

SAS Bulletin

Society for Archaeological Sciences

Volume 17

Number 3

July-Sept. 1994

SAS News

SAS Electronic Mailbox And Filestore: SAS-Net And SAS-Depot

As access to Internet has grown, it is now much easier for people inside cooperative networks like Bitnet to communicate and exchange information with colleagues around the world through electronic mail while incurring only trivial costs. In addition, the advent of FTP and Telnet now permit rapid and inexpensive movement of large bodies of data from one part of the world to the other. The Society administers two associated services for the benefit of members which take advantage of these developments.

1: Electronic Mailbox Network (SAS-Net)

This functions as a mail re-distribution service. For example, if you wish to make a general inquiry about some problem or aspect of your academic work which you think another SAS member may be able to help with, then write a short note and send it by e-mail to SAS-Net. Your note will be relayed to all other registered members, and one or more may respond directly to you, or, if there is general interest in the response, back to SAS-Net for wider distribution. It is also a suitable place to send notices such as advertisements for jobs relating to archaeological science, and engage in discussion on topics of mutual interest. There is no cost to register, but you must be a member of SAS.

2: Filestore Depot (SAS-Depot)

This is a place where you can leave material which you think other SAS members may be interested in gaining access to on an individual basis, such as major pieces of software (either code or binary files), databases, compilations such as bibliographies, regional ¹⁴C date lists, etc.

How Do These Services Work in Practice?

To contribute some item to SAS-Net, simply prepare a message in your computer, and send it to the SAS-Net

Manager who has the Internet address srgimus@grv.grace.cri.nz. The manager of the service checks incoming mail to see that it is suitable for re-distribution and then relays it to all registered members. Some points to notice: Firstly, people who are not members of SAS may send an item, and this may be distributed if the manager thinks that members would be interested, but it will contain a banner saying that it is from a non-member. This restriction is to try and keep junk-mail down to a minimum. Another way that junk mail is kept to a minimum in this service is by sending replies to any message directly to the person contributing an item, rather than back to SAS-Net. However, if you think the response is of wide interest, by all means send it to SAS-Net.

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SAS News

New SAS Logo

The new SAS logo is here. Its development was described in the last issue of the *SAS Bulletin*. Thanks again to Betsy Lawlor for her efforts in the actualization of this long-standing idea.

How or where in the *Bulletin* should the logo be displayed? The Editor is eager to here your suggestions about where this critter should be placed, how big it should be, etc. Your esthetic opinion on this matter is hereby solicited! □



News of Archaeometallurgy

Meetings

A number of archaeometallurgical conferences are being planned for 1995. In April there will be a meeting on early smelting to be held at the German Mining Museum in Bochum. For further information write Dr. Andreas Hauptmann at the Institut für Archäometallurgie, Deutsches Bergbau Museum, Lohrheidestrasse 57, D-4630 Bochum 6, Germany, tel. 49 23 27 3704.

In September 1995 the British Museum Department of Scientific Research and the Early Mines Research Group will sponsor a six-day conference on the Prehistory of Mining and Metallurgy from its inception to the publication of Agricola's *De Re Metallica* in 1556. The conference will run from Wednesday, September 14 through Monday, September 19. It will be divided in half, three days in London at the British Museum dealing with the topic worldwide, and three days on Bronze Age mining in Western Europe to be held in Bangor, North Wales. The venue there has not yet been decided, but site visits are being planned. If you might attend please assist the organisers in their planning by writing Dr. Paul Craddock, Department of Scientific Research, British Museum, London WC1B 3DG, England (telephone 44-71-323-8797), indicating whether you are interested in the London meeting, the Welsh meeting, and/or the site visits and also whether you would like transport from London to Wales, and on the field trips. Please include your address, telephone number and fax number.

A plan is being hatched to have another meeting in September 1995 in England. If enough interest is expressed there will be a meeting in Cornwall to discuss tin, and to visit the South Crofty Mine. This tin mine has been in operation since at least the sixteenth century. It is hoped that the meeting can be held in tandem with the annual conference of the Historical Metallurgy Society, whose place and dates are not yet set. If you are interested in the tin meeting, write Bryan Earl, Heathercliffe, Sennen, Penzance, Cornwall TR19 7AX, England; tel. and fax: 44-736-8971338.

The last water-powered grey iron foundry remaining in operation in the United States, the Historical Knight & Co., Ltd Foundry and Machine Shop, several times a year offers three-day hands-on workshops on casting iron. The foundry was established in 1873 at Sutter Creek, California, to supply the nearby gold mines. For information on the workshops write to Historic Knight and Co., Ltd, 81 Eureka Street, PO Box 158, Sutter Creek CA 95685, USA.

Publications

The proceedings of the International Symposium on Archaeometallurgy that was held in Bologna on October

18-21, 1988, *Archaeometallurgia, Ricerche e Prospettive*, has been published at last. This volume inspires a certain nostalgia since the lead paper is the late Ronald Tylecote's review of extraction metallurgy. The papers are in English or Italian; one is in German. It is edited by Elena Antonacci Sanpaolo and is published by the Cooperative Libreria Universitaria Editrice, Via Marsala 24, 40126 Bologna BO, Italy, tel. 39-51-22 07 36 or 22 47 80, fax 39-51-23 77 58. The price is ITL. 130,000, and payment may be made by international postal giro to account number 21716402 or by international money order.

The Archaeometallurgy column in the *JOM, the Journal of the Mining, Metals, and Materials Society* being conducted by Vincent Pigott presented "The thermomechanical processing of high-tin bronzes—an old practice in a South Indian village" by S.G.K. Pillau, R.M. Pillau, A.D. Damodaran, and T. R. Ramachandran in the March 1994 issue, pages 59-62. It includes many illustrations of the traditional hot forging of high (21%) tin bronze (an alloy used in gongs and cymbals) being conducted at present in a village of Kerala, India, for the making of food utensils.

Robert Shepherd has produced a sequel to his *Prehistoric Mining and Allied Industries*, published in 1980. The new volume is *Ancient Mining*, a history of the extractive industries from prehistory to the final years of the Roman Empire, and covers Western Europe and the Middle East with adjacent areas of Southwest Asia and North Africa. It was published in 1993 by Chapman and Hall (ISBN 1-85861-011-7) at £65 and can be ordered from their Direct Response Supervisor, Cheriton House, North Way, Andover, Hants, SP105BE, England, tel. 44-262-342830, fax 44-264-342761. They accept Visa, Access, Mastercard, American Express and Diners Club; there is no further charge in the United Kingdom with prepaid or credit card orders; otherwise there is a shipping charge of £3.50 surface mail or £9.50 airmail.

In 1992 Sandig reprinted Volume 1 of the 1891 Braunschweig edition of Ludwig Beck's *Die Geschichte des Eisens in technischer und kulturgeschichtlicher Beziehung*. This volume covers the early history of iron up to AD 1500 and runs to more than a thousand pages. The publisher's address is Sändig Reprint Verlag, Hans R. Wohlwend, Am Schrägen Weg 12, FL-9490 Vaduz, Liechtenstein. They will send a prospectus. The volume can also be ordered through Anton Siegel Fachbuchhandlung GmbH, Postfach 80 17 03, D-81617 München, Germany, fax 49-89-4704953. Telephone orders (089-47-52 43) are taken only within Germany; over-seas orders are invoiced.

Anton Siegal also stock *Montanarchäologie in Europa*, edited by Heiko Steuer and Ulrich Zimmermann and published in 1993 by Jan Thorbecke in Sigmaringen (ISBN 3-7995-7354-2). It is the proceedings volume of the inter-

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national colloquium "Frühe Erzgewinnung und Verhütung in Europa" that was held in Freiberg from the 4th to the 7th of October, 1990, and is Volume 4 in the series *Archäologie und Geschichte, Freiburger Forschungen zum ersten Jahrtausend in Südwestdeutschland*. Of the forty-two contributions, one is in French and three are in English: A short review of the evidence for Bronze Age mining in the British Isles by Paul Craddock (p. 37-56); mining and metallurgical activity in the Campiglia Marittima region (Tuscany) and the archaeological excavation at Rocca San Silvestro by Riccardo Francovich (p. 429-442); and early iron manufacture in Sweden by Gert Magnusson (p. 477-496).

The Mining History Association has announced publication of its first annual volume, which contains 14 papers and is edited by John Townley. Among the subjects considered are dredging in Alaska, medicine in the Gold Rush era, and Chinese hydraulic mining in the American West. The 1994 Annual (128 pages, illustrated) is US \$10.00 and includes membership in the Mining History Association. It can be ordered from the Association, PO Box 150300, Denver, CO 80215, USA.

Patrick R. McNaughton's book *The Mande Blacksmiths: Knowledge, Power, and Art in West Africa*, initially published in 1988, was reprinted in 1993 in paperback by the Indiana University Press, Bloomington and Indianapolis (ISBN 0-253-20798-3). Eight plates that were originally in color have been reprinted in black and white. The book is available from Lindsay Publications, Inc., PO Box 538, Bradley, IL 60915-0538, USA, tel. 815-935-5353, fax 815-935-5477. They accept Mastercard and Visa. The price is US \$14.95; in the US shipping is an additional \$0.75.

