrogen bonds with both the PEG and the wood might be most successful. Two silane coupling agents (an amino and an epoxy functional) used with Paraloid B-72 and sodium carboxy methyl cellulose (CMC) were tested. For comparison cellulose nitrate, Paraloid B-72 and Plamuur C (an epoxy resin recommended for use in this context) were also tested. Some research on the use of isocyanates was done but could not be tested.

Although the research is by no means complete, silane coupling agents may be useful to make joins on small objects. The use of silane coupling agents, particularly the amino functional, significantly improved the performance of the join without causing undue wood loss on failure. Results with CMC were also encouraging, but the adhesive would not be strong enough for use under stress. The epoxy resin, Plamuur C, was found to be excessively strong resulting in a great loss of wood on failure.

received from:
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31-4 Gordon Square,
London WC1H 0PY
Great Britain

Water-resistant Plant Materials

At the Portland Meeting, it was agreed that as part of the next three year research plan, WOAM would investigate the problems associated with the conservation of wet, water-resistant plant materials. Since I suggested this topic, Tom Daley asked me to coordinate the work over the next three years.

As an initial step, I would like WOAM members to send me information about their experiences with treating things like basketry, bark containers, floats, cork, etc. A description of the actual treatment as well as the results would be ideal, but even general observations would be useful at this stage.

At CCI, we have not treated a lot of water-resistant plant materials. To date, we have treated a small collection of basketry from the Lachane Site - a wet site on the coast of British Columbia - and several bark floats from arctic sites and cork artifacts from the 16th century Basque site at Red Bay, Labrador. With the exception of one basket and some basketry fragments, we used PEG followed by freeze drying (the exceptions had been treated with TEOS - with terrible results). Even after being treated with PEG, cork has consistently been a problem, as have the bark floats. Both types of material tend to break up or delaminate on drying and need to be treated with an adhesive, usually a PVA emulsion, to hold the objects together.

We have yet to compile all the data that will allow us to compare the results of the PEG treatments, but this has become a priority since we will be assisting with the conservation of basketry from another wet site in British Columbia. At the present time, we have 20 pieces of basketry and cordage from that site. We will be putting the objects through a room-temperature PEG treatment (PEG 400, then 3350, depending on the condition of the object), followed by freeze-drying. Prior to freeze-drying, Greg Young of CCI's Analytical Research Division, will take samples to see if it is possible to determine the extent

of PEG penetration in the cell walls. Malcolm Bilz of CCI's Conservation Process Research Division will be assisting us by modifying a small freeze-drier to try to control the conditions in the vacuum chamber, as suggested by Poul Jensen at the Portland conference. Since there has been some inconsistency in the results of freeze-drying bark artifacts from other sites on the West coast (Kathryn Bernick, University of British Columbia, Museum of Anthropology, personal communication), samples will be freeze-dried prior to putting the objects through the process.

Tara Grant, CCI's Archaeology and Textiles Division, will be the conservator responsible for the treatment of the basketry and cordage.

In the next Newsletter, CCI will report on the progress of these treatments. If there is sufficient response from WOAM members to my request for observations on treatments of water-resistant material, I will summarize the results.

Hope to hear from you - if not, expect nagging letters in your mail!

received from:
Judy Logan
Chief
Archaeology and Textiles Division
Canadian Conservation Institute
1030 Innes Road
Ottawa, Ont.
K1A 0C8

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FAX: (613) 998-4721
E-mail:
Judy=Logan%CS%CCI=HQ=ADMAH@Gateway.Banyan.DOC.Ca

Questionnaire about large impregnation systems for wood

1. Name, institution and address of person in charge of treatments.
2. Type of treatments - PEG 200, PEG 400, PEG 4000 or others. What is the final concentration (%w/v) and how many steps to get to that point. What is the temperature (°C).
3. Dimensions of the tank(s)
   -Length(m), width(m), height(m) and inside volume(m^3)
   -Tank construction including the exact type of materials, the quality, suppliers, cost and supplier
   -Thickness of tank wall
   -Protective coating - inside and outside of tank (type and trade name)
   -Tank insulation - type, thickness and cost
   -Problems encountered - corrosion, leaks, cracks, blistering, etc. and list location on tank, the extent of damage, after how long it occurred and how the problem was resolved
4. Heating the impregnation solution
   -Form of energy (gas, oil, electricity or other)
   -Type and trade name
   -Power in kilowatts
   -Temperature - max. allowed and normal working
   -Method of warming - elements in tank, waterjacket (type of pump and flow rates), other (eg: connected to central heat supply)
   -Heat distribution system (diameter of pipes, material of fabrication, protective coating, and type and thickness of insulation
   -Energy consumption (or average temperature of treatment room)
   -Temperature regulation equipment (type and manufacturer)
   -Price of heating
   -Problems encountered - type, after how long, and how it was resolved
5. Impregnant pumping system
   -Continuous or discontinuous
   -# of pumps, type, flow rate, trade name and price
   -Brief description of system or diagram
   -Pipes - diameter, material and joints to tank
   -Filtration - number of filters, type, quality of filtration, trade name, and cost
   -Problems encountered (Plugs, leaks, pump repairs)
6. PEG concentration increases
   -Rate (%w/v/day) planned and actual
   -Product addition - in solution, melted or solid
   -Continuous or discontinuous feed
   -Manual or automatic feed
   -Problems encountered
7. Evaporation - natural or forced (equipment used)
8. Wood storage in the tank
   -supports - description or sketches, disposable or reusable, cost and attachment to tank
   -maximum volume of wood in the tank and ratio to internal volume of tank
9. Improvements or changes made to the system after use
10. Potential for the treatment of external wood artifacts
    -type, price/m^3 of wood and estimated time of treatment

It would be much appreciated if those of you in the working group who use equipment of this scale could answer this survey. All replies should be sent to:
Albert Terfve
23 Av. St. Augustin
1190 Bruxelles
Belgique

FROM THE EDITOR

For your submissions to be placed in the next Newsletter please send them to your Regional Representative or to me by the end of March 1994. (The preferred format is in WordPerfect for DOS on a 3.5" disk)

Clifford Cook
Parks Canada
Historic Resource Conservation Branch
1550 Liverpool Court
Ottawa, Ontario
K1A 0H3 Canada
Telephone (613) 993-2125
Fax (613) 993-9796

FREE !

Proceedings of the ICOM Waterlogged Wood Working Group Conference, Ottawa 1981

In order to contribute to the dissemination of information on the conservation of waterlogged wood (and to reduce stocks), the ICOM-CC-Waterlogged Wood Working Group is offering this publication **free of charge** to anyone interested.

Edited by David W. Grattan
Special discussions edited by J. Cliff McCawley
Published by the ICOM-CC-WWWG, Ottawa 1982
Soft cover, 292 pages, ISBN 0-9691073-0-7

Order from:
Tom Daley, Canadian Conservation Institute,
1030 Innes Road, Ottawa, Ontario, Canada K1A 0C8, telephone: 613-998-3721, fax 613-998-4721.