Eugenia Herbert's volume on copper in precolonial Africa, *Red Gold of Africa*, published in 1984, is being offered by Oxbow Books for US \$12.98, hardbound, plus \$3 for shipping. Order in the US from Oxbow Books, PO Box 5605, Bloomington IN 47407, tel. 812-331-0266, fax 812-331-0277; elsewhere from Oxbow Books, Park End Place, Oxford OX1 1HN. England, tel. 44-865-241249, fax 44-865-794449. They accept American Express, Visa and Mastercard.

If you have any archaeometallurgical news to share or comments to make, please write or call:

Martha Goodway, MRC 534, Smithsonian Institution, Washington DC 20560 USA; tel. 301-238-3733; fax 301-238-3709

SAS-Net (continued from p. 1)

To contribute something to *SAS-Depot*, use your FTP software to connect onto the node which is used for this purpose (grv.grace.cri.nz or 131.203.8.2) using the appropriate userid/password which is dump/dump, and then send the file you have prepared (software or datafile). You must include a short note with the file which gives your name and address, a brief description of what it is, and a statement that you either hold the copyright, or that it is shareware. The manager checks any file which turns up for viruses and then places it in the open SAS area, so that members may download the file if they wish.

To get something from *SAS-Depot*, use your FTP software to connect onto the node which is used for this purpose (grv.grace.cri.nz) using the appropriate userid/password which is anonymous/guest, and then change to the SAS sub-directory. This is accomplished with the command:

```
FTP> cd [.SAS] <return>
```

There is an index (00INDEX.TXT) you can browse through which contains a brief description of the files present. Any material of interest can be uplifted with appropriate FTP commands.

People unfamiliar with FTP should consult a local advisor; however the Manager of these SAS services will be able respond to most questions by sending an e-mail message requesting specific help.

Registration format

If you wish to be a member of *SAS-Net* and *SAS-Depot*, please send the following details to srgibfl@wnv.dsir.govt.nz and you will be added to the list. Note that you must be a member of the Society for Archaeological Sciences to register.

1. Name
2. Postal address
3. E-mail address
4. Does your site possess FTP software?
5. Keywords: (your range of interests in archaeological science)

The current list of files dumped by users into *SAS-Depot* is listed below. The identity of members depositing files is not always known, and some prefer to be anonymous. In almost all cases, however, when a master file is unzipped, a readme file will be found which contains useful information, including the e-mail address of the original user. Any enquiries about the files should be addressed to

this user. The 00INDEX.TXT file and the unzipped documentation usually contain references to literature and FTP nodes where further information can be found.

3DVIEW As the name implies, 3-dimensional viewing software with real-time rotations using a mouse. Very fast software.

ADOBFON Adobe font foundry software.

ALIASC14 List of email addresses for people professionally interested in ¹⁴C dating.

ANTI VIRUS SOFTWARE Some kind member of SAS regularly updates the archive with the latest copies of McAfee's Scan, Clean and VShield software.

ARCHIE A copy of the Archie Internet server listing service manual. This system lets a user query a database containing a list of files available on hosts connected to Internet. Software that's located with Archie can be obtained via anonymous FTP. Excellent resource for FTP explorers.

ASEASY5 Version 5.0 of AS-EASY-AS, which is considered to be amongst the best of the shareware spreadsheets. Mouse support.

CALIB Version 3.0 of Minze Stuiver and Paula Reimer's dendrochronological calibration program.

EARTHSCI Internet Resources for Earth Sciences, May 1992. Very useful information about earth science Internet resources, including BITNET discussion groups, Anonymous FTP sites, and more.

EFFIE Is a set of programs and procedures for solving common astronomical problems relating to ephemerides, coordinate conversions, and the calendar.

EZGRAPH3 Version 3.0 of EZGRAPH, a two-dimensional WYSIWYG scientific graphics for EGA/VGA. This is an excellent shareware scientific graphics program. A mouse is supported.

FTPLIST An extensive listing of anonymous FTP Internet sites.

GLE32C General purpose graphics package with utilities for surface, contouring, data entry and manipulation package, fitting surfaces to x, y, z data, surface generation from x, y equations. This is a PC version and will produce postscript output.

HH3 This is a shareware version of Hyper Helper 3.0, a very flexible hypertext development system. Links can be made within or between hypercard stacks or with other executable programs. Can be made memory-resident. Mouse support. Very useful for constructing TSR help files.

HYPERMET Automatic gamma ray spectrum reduc-

tion for Ge detectors.

INTERNET

Listing of library catalogs that are accessible through the Internet.

LIST

A premier ASCII file-viewing utility.

MVSP2

Multivariate statistical package version 2.0. The shareware version of a well-done multivariate statistical package. Included are several varieties of cluster analysis, correspondence analysis, principal components analysis, and principal coordinates analysis. Useful for the exploratory analysis of multivariate geochemical data sets. The package can produce reasonably good-looking dendrograms.

NEWPET

A multipurpose geochemical data analysis program. This package is of particular interest to petrologists, but also includes ternary and scatterplot plotting capabilities that are very handy in geochemical data exploration.

OBSIDIAN

An ASCII bibliography of over 2100 obsidian-related references plus a user shell and other associated files. Distributed by the International Association for Obsidian Studies (IAOS).

PERIODIC

A basic periodic table.

PKUNZIP

For unzipping files compressed into the ZIP format. Some of the files stored in SAS-Depot are stored in this format.

POOLC14

This is designed to take a series of ¹⁴C dates from one archaeological provenance, carry out secular correction, and then pool the probability distributions.

POPPER

The Popper's Razor algorithm for optimised Mahalanobis D2 analysis of trace element data for source determination.

SEDROSE

Produces rose diagrams for plotting directional data.

SYGRAF34

Southampton York archaeological simulation system.

TERN

Version 4.0 of a simple ternary-plotting utility.

TERNARY

This is a ternary plotting worksheet for Quattro Pro1 adapted from the Lotus 1-2-3 ternary worksheet. It can be used to produce publication-quality triangle plots.

TRIANGLE

A clever Lotus 1-2-3.WK1 worksheet that can be used to create ternary plots. □



INTERNET Network Resources of Interest to Anthropologists

The Internet and its resources (or its diversions) are becoming an increasingly important part of our professional (or personal) lives. Many of you, like me, may be on the ARCH-L listserver. Although much of what comes across there is useless to me, or perhaps to everyone, occasionally there is that nugget of information that proves highly useful in and of itself, or as a gateway to further information. Here is one such item that may prove useful. Thanks to Allen Lutins for his compilation and permission to include this piece.

From the Editor

Release: 5.13

Last Update: October 1994

Posted to: ANTHRO-L, ARCH-L, sci.anthropology,
sci.archaeology

Archived at:

Anonymous ftp: ftp.neosoft.com (pub/users/claird/
sci.anthropology/Anthropology_network_FAQ);
ftp.anatomy.su.oz.au (/danny/anthropology/net-faq);
lucy.ukc.ac.uk(/pub/Anthropology_network_
FAQ)

Gopher: ArchNet; Archaeology Information & Software

WWW: <http://lucy.ukc.ac.uk/afaq.html>;

<http://www.anatomy.su.oz.au>

This list is intended for those who already have a grasp of how to use such net tools as listserv, ftp, telnet, gopher, and World Wide Web. Feel free to contact me with corrections, updates and comments, but if you need further assistance in utilizing these resources, please see "Further Reading" at the end of this document. I don't have the space to thank everyone who's contributed so far, but I must acknowledge Peter Stott's "Internet Resources for Heritage Conservation, Historic Preservation and Archaeology" as a very useful resource (can be found via gopher at una.hh.lib.umich.edu/intdirs). Thanks also to all the wonderful people who maintain archives of this list!

BITNET and INTERNET Discussion Groups

AEGEANET — Pre-Classical Aegean World
apply to majordomo@acpub.duke.edu (message:
"subscribe aegeanet")

messages to: aegeanet@acpub.duke.edu

AIA-L — Archaeology & Technology
apply to listserv@cc.brynmawr.edu (moderated)

ANCIENT-L — History of Ancient Mediterranean
contact Jim Cocks (jacock01@ulkyvm.bitnet)

ANE — Ancient Near East
send message "subscribe ane" to majordomo@oi.uchicago.edu

ANSS-L — Discussion Forum for Information Specialists
in Anthropology, Sociology and Related Fields

apply to listserv@uci.edu

ANTHAP — Applied anthropology news, announcements,
jobs, etc. (open only to members of Society for Applied
Anthropology or National Association of Practicing
Anthropologists)

apply to anthap-request@oakland.bitnet (not a server)

ANTHRO-L — Anthropology
apply to listserv@ubvm.cc.buffalo.edu

ARCH-L — Archaeology
apply to listserv@tamvm1.tamu.edu

ARCH-THEORY — Archaeological theory in Europe
send message "join arch-theory (your-name)" to
mailbase@mailbase.ac.uk

(messages go to arch-theory@mailbase.ac.uk)

ARTIFACT — Material culture study/methods
apply to listserv@umdd.bitnet

ASAONET — Anthropology of Oceania
apply to listserv@uicvm.uic.edu or listserv@uicvm.bitnet

AZTLAN-L — Mesoamerican studies
apply to listserv@ulkyvm.louisville.edu

CBR-L — Craniofacial Biology Research
send message "SUBSCRIBE CBR-L" (without quotes)
to majordomo@po.cwru.edu

CROSS-L — Cross-Cultural Research in Information
contact Roberto Evaristo (evaristo@umnsom.bitnet)

DARWIN-L — Cultural Evolution
apply to listserv@iris.uncg.edu

DEVEL-L — Technology transfer in international
development
apply to listserv@auvm.bitnet

EAAN — East Asian Archaeology Network (early East
Asian Archaeology and History)
send message "subscribe eaan" (without quotes; also
without signature and subject line, if possible) to
lstsrvc@cat.sas.upenn.edu

ETHMUS-L — Ethnomusicology
apply to listserv@umdd.bitnet

ETHNET-L — Irish & British Ethnography
contact Mark Shutes (fr191601@ysub.ysu.edu) or Lee
Komito (ikomito@irlearn.ucd.ie)

ETHNO — Ethnomethodology / conversation analysis
apply to comserve@rpiacs.bitnet
messages to ethno@rpiacs.bitnet

ETHNOHIS — Ethnology and history
apply to listserv@hearn.bitnet

FOLKLORE — Folklore
apply to listserv@tamvm1.tamu.edu

HISTARCH — Historical Archaeology
apply to listserv@asuacad.bitnet or listserv@asvm.inre.asu.edu

HUMBIO-L — Human Biology
apply to humbio-request@acc.fau.edu

HUMEVO — Human Evolution
 apply to listeserv@gwuvvm.bitnet

INTERCUL — Intercultural communication
 apply to comserve@rpiecs.bitnet
 messages to intercul@rpiecs.bitnet

JWA — Journal of World Anthropology
 apply to listserv@ubvm.cc.buffalo.edu (back-issues available via buffalo gopher; see below)

LORE — Folklore
 apply to listserv@ndsuvml.bitnet

MAPC — Materialist Anthropology and the Production of Culture Workshop
 apply to listserv@utoronto.bitnet

MUSEUM-L — Museum issues
 apply to listserv@unmvma.unm.edu or listserv@unmmvm.bitnet

NAGPRA-L — Discussion of Native American Graves Protection and Repatriation Act
 apply to majordomo@world.std.com

NATIVE-L — Native Cultures
 contact Gary Trujillo (gst@gnosys.svle.ma.us)

PACARC-L — Pacific Rim archaeology
 apply to listserv@wsuvml.bitnet

PAN — Physical Anthropology News List
 apply to listserv@gwuvvm.bitnet

ROCK-ART — Petroglyphs, pictographs, etc.
 apply to listserv@asuvml.inre.asu.edu

SAS-net — Society for Archaeological Sciences (primarily for members)
 contact srgibfl@wnv.dsr.govt.nz

XCULT-X — Intercultural communication
 apply to listserv@umrvmb.bitnet

USENET Discussion Groups

Name	Topic
alt.native	Native American issues
rec.food.historic	ancient foods
sci.anthropology	anthropology
sci.anthropology.paleo	evolution of humans and other primates
sci.archaeology	archaeology
sci.archaeology.mesoamerica	archaeology of Mesoamerica
sci.lang	linguistics
soc.misc	miscellaneous social issues
soc.*	issues pertaining to culture area/country "*"

Programs and Files Via Anonymous Ftp

[ftp.cit.cornell.edu /pub/special/NativeProfs/usenet](ftp://cit.cornell.edu/pub/special/NativeProfs/usenet)
 Native American information

[ftp.halcyon.com /pub/FWDP](ftp://halcyon.com/pub/FWDP)
 Fourth World Documentation Project—Information on indigenous peoples

(also available via gopher and World Wide Web)

[ftp.neosoft.com /pub/users/claird/sci.anthropology](ftp://ftp.neosoft.com/pub/users/claird/sci.anthropology)
 Anthropology/archaeology information and software

[ftp.uu.net /pub/linguistics](ftp://ftp.uu.net/pub/linguistics)
 Linguistics archive: syllabi, handouts, fonts, lexica, software, papers, digests, more!

[ftp.u.washington.edu /public/calib](ftp://ftp.u.washington.edu/public/calib)
 Radiocarbon calibration program for IBMs

[grv.grace.cri.nz /Archaeometry](http://grv.grace.cri.nz/Archaeometry) and /sas
 Archaeology software and Society for Archaeological Sciences database; Use "cd [.SAS]"

[info.umd.edu /info/Government/US/Cesus-90](http://info.umd.edu/info/Government/US/Cesus-90)
 Census information

isdres.er.usgs.gov
 USGS maps

[jefferson.village.virginia.edu /pub/publications/med](http://jefferson.village.virginia.edu/pub/publications/med)
 Mayan Epigraphic Database Project (also available via gopher and WWW)

[joyce.cs.su.oz.au /danny/sci.anthropology.paleo](http://joyce.cs.su.oz.au/danny/sci.anthropology.paleo)
 Archives for the sci.anthropology.paleo newsgroup

lucy.ukc.ac.uk
 CSAC Ethnographics Gallery/Intermedia Library (also available via gopher, WAIS, WWW, etc; use same address (e.g., <http://lucy.ukc.ac.uk> for WWW)

[newton.newton.cam.ac.uk /pub/ancient](http://newton.newton.cam.ac.uk/pub/ancient)
 Egyptology resources (also available via World Wide Web)

[oakland.edu /pub/msdos/mapping](http://oakland.edu/pub/msdos/mapping)
 GIS software (OzGIS)

[rascal.ics.utexas.edu /misc/misc](http://rascal.ics.utexas.edu/misc/misc)
 State Dept. travel Advisories

[rtfm.mit.edu /pub/usenet-by-group/sci.anthropology/Shamanism-General_Overview](http://rtfm.mit.edu/pub/usenet-by-group/sci.anthropology/Shamanism-General_Overview)
 Shamanism-General Overview-Frequently Asked Questions (FAQ)

[seq1.loc.gov /pub/vatican.exhibit](http://seq1.loc.gov/pub/vatican.exhibit) & pub/deadsea.scrolls.exhibit
 On-line museum exhibits

[sparky2.esd.mun.ca /pub](http://sparky2.esd.mun.ca/pub)
 Geology software

[spectrum.xerox.com /pub/map](http://spectrum.xerox.com/pub/map)
 USGS maps, census data, etc.

[sumex-aim.stanford.edu /info-mac/info/nms](http://sumex-aim.stanford.edu/info-mac/info/nms)
 Anthropology Hypertext Book (Hypercard stack for Macintosh)

[ucsbuxa.ucsb.edu /hcf](http://ucsbuxa.ucsb.edu/hcf)
 "Computing & Humanities" archive

[ubvm.cc.buffalo.edu anthro-l](http://ubvm.cc.buffalo.edu/anthro-l)
 Worldwide Email Directory of Anthropologists (can also be searched via gopher)

[vela.acs.oakland.edu /pub/anthap](http://vela.acs.oakland.edu/pub/anthap)
 ANTHAP (Applied Anthropology Computer Network) archives

Gopher Servers

Acadame This Week (Chronicle of Higher Education; new

INTERNET Resources

- issue every Tuesday at noon; extensive digest, includes articles, listings of jobs, conferences, grants, etc.)
Server: chronicle.merit.edu
- ANTHAP (Applied Anthropology Computer Network) archives
Server: gopher.acs.oakland.edu; select 'Applied Anthropology Computer Network'
- Anthropology information
Server: toto.ycc.yale.edu 7000 select 'Archaeology Academics' from the phone book
Server: uniwa.uwa.edu.au; select 'Departmental', then 'people with a common interest'
- Archnet (Prehistoric archaeology of the Northeast)
Server: spirit.lib.uconn.edu (or use World Wide Web server)
- Bishop Museum (Access to nearly every museum that's on the Internet!)
Server: bishop.bishop.hawaii.org
- Buffalo server ("Worldwide E-mail directory of anthropologists" and back-issues of "Journal of World Anthropology"; both also available via ftp)
Server: wings.buffalo.edu. Select "Academic & Departmental Information," then "Academic Departments," then "Anthropology Department"
- Center for World Indigenous Studies/Fourth World Documentation Project
Server: fir.cic.net; select Politics; Fourth World (or use WWW server)
- Classics and Archaeology
Server: rome.classics.lsa.umich.edu (or use World Wide Web server)
- Georgia Anthro (inc. general southeastern anthropology, CRM, etc.)
Server: julian.dac.uga.edu
- Historical documents
Server: scilibx.ucsc.edu; select items 7 (The Library), then 3 (Electronic Books and Other Texts), then 19 (Historical Documents)
- Human Genome News
Server: gopher.gdb.org; select Genome Project; Human Genome News Library of Congress Machine-Assisted Realization of the Virtual Electronic Library
Server: marvel.loc.gov; or telnet to marvel.loc.gov and login as "marvel"
- Mayan Epigraphic Database Project (scheduled to open in September)
Server: jefferson.village.virginia.edu (or use ftp or WWW)
- Native American Issues and Culture
Server: absolut.gmu.edu
- Peabody Museum of Natural History (Yale University) collections data
Server: gopher.peabody.yale.edu
- Primate Information Net
Server: gopher.primite.wisc.edu
- Smithsonian Natural History Museum
Server: nmnh.si.edu
- UC-Berkeley Museum
Server: ucmp1.berkeley.edu
- USGS data & reports
Server: merlot.welch.jhu.edu; select the following menu choices from each succeeding menu: 13 (search/retrieve software), 8 (search/retrieve graphics), 3 (search all), then 2 (graphics software).
- World Heritage Gopher (Inst. for Global Communications/Int'l Council on Monuments & Sites)
Server: hpb.hwc.ca:7000/.icomos/wh (or use World Wide Web server)
- Worldwide E-mail directory of anthropologists — See "Buffalo Server" above

World Wide Web Servers

- Archaeological Field Work Opportunities
Server: http://durendal.cit.cornell.edu/TestPit.html
- Archnet (Prehistoric archaeology of the northeast)
Server: http://spirit.lib.uconn.edu/HTML/archnet.html (or use gopher server)
- Center for World Indigenous Studies/Fourth World Documentation Project
Server: ftp://ftp.halcyon.com/pub/FWDP/WWW/fwdp.html (or use gopher server or anonymous ftp)
- Classics and Mediterranean Archaeology
Server: http://rome.classics.lsa.umich.edu/welcome.html (or use gopher server)
- Egyptology Resources
Server: http://www.newton.cam.ac.uk/egypt (or use anonymous ftp)
- Human Genome Network
Server: http://www/gdb.org/hopkins.html
- Mayan Epigraphic Database Project
Server: http://jefferson.village.virginia.edu/med/medwww.html (or use ftp or gopher)
- Oriental Institute
Server: http://csmalab-www.uchicago.edu/OI/default.html
- Palynology/paleoecology
Server: http://life.anu.edu.au/landscape_ecology/pollen.html
- Southampton University Archaeology Department
Server: http://avebury.arch.soton.ac.uk/arch_top.html
- Theoretical Anthropology (Electronic Journal)
Server: http://www.univie.ac.at:8088/ethno
- UC-Berkeley Museum of Paleontology hypertext server
Server: http://ucmp1.berkeley.edu:80/welcome.html
- University of Michigan Papyrology Collection
Server: http://www.lib.umich.edu/pap/HomePage.html

World Heritage Materials (see World Heritage Gopher)
 Server: <http://hpb.hwc.ca:7002/world.heritage.html>;
<http://hpb.hwc.ca:7002/heritage.list.html>; etc.

Electronic Journals & Archives

Anthropology News Network

Makes anthropological perspectives on news and issues available to the public; contact Fred Skanes (fskanes@kean.ucs.mun.ca) for more information.

Coombspapers Data Bank

Electronic repository of social science & humanities research papers and documents; ftp to [coombs.anu.edu.au](ftp://coombs.anu.edu.au) & get file INDEX from directory 'coombs-papers' (available via Gopher as well).

World Systems Archive

Announcements, documents, data, biographical and publications information;
 ftp to [csf.colorado.edu](ftp://csf.colorado.edu) and connect to directory 'wsystems'.

Other Sources of Information/Software

HNSource (Central Information Server for Historians)

For list of gophers with Native American information, telnet to [history.cc.ukans.edu](telnet://history.cc.ukans.edu); login as history; select "Index of Resources," then "Resources organized by region," then "North America," then (almost at the bottom of the list) "Native American Gopher Sites."

National Archaeological Database

Telnet to [cast.uark.edu](telnet://cast.uark.edu); login as "nadb" (omit quotes; use lower-case only).

Further Reading

The Big Dummy's Guide to the Internet by Adam Gaffin. MIT Press, \$14.95. Not just for dummies! An excellent beginner's guide.

The Complete Idiot's Guide to the Internet by Peter Kent. Alpha Books, \$19.95. Another in the beginner's guide genre.

The Internet Companion, A Beginner's Guide To Global Networking by Tracy LaQuey with Jeanne C. Ryer. Addison-Wesley Publishing. Includes a detailed history of the Internet, a discussion on "netiquette" (network etiquette), and how to find resources on the net.

The Internet Yellow Pages by Harley Hahn & Rick Stout. Osborne McGraw-Hill, \$27.95. An excellent, comprehensive guide to Internet resources, highly recommended, and new for 1994!

Compiled by Allen H. Lutins, State University of New York at Albany, Department of Anthropology, Social Science 263, Albany, NY 12222, USA; e-mail: al2032@thor.albany.edu □

Announcements

Positions

Assistant Professor of Archaeology, Boston University

The Department of Archaeology at Boston University announces a new tenure-track position in archaeological science at the level of Assistant Professor, effective September 1, 1995. The ideal candidate will have a specialization in a field such as materials science, geoarchaeology, or paleoecology. A Ph.D. is required; demonstration of an active research program and successful teaching experience are desirable. The regional period/focus is open. Teaching assignments will include an introductory course in archaeological sciences, as well as graduate and undergraduate level courses in the area of specialization.

Applications/nominations and letters from three referees are due by January 15, 1995 and should be sent to: Professor James R. Wiseman, Chairman, Department of Archaeology, Boston University, 675 Commonwealth Avenue, Boston, MA 02215, USA.

Zooarchaeologist, Bishop Museum

Bishop Museum, Department of Anthropology invites applications for a full-time zooarchaeologist to process, analyze, and interpret bone and shell from previous, ongoing, and future Museum projects in Hawaii and the Pacific. Applicant will also be responsible for enlarging reference collections, database management, and training lab personnel.

Minimum requirements include a Ph.D. in Anthropology or related field, experience with zooarchaeological techniques (sampling, identification, quantification, and report writing), and a demonstrated publication record. Additional requirements include a creative, problem-oriented approach to faunal remains and an interest in methodological issues. Desired geographical focus Pacific Basin or other coastal region. Preference given to candidates with prehistoric and historic experience. Essential personal skills include communication, cooperation, and willingness to work with lay community. Competitive salary, benefits, and retirement plan.

Submit cover letter, vita, and names of three references by November 30, 1994 to: Bishop Museum, Personnel Department, PO Box 19000A, Honolulu, HI 96817, USA.

Southwestern Archaeologist, University of Colorado

The Department of Anthropology, University of Colorado, Boulder, seeks a Southwestern Archaeologist for a tenure-track position beginning Fall, 1995. Although we encourage all qualified people to apply, we are especially interested in someone whose work focuses upon spatial analysis, human ecology, and/or ethnoarchaeology. Applicants should be engaged in field research and be

Announcements

willing to conduct a field school on a rotating basis. Preference will be given to candidates whose general interests and expertise will strengthen one or more of the Department's three foci: Ethnology and Cultural Theory, Human Ecology, and Applied Anthropology. Applicants must have proven excellence in both research and teaching. Preference will be given to candidates at the beginning Assistant Professor level, but candidates of all levels will be considered.

The University of Colorado at Boulder has a strong institutional commitment to the principal of diversity. In that spirit, we are particularly interested in receiving applications from a broad spectrum of people, including women, members of ethnic minorities, disabled individuals, veterans, and veterans of the Vietnam era. Applications should include a letter from the candidates, a curriculum vitae, and names and addresses of four references. The deadline for receipt of applications is January 15, 1995. Send applications to: Barbara Voorhies, Chair, Search Committee, Department of Anthropology, Campus Box 233, University of Colorado, Boulder, CO 80309-0233, USA.

Geoarchaeologist, Washington State University

Washington State University, Department of Anthropology, invites applications for a tenure-track position in archaeology at the assistant professor level to begin August 1995. Requirements: Ph.D. by June 1995; specialty in geoarchaeology; demonstrated record of excellence in research and teaching; ability to teach archaeological stratigraphy, introduction to anthropology, and undergraduate and graduate courses in archaeology. Expected to involve graduate students in research projects and to sustain collaborative research with other faculty. Preferred additional specializations: geochronology, materials analysis, or paleoenvironments. Normal teaching load two courses/semester. Submit statement of current and long-term research interests, curriculum vitae, and list of 3-4 references (including phone numbers and e-mail addresses) by January 14, 1995 to Timothy A. Kohler, Chair, Archaeology Search Committee, Department of Anthropology, Washington State University, Pullman, WA 99164-4910, USA. WSU is an Equal Opportunity/Affirmative Action educator and employer. Members of ethnic minorities, women, Vietnam-era or disabled veterans, persons of disability and/or persons of the ages of 40 or over are encouraged to apply.

Fellowships

Geoarchaeology, ASOCS Wiener Laboratory

Applications are invited for a one-year Fellowship at

the Wiener Laboratory of the American School of Classical Studies at Athens for research on a geoarchaeological topic in Greece. The general areas of study include quarried stone, lithics, building materials, ceramics (domestic, architectural or industrial), soil and sediment studies, and the project should focus on addressing significant archaeological questions. Applicants should have in mind a specific piece of research which could be undertaken within the given time in the laboratory, or in collaboration with local research institutions with enhanced analytical capabilities. In addition to the research, the Fellow will be expected to contribute to the Lab's permanent collections of lithic, ceramic and building materials, contribute to the daily running of the Lab, to assist with queries from excavators, offer a lecture on the work undertaken while at the Lab, to participate in one School trip, and to contribute to seminars on aspects of archaeological science as part of the School's annual curriculum.

Larry Angel Fellowship in Human Skeletal Studies, ASOCS Wiener Laboratory,

Applications are invited for a one-year Fellowship at the Wiener Laboratory of the American School of Classical Studies at Athens to study human skeletal remains from archaeological contexts in Greece. Applicants should have in mind a specific piece of research which could be undertaken within the given time in the laboratory, or in collaboration with local research institutions with enhanced analytical capabilities. In addition to the research, the Fellow will be expected to contribute to the development of the Lab, to assist with queries for excavators, to offer a lecture on the work undertaken while at the Lab, to participate in one School trip, and to contribute to seminars on aspects of archaeological science as part of the School's annual curriculum.

Faunal Studies, ASOCS Wiener Laboratory

Applications are invited for a one-year Fellowship at the Wiener Laboratory to study faunal remains from archaeological contexts in Greece. Applications should have in mind a specific piece of research which could be undertaken within the given time in the laboratory, or in collaboration with local research institutions with enhanced analytical capabilities. In addition to the research, the Fellow will be expected to place a high priority on developing the Lab's comparative collection, contribute to the daily running of the Lab, to assist with queries from excavators, offer a lecture on the work undertaken while at the Lab, to participate in one School trip, and to contribute to seminars on aspects of archaeological science as part of the School's annual curriculum.

For all the above Wiener Laboratory fellowships:

The Fellowships are open to those working on a doctoral dissertation, as well as to senior scholars with a stipend of approximately \$13,000 to \$25,000 depending on seniority and experience in their field, and may be extended or renewed upon appropriate applications.

The appointments will be for one academic year, beginning September 15, 1995. Letters of application, along with a curriculum vitae, a project description of not more than two pages, a list of relevant courses taken or taught, and two letters of reference should be sent to Dr. Sarah J. Vaughan, Director, The Wiener Laboratory, The American School of Classical Studies, 54 Souidias, Athens GR106-76, Greece (tel. 30-1-723-6313 ext. 35, or fax 30-1-725-0584). The deadline for applications is March 5, 1995.

NEH Fellowship in Classical and Byzantine Studies

American School of Classical Studies at Athens. Awarded to post-doctoral scholars from assistant to full professor, who are U.S. citizens or current U.S. residents. Maximum stipend per year is \$30,000. Applicant must submit a project description up to five pages showing the need to the use the School, a full curriculum vitae, and three supporting letters from qualified scholars. Send applications to: NEH Selection Committee, ASCSA, 993 Lenox Drive, Suite 101, Lawrenceville, NJ 08648. For information e-mail 73061,2506@compuserve.com or tel. 609-844-7577. Deadline: 15 Nov. 1994.

Samuel H. Kress Joint Athens-Jerusalem Fellowship

American School of Classical Studies at Athens and the W. F. Albright Institute of Archaeological Research, Jerusalem (AIAR), awarded to a Ph.D. candidate in art history, architecture, archaeology, or classical studies, who is a U.S. citizen. Half of ten-month period (exclusive of summers) to be spent at each institution. \$5,500 stipend plus fees, room, and partial board. For information and application, e-mail 73061,2506@compuserve.com or tel. 609-844-7577. Deadline: 15 Nov. 1994.

Advanced multi-country research, CAORC

The Council of American Overseas Research Centers (CAORC) announces a fellowship program for 1995-1996 that will support advanced regional research in countries in the Near and Middle East and South Asia. The program is funded (subject to receipt of funds) by the United States Information Agency through the Near and Middle East Research and Training Act.

CAORC will administer the program in concert with constituent members including the American Institute for Maghreb Studies; the American Research Center in Egypt; the W.F. Albright Institute in Jerusalem; the American Center of Oriental Research in Amman; the American Research Institute in Turkey; the American Institute for Yemeni Studies; the American Institute of Iranian Studies; the American Institute of Indian Studies; the American

Institute of Pakistan Studies; and the American Institute of Bangladesh Studies.

It is anticipated that twelve awards of up to \$6,000 each, with an additional \$3,000 for travel, will be given to scholars who wish to carry out research on broad questions of multi-country significance in the fields of humanities, social sciences, and related natural sciences. Scholars may carry out research in countries that host overseas research centers: Tunisia, Morocco, Egypt, Jordan, Turkey, Israel, Yemen, India, Pakistan, and Bangladesh, as well as in other countries in North Africa, the Middle East, and South Asia, unless subject to official security and/or travel restrictions or warnings. These additional countries currently eligible include Mauritania, Saudi Arabia, Syria, Kuwait, United Arab Emirates, Bahrain, Oman, Qatar, Sri Lanka, and Nepal. Please contact CAORC concerning the status of West Bank and Gaza, Algeria, Libya, Lebanon, Iraq, and Iran.

Doctoral candidates and established scholars with US citizenship are eligible to apply as individuals or in teams. Preference will be given to candidates examining comparative and/or cross-regional questions requiring research in two or more countries.

Scholars wishing application material should contact in writing: The Council of American Overseas Research Centers (CAORC), Smithsonian Institution, IC 3123 MRC 705, Washington, DC 20560, USA. The deadline for reception of all application materials is January 1, 1995.

American Research Institute in Turkey

The American Research Institute in Turkey will offer a number of fellowships for research in Turkey for the academic year 1995-1996. Increased doctoral and post-doctoral fellowships will be available in a range of tenures (two to twelve months) and amounts. Scholars and advanced graduate students engaged in research on ancient, medieval or modern times in Turkey, in any field of the humanities and social sciences are eligible. Applicants are expected to be affiliates of educational institutions in the United States or Canada. Research permission is required by the Turkish government. Application deadline: November 15, 1994. The fellowship program of the American Research Institute in Turkey is supported in part by a grant from the United States Information Agency. For further information and application materials contact: American Research Institute in Turkey, c/o University of Pennsylvania Museum, 33rd and Spruce Streets, Philadelphia, PA 19104-6324, USA; telephone (215) 898-3474.

Educational Programs*Analytical Chemistry in Conservation Science, University of London*

The Department of Chemistry at Birkbeck College is offering a new taught MSc in Analytical Chemistry in Conservation Science. The new course presents a unique

opportunity to study the application of scientific techniques to the analysis and conservation treatment of cultural objects. Emphasis will be placed on the effects of environmental degradation and understanding the mechanisms of change and the effects of conservation treatment. It will also provide the opportunity of familiarisation with the latest developments in analytical techniques and their applicability to these complex systems. In addition to the analytical component, emphasis is placed on the materials science and polymer chemistry aspects of conservation and the application of thermoanalytical and spectroscopic techniques. The course involves a research project (approximately 25% of the course) which will be carried out in collaboration with the Institute of Archaeology, or the Courtauld Institute of Art, or, possibly, the Conservation Department of the British Museum. Further information from: Departmental Office, Department of Chemistry, Birkbeck College, 29 Gordon House, London WCIH 0PP, UK; tel: 44-71-380 7466; fax: 44-71-380-7464.

Submitted by Marianne Odlyha, to the Science-Based Archaeology Newsletter, #7, February 1994.

Postgraduate study in Archaeological Sciences, University of Bradford

A brochure and other documentation on postgraduate study in The Department of Archaeological Sciences at the University of Bradford is available from: The Postgraduate Admissions Secretary, Department of Archaeological Sciences, University of Bradford, Richmond Road, Bradford, West Yorkshire BD7 1DP, United Kingdom; tel 44-274-383532; fax 44-274-385190.

Department of Archaeology, University of Edinburgh, Environmental Archaeology

This new four-year Bachelor of Science Single Honours degree is intended to provide a fully integrated approach to the study of past human environments. In the first two years students acquire basic knowledge in archaeology, geography, geomorphology, geology, and the multi-disciplinary skills involved in environmental reconstruction. In the junior and senior honours years students choose from paleoecology, paleoeconomy, and environmental history. The degree places emphasis on practical laboratory work and fieldwork, culminating in the preparation of a research dissertation. Further details may be obtained from the course coordinator, Geriant Coles, Department of Archaeology, University of Edinburgh, 19 George Square, Edinburgh EH8 9JZ; tel 44-31-650-4143.

Funding

British Academy Fund, Applied Science in Archaeology

The Fund for Applied Science in Archaeology (FASA)

provides support for research involving the application of established techniques by paying for the work of an identified specialist or for the services of existing analytical facilities (such as the Oxford Radiocarbon Accelerator Unit and the Sheffield Environmental Facility). It is open to all archaeologists, archaeological scientists and archaeological conservators resident in the UK, and provides grants up to a maximum of £5000. The closing date is 31 December each year. Further information can be obtained from Miss J.A. Leitch, Assistant Secretary (Research Grants), British Academy, 20-21 Cornwall Terrace, London NW1 4QP, United Kingdom; tel: 44-71-487 5966, or from the Science-Based Archaeology Co-ordinator for FASA. This fund is *not* intended to provide normal site post-excavation costs. *From the Science-Based Archaeology Newsletter, #7, February 1994.*

Transfer Of Science-Based Archaeology To NERC

Following the publication of the British Government's White Paper, "*Realising our Potential: A Strategy for Science*," in May 1993, the Office of Science and Technology set up a Boundary Commission to examine the scientific remits of the new research councils from 1 April 1994. The Chancellor of the Duchy of Lancaster accepted the Commission's recommendation that the Natural Environment Research Council (NERC) should be given responsibility for science-based archaeology.

The SERC (Science and Engineering Research Council) and NERC have agreed the overall terms of the transfer, which includes the necessary budget for the programme's existing and planned commitments, including research grants, studentships, fellowships, and support activities such as co-ordination, newsletters and community meetings. The members of the SERC Science-Based Archaeology Committee (SBAC) secretariat are not transferring, although the transfer makes financial provision for secretariat staff within NERC.

SERC has processed all applications submitted to SBAC for the 1 October 1993 closing date, and for existing MSC courses and CASE project applications for studentships commencing in 1994. NERC will assume responsibility for all subsequent applications for grants, studentships and fellowships. The Research Councils are issuing letters to HEIs which set out advice to future applicants in all areas being transferred. In the case of grant applications in science-based archaeology the next closing date will be the Standard NERC closing date of 1 July. Recognising that this slippage may cause difficulties in respect of staff in post and of losing opportunities for field work, NERC will be willing to consider other arrangements in exceptional circumstances. The appropriate studentship and fellowship closing dates are expected to be 15 November and 15 December 1994 respectively. The community should keep abreast of the general notes NERC circulates to HEI's on these matters.

Announcements (continued on p. 15)

Laboratory Profile

SLOWPOKE Reactor Facility, University of Toronto

Over the past 23 years, archaeometric research at SLOWPOKE-Toronto has been based primarily on instrumental neutron activation analysis (INAA) of a wide range of materials. The stable neutron fluxes and ease of operation of the SLOWPOKE reactor and associated equipment make SLOWPOKE quite user-friendly, a sort of low-tech high-tech.

SLOWPOKE-based research projects have united chemists, physicists, anthropologists, archaeologists, materials scientists, and mathematicians who otherwise might never have interacted. Over the years, primary workers (those who actually did the analytical work) have ranged from undergraduate students through graduate students and postdoctoral fellows, to visiting scientists and academics. For two decades, researchers paid only for materials used, but in current belt-tightening times, partial user fees are now charged to all but the most impoverished of researchers. Archaeometric researchers and research projects tend to be funded by those involved and so are financially separated from the overall operation of SLOWPOKE-Toronto. In some cases, fee-for-service work is conducted by one of the two SLOWPOKE staff members.

Archaeometry at SLOWPOKE-Toronto began in 1972 with a study of northwestern Iranian Neolithic pottery. This was a joint study with U.M. Franklin of the Department of Metallurgy and Materials Science at the University of Toronto and T.C. Young of the West Asian Department of the Royal Ontario Museum. It was found that the low neutron fluxes available at SLOWPOKE ($1.0-10.0 \times 10^{11}$ neutrons per cm^2 per second) allowed us to analyze quickly and safely for the elements that produce short-lived radioisotopes as well as for the elements routinely analyzed by other laboratories using conventionally-sized research nuclear reactors, which are 50-200 times more powerful than SLOWPOKE. The elements that produce short-lived radioisotopes are interesting interpretively in that they include four of the major elements (Al, Ca, Mg, and Ti) that are best measured by X-ray fluorescence but that are not usually measurable by long-lived radioisotope INAA.

There is at SLOWPOKE now a broad cross section of both ongoing and completed projects. Many of these projects have deal with ceramics and lithics from many parts of the world (e.g., North America, Europe, Africa, and West Asia) and keep a number of junior and senior researchers busy.

The chemical analyses of galenas have provided evidence complementary to lead isotope measurements for the sourcing of the samples analyzed. Several ongoing projects are concerned with the chemical separation of

archaeological copper-based metals: native (geological) copper, European trade copper, and brass.

Recent work on the measurement of trace elements in modern and archaeological shells from the Pacific Ocean has shown that the intra-shell variability of trace element contents is often as large as the inter-shell variability. This suggests that shells may fall into the same environmentally-affected category as archaeological bone, for which previous work appeared to show that over-optimistic interpretations of unsophisticated archaeological bone analyses should be treated with some skepticism.

One expanding, low-budget project is the analysis of blue glass trade beads. Several years of work indicate that visually similar turquoise blue glass beads made from the late sixteenth through to the early twentieth centuries may be identified by their major and minor elemental chemistries in time blocks of about 50 years. This age model is now beginning to be applied to the analysis of glass beads from complex or controversially-dated archaeological sites in North America. Chemically identifying odds and ends of other types of archaeological samples (e.g., mortars, glasses, lithics, and corroded metals) is also carried out on a regular basis.

SLOWPOKE-based INAA has also been used to measure uranium, thorium, and potassium contents of samples for thermoluminescence studies.

SLOWPOKE research projects have often been integrated with projects in the Department of Physics, specifically with the IsoTrace Laboratory (^{14}C dating) and the Archaeometry Laboratory (geophysics and authenticity testing). Collaborative projects with researchers from other Canadian, American, and European universities have been and will continue to be a cornerstone of archaeometric research at SLOWPOKE-Toronto.

Summaries of ongoing research projects are included in SLOWPOKE Annual Reports, which are available on request.

Submitted by R. G. V. Hancock, SLOWPOKE Reactor Facility, University of Toronto, Toronto, Ontario M5S 1A1, Canada □

Coming Lab Report

*The Archaeological and Historical
Textiles Research Program at the Ohio
State University*

Conference Report

Fourth Advanced Seminar on Paleodiet September 4-8, 1994, Banff, Alberta

The Fourth Advanced Seminar on Paleodiet, organized by Stanley Ambrose (University of Illinois) and Anne Katzenberg (University of Calgary), was held at the Centre for Conferences in Banff, Alberta from September 4-8, 1994. Stanley Ambrose opened the presentations with results of recent controlled-feeding experiments on rats, in which nitrogen isotope shifts were monitored as a function of heat stress and protein stress. Differences between collagen and apatite-carbonate ^{13}C were related to differential assimilation and fractionation of protein intake, which strongly affects collagen isotopes, and total dietary carbon intake, which is reflected by serum CO_2 and hence by apatite-carbonate.

James Burton (University of Wisconsin-Madison) modeled diet compositions and showed that alkaline-earth elements (Ba and Sr) mainly reflect high-calcium foods. The Ba/Ca and Sr/Ca ratios in the diet and, hence, in the bone need not change significantly even when there are large differences in dietary meat/plant ratios. Thus they might not reveal changes in trophic position even if they faithfully reflect the composition of the diet.

Roy Krause (University of Calgary) presented data for a variety of stable isotopes, including ^2H , ^{13}C , ^{15}N , ^{34}S , as a function of various parameters such as latitude. Isotopic differences were also markedly different between continental and marine samples. Variations in these isotopes in hair and nails tracked residence changes of modern humans as well as other animals.

Gert van Klinken (Oxford Radiocarbon Accelerator) showed the regional variability in Europe of stable isotopes, and related this to regional variability in temperature and aridity. The data could then be used to determine local correction factors for higher resolution in paleo-isotopic studies.

Robert Hedges (Oxford Radiocarbon Accelerator) discussed metabolic models for light-isotope fractionation. Although the complexity of metabolic processes preclude a rigorous analysis, he tested a simplified, steady-state model based upon the rate-limiting reactions of acetyl coenzyme-A. The simplified model for animals in dynamic equilibrium with their diet did not, however, produce results consistent with observed diet-bone isotopic shifts.

Richard Evershed (University of Bristol), rather than examining the chemistry of bone, is characterizing the chemical residues in prehistoric potsherds. Using gas-chromatography and mass-spectrometry, individual compounds can be isolated from lipid extracts, identified, and isotopically characterized. While the recognition of specific lipids may identify specific foods (e.g., cabbage), the isotopic ratios of lipids can provide information about the isotopic constitution of the carbohydrate component

of diet, independently of protein sources.

Herve Bocherens (Pierre and Marie Curie University, Paris) analyzed light stable isotope measurements for bone collagen, and permanent and deciduous teeth of modern and Pleistocene mammals. The dental (carbonate) isotopes were compared to collagen isotopes to assess the relationship between the collagen/carbonate "shift" and trophic position.

Noreen Tuross (Smithsonian Institution) studied carbon isotopes in enamel (apatite carbonate) and bone collagen for Paleolithic fauna recovered from Kent's Cave. Although carnivores were isotopically different from herbivores, there was no separate, intermediate range for omnivores. Thus there was no resolution of trophic level beyond these "end-members." She also noticed that most of the collagen had diagenetically altered amino-acid ratios, generally showing glycine enrichment.

Julia Lee-Thorp (University of Cape Town) examined effects of sequential acetic-acid washes upon elephant bone, tusk, tooth enamel, and dentin. She found that the elemental (Ca/P and Sr/Ca) and isotopic attributes sometimes varied significantly among the different materials from the same individual, even after acid-washing.

Paul Koch (Princeton University) used stable isotopes in ivory to evaluate diet and home range for elephants in East Africa. The isotopes mirrored the seasonal migration histories and long-term changes in these patterns for several elephants whose histories were known from independent observations.

Andrew Sillen (University of Cape Town) outlined a comprehensive study to examine the sources and magnitudes of chemical variability of elements such as barium and strontium in a modern foodweb in Planesburg, South Africa. The study starts with soils and plants at the base of the foodweb, and follows chemical changes through trophic levels. Intrinsic geographic variability in Sr-isotopes was also discussed in relation to studies using bone and tooth $^{87}\text{Sr}/^{86}\text{Sr}$ as a monitor of mobility.

Anne Katzenberg examined stable isotopes in bones from the 19th century cemetery of St. Thomas Anglican Church in southern Ontario. The availability of historic, demographic records permitted the comparison of bone chemical data with the historic records for single individuals, 80 out of 579 of whom could be identified. The data could thus be related to ages of the individuals with sufficient resolution to determine weaning ages for the infants. The data are also being evaluated in relation to isotopic measurements on foods prepared using the traditional recipes.

Judy Sealy (University of Cape Town) examined the stable isotopes and $^{87}\text{Sr}/^{86}\text{Sr}$ ratios in bone and teeth for

several prehistoric and historic individuals. Because bones and teeth chemically track different times in the life of an individual, she was able to track significant changes in the life histories of the individuals.

Christine White (University of Western Ontario) measured the stable oxygen isotopes in skeletons from Teotihuacán. She found that the isotopic data correlated strongly with spatial arrangements of the burials, paralleling group identity and status. Although specific home regions could not be identified, White hypothesized that the isotopic differences reflected the various geographic regions from which each group originated.

Nikolaas van der Merwe (Harvard University) presented isotopic data for pre-Formative (Valdivia/Machililla) people of coastal Ecuador. Although heavier carbon isotopes had been thought to reveal the presence of maize, nitrogen isotopes were more consistent with seafood as the explanation for both the carbon and nitrogen data. He also presented faunal and stable isotope data for the pre-Classic Maya at Cuello, revealing that they used maize but, in contrast to later populations, were not dependent upon it.

Susan Pfeiffer (University of Guelph) discussed a variety of diagenetic monitors, including the examination of micromorphology, measuring Ca/P and C/N ratios, and examining lipid extracts and amino-acid profiles. Her study examined cortical bone tissue from remains of American soldiers killed during the War of 1812 and buried in Canada on the north shore of Lake Erie. She noted that diagenetic processes are diverse and can affect various aspects of bone chemistry without being revealed in others. Diagenesis still appears to be a complex suite of problems that vary with each archaeological context.

Gisela Grupe (Ludwig Maximilian University, Munich) followed this discussion of diagenesis with results of experimental studies in which she measured isotopic shifts of several per mil in collagen from bones exposed to collagenase-producing microorganisms. Even though other evidence suggested that the exposed bones were well-preserved, there were significant alterations of the amino acid profiles due to selective catabolism of specific amino acids. She also cautioned that some commercial collagen preparations have profiles characteristic of microbial degradation.

At the conclusion of the seminar, two additional papers were presented in absentia and discussed:

Lynette Norr examined collagen and apatite-carbonate isotopes for Pre-ceramic and Early Ceramic sites in lower Central America. Using the isotopic differences between these two, along with interpretive models developed with Stan Ambrose, she inferred that diets associated with the early sites were mainly terrestrial resources, including maize, while later sites had diets with more marine resources and mixed C3 and C4 plants. She cautioned, however, that the high maize consumption implied by the isotopic data for the Pre-ceramic seemed unreasonable and needed further study.

Henry Schwarcz (McMaster University) described some biochemical aspects of carbon isotope studies. His models hypothesize that the fractionation between carbonate and collagen varies as a function of the amount of meat, and partly to the amounts of C3 and C4 foods in the diet of the meat sources, but not to the C3/C4 ratios of plant foods. His calculations also suggest that the degree to which protein influences collagen depends upon the individual's nitrogen balance and thus could differ between immature animals and adults.

Four days were allocated to the presentations, allowing ample time for the discussion of each. The conference then concluded with a hike in the Canadian Rockies to the Burgess Shale, near the summit of Mt. Field. Conference participants were able to observe in situ superbly preserved *Ottoia*, *Marrella*, even fragments of *Anomalocaris*, and other evidence for the "Cambrian explosion."

The seminar was supported by grants from the Wenner-Gren Foundation for Anthropological Research, the L.S.B. Leakey Foundation, and the Social Sciences and Humanities Research Council of Canada with additional contributions from the Department of Archaeology, University of Calgary and the Department of Anthropology, University of Illinois.

Submitted by James Burton, Department of Anthropology, University of Wisconsin, Madison, WI 53706, USA; tel 608-262-4505; e-mail jhburton@facstaff.wisc.edu □

Coming Conference Reviews
Geophysics and Archaeology
Science and Archaeology

Announcements (continued from p. 12)

The SBA Committee will transfer to the NERC committee structure with its existing membership. It will continue to operate as at present until SBA as a subject is successfully integrated into NERC, when it will be subject to the normal review of committee functions. The SERC/NERC Ancient Biomolecules Initiative will become solely an NERC programme within the Earth Sciences Directorate. NERC will continue to issue advice regarding closing dates for the initiative etc. through Announcements of Opportunity.

Officers of both Councils are convinced that the transfer of SBA to NERC should not affect the way in which the subject is supported, and that it will be treated on its merit as a discipline as it has been within SERC. Every effort is being made to ensure that the transfer is as smooth as possible.

Neil Williams, from the *Science-Based Archaeology Newsletter*, #7, February 1994.

Book Reviews

An Archaeologist's Guide to Chert and Flint. Barbara E. Luedtke. Archaeological Research Tools 7, Institute of Archaeology, University of California, Los Angeles, 1991, 172 pp., 2 appendices, glossary, index, \$18.75 (paper).

Reviewed by M. Steven Shackley, Phoebe Hearst Museum of Anthropology, University of California, Berkeley

Of all the flaked stone raw materials subjected to archaeological and archaeometric analysis, chert has certainly been the substance of the most misunderstanding. Not only do geologists and archaeologists classify this secondary siliceous sediment differently, the vernacular in archaeology is far from standard; rarely do two archaeologists employ the same terms for the same stone. Given most archaeologists' general ignorance of petrology, it would be hard to imagine a book better suited to archaeology than Luedtke's treatment of this raw material. The only negative aspect of the book is hardly Luedtke's fault. The 172-page paper-bound book is a reader's nightmare due to very small and thin print, typographical errors, and a typesetting that runs words together in interesting but unreadable sentences.

Virtually no aspect of chert is left uncovered, from the nature and origins of this siliceous sediment, to properties, alteration, and appendices detailing geochemical analysis and specific analyses of chert and flint from around the world. Most helpful, and certainly needed, is the glossary.

In order to outline the salient and, to my thinking, most interesting aspects of the volume, I will follow the book outline and summarize each chapter, following with a general synopsis and critique.

Introduction

Luedtke's rather simple, but extremely useful, goal for the book was to "draw together as much information possible about chert and its properties" (p. 2). While this goal is somewhat understated, she succeeds admirably. On the individual level, she includes a bit of personal history about her study of chert over the years. Luedtke's stated decision to organize the study around the various properties solves many of the misunderstandings about the nature of chert in a way easily comprehensible to archaeologists.

The Nature of Chert

Of all the problems noted above in archaeology concerning chert, certainly one of the most vexing is the

definition of chert. In this chapter, Luedtke solves the issue admirably, dealing with both the petrologic and amorphous archaeological definitions of the stone, and arriving at a classification that should be followed by all archaeologists and archaeometrists. This is perhaps her greatest contribution.

The contrast between the petrologic and archaeological definitions of chert is striking, and points to the confusion in archaeology, and to a lesser extent in geology. Most important is the distinction between *chert* and *chalcedony*. In petrology, chert is often a "convenient pigeonhole rather than a species of fixed composition" (Mason and Moore 1992:95, in Luedtke 1992:5). This problem has taken hold in archaeology, frustrating classification. In petrology, the distinction between chert and chalcedony is often based on the crystalline structure of the rock. Chert is generally derived from other sediments through precipitation and exhibits a granular structure, while chalcedony is formed by precipitation in volcanics during and after emplacement, but can also form in other environments including within chert, and exhibits a fibrous structure (see Blatt 1982, in Luedtke 1992:5-6). Importantly, Luedtke notes that while the structural difference in these rocks can be quite significant, the chemical composition is quite similar and x-ray diffraction peaks are in the same position.

In this chapter, the author begins to detail the problems of visual characterization of cherts so commonly employed by archaeologists, which are discussed frequently in the book. Alteration and inherent variability frustrate this type of classification. Given this and the petrologic definitions, Luedtke rightly chooses the term *chert* for all categories including flint and jasper, and for *chalcedony* when the fibrous character is not evident (p. 5). I will follow the same convention and implore all archaeologists and archaeometrists to do likewise. I doubt that this will move many in Europe to give up the term *flint* as a specific type even though the author's arguments for doing so are cogent.

Before leaving this chapter, two other terms defined in the book deserve some comment. Luedtke contrasts the terms *chert type* as a chert that "occurs in a discrete geological deposit and exhibits a restricted range of variation in at least some properties," and *chert source* as a "location where a particular type of chert can be obtained" (p. 6). These are, of course, overlapping and embedded. Excellent tables and illustrations in this chapter serve to detail the complexity of these issues, and some, like the flow charts of rock types, merit the price of the book.

Origins of Chert

Of great value in the understanding of chert in prehistory is Luedtke's discussion of its petrologic origins. Using specific examples of chert types from around the world, she explores: the history of research, solubility, precipitation, the forms of quartz in cherts; a further

discussion of chalcedony, micro and macrocrystalline quartz, diagenesis, metamorphism; and finishing with case studies of depositional contexts of English chalk flint, Monterey chert, Pennsylvania jasper, agates, silicified wood, and Magadi-type chert. All this points out that chert is much more variable in its origin than most of us imagine. As an example, while most chert nodules grow from the center out through precipitation, agates (e.g. geodes) grow from the outside in (p. 33). While we all know this, the process is made very clear here. Luedtke notes that even though there is such great variability in origin, most texts only state that chert is found either in nodular form in carbonates or in bedded form in shales (p. 29).

"Of all the flaked stone raw materials subjected to archaeological and archaeometric analysis, chert has certainly been the substance of the most misunderstanding. ... Given most archaeologists' general ignorance of petrology, it would be hard to imagine a book better suited to archaeology than Luedtke's treatment of this raw material."

Chemical Properties

"While geochemistry is a well-established branch of geology, the geochemistry of chert must be considered an underdeveloped twig" (p. 39). Working with silicic glasses, it is easy for me and many others to assume that the level of knowledge within geochemistry is similar throughout. For chert, this is certainly not the case. Here Luedtke examines the silicon and oxygen composition of cherts as well as the modal composition including clays, iron minerals, carbonates, rare earths, and organic matter that all serve to complicate the understanding of chert chemistry. Again using a case study formula, after discussing the vagaries of chemistry, she examines this in various forms of chert, and compares chert to other rock types using an example I found quite illuminating. Because of the small amount of work on the subject, Luedtke's conclusions are preliminary, but compelling. One of the most important observations here is that the "kinds and quantities of impurities may be useful in determining exactly how cherts formed" (p. 61), and consequently may be the best way to discriminate chert sources.

Visible Properties

This chapter will appeal to many archaeologists given the rampant attempts to discriminate sources based on visual criteria. However, within this chapter are many implicit and explicit caveats and discussions as to why that can be hazardous, even when the researcher is intimately knowledgeable about regional sources.

This chapter is an excellent examination of the archaeological as well as physical science methods that have been used to describe and understand the visible

properties of chert, including jewelers' definitions. I found the discussion of color variations based on iron mineral composition most informative.

The issue of translucency is covered here, again exposing the myth that only chalcedony is translucent. A very important discussion focuses on the properties visible in hand samples, with low-power magnification, and with high-power (SEM). Again, the visible properties of chert are mainly an effect of the impurities as discussed in the previous chapter, and these properties can be a "rich mine of information about a chert and its history," especially when combining hand specimen, low-power and high-power microscopy (p. 77).

Mechanical Properties

This chapter and the next will have the greatest interest to lithic technologists. This is the best overall compilation and discussion of the mechanical properties and alteration processes available in the literature. Within this chapter, the author spends a great deal of time examining the approaches to the study of stone tool manufacture and the fracturing in chert. Apparently, Luedtke wrote the book in the 1980s when a number of articles dealing with these issues came out which are not included, but the summary is still very good. Her discussions of abrasion, tensile strength, homogeneity and isotropy, elasticity, and hardness are worth the price of the book on their own.

Altered Cherts

Through an examination of various chert types in this chapter, Luedtke reflects on the effect of mechanical properties on geochemistry, and visible properties. I found this treatment the most useful in the book; it allows for a greater understanding of the whole. Even though there have been some good recent articles on heat-treatment, Luedtke's discussion here may be the most comprehensive. Also covered are sections on dating heat-altered cherts, weathering, secondary deposition (transport) and, importantly, implications for archaeology. I was surprised here that she had not referenced Meltzer's (1985) important work on long distance transport of cherts in eastern North America, but perhaps this was written before that.

Appendices and Glossary

Luedtke provides two very useful appendices. Appendix A details the procedures used in source analysis. This six-step process is designed to help those who are interested in recording a specific chert source, but provides some important insight for anyone interested in source analysis of raw materials. Appendix B provides some primary descriptive and chemical data for 30 different cherts worldwide. Nowhere else is this type of data so readily available.

The glossary provides terms useful to all archaeologists. I found this particularly useful and provide it to my archaeometry students to be used with Bates and Jackson (1987).

Book Reviews

Typesetting and Mechanical Problems

It is unfortunate that such an important book for archaeologists and archaeometrists is bound within one of the worst typesetting nightmares I have ever seen. The format is two column and the software so frequently runs together words on a line, comprehensibility is severely hindered, particularly for the many readers whose first language is not English. One example of many like it is to be found on page 90, second paragraph, which reads:

practioners associate elasticity specifically with the ability of a lithic

I think you see what I mean. There are typos throughout, and at least one reference was missing (Ogelman 1986) on page 107. Additionally, the print is so thin that the over-40 readers will have some trouble. It is vexing why there was a problem on this particular volume, since the others in this series that I have do not exhibit these problems. It is unfair to both the author and the reader.

Summary and Discussion

This book deserves very wide readership. As a researcher involved in obsidian studies, I found much of value here. There is very little about secondary siliceous sediments that Luedtke did not cover. I found that the discussion was slightly out of date, but the production time may have been extensive. Regardless, archaeologists, lithic technologists, and archaeometrists will all find much in this book of value, both as a reference text and a classroom text. I predict that it will be referenced as a standard for years to come.

References Cited

- Bates, R.L. and Jackson, J.A.
1987 *Glossary of Geology*. American Geological Institute, Falls Church, Va.
- Meltzer, D.J.
1985 On stone procurement and settlement mobility in Eastern Fluted Point Groups. *North American Archaeologist* 6:1-27. □

Scientific Research in Early Chinese Glass. Robert H. Brill & John H. Martin (eds.). Corning Museum of Glass, 1991, 212 pp., 143 ill. \$55.00 (cloth).

Reviewed by George (Rip) Rapp, Jr., Archaeometry Lab, University of Minnesota, Duluth MN 55812

This fine volume is the proceedings of the Archaeometry of Glass sessions of the 1984 International Symposium on Glass, held in Beijing, China, on September 7, 1984, along with Supplementary Papers. It is composed of 19 chapters by a wide range of authors, over half of them Chinese. Several of the papers from the symposium were published previously in Chinese. Topics cover both technology and art, and focus on the origin and evolution of Chinese glass. A few of the chapters are merely long abstracts.

In reference to Chinese glass, "early" means from the beginnings of glass technology in China about the 6th century B.C. Papers include studies of glass objects made through the Qing Dynasty, which ended only in 1911. The fine hand of Robert Brill shows throughout this volume, and the western world is in his debt for bringing us extensive analytical data and related scholarly insights not previously or easily available.

"Individual chapters range from studies of a single glass object through systematic analyses of a suite of objects to specialized research such as lead isotope studies and a summary of the physical properties of early Chinese glass. The authors of the isotope studies are forthright in their consideration of the problems involved in sourcing raw materials using lead isotope techniques."

In his introduction, Gan Fuxi traces the development of Chinese glass beginning with the use of faience in beads and sword ornaments from the Western Zhou Dynasty (12th through 8th centuries B.C.) to the Spring and Autumn Period (8th through 5th centuries B.C.). True glass technology began in the Warring States Period (5th century B.C.) with the manufacture of beads, sword ornaments, and bowls, using materials in the PbO-BaO-SiO₂ system. From the Tang Dynasty (7th to 10th centuries A.D.) through the Yuan Dynasty (13th and 14th centuries A.D.), Chinese glass was utilized mainly for utensils using compositions from PbO-SiO₂, K₂O-CaO-SiO₂, Na₂O-CaO-SiO₂, and Na₂O-CaO-PbO-SiO₂ systems. Since the 14th century many types of glass objects such as bottles, cups, and jars have been made using materials from the K₂O-PbO-SiO₂, K₂O-CaO-SiO₂, Na₂O-CaO-SiO₂, and Na₂O-CaO-PbO-SiO₂ systems.

Part of the impetus for this conference and for this volume is that recent archaeological excavations in China have unearthed numerous glass objects. One of the initial and driving questions about these objects is whether they are domestic or imported. From the time of the Western Han Period (late 3rd century B.C. to early 1st century A.D.) it is known that Roman, Sasanian, and Islamic glass was brought to China. It is now established that small and

exquisite glass objects were made domestically at least back to the 6th century B.C. Most Chinese glass vessels were made of lead glass, but, as indicated above, the compositions varied in different periods. One learns that in the earliest glasses barium may have been added in order to imitate jade or, perhaps, barium found its way into the glass because lead and barium minerals occur together in Henan and Hunan, centers of early technology.

Individual chapters range from studies of a single glass object through systematic analyses of a suite of objects to specialized research such as lead isotope studies and a summary of the physical properties of early Chinese glass. The authors of the isotope studies are forthright in their consideration of the problems involved in sourcing raw materials using lead isotope techniques. In many chapters there are catalogs of the objects studied, giving the reader both a good understanding of the material and the completeness necessary to make wider use of the data without having to seek missing information, a very important consideration for a book devoted largely to research done in China. There is perhaps more here for the archaeometrist than for the art historian, but the authors and editors have done very well in providing a full context for their analytical studies.

This volume contains numerous photographs of important glass objects. Probably because the original photographs were of marginal quality, the final figures often do not reveal fine detail. The use of glossy paper throughout the book enhances the quality of the photographs. As a volume which reports on scientific research, the book also includes a number of chemical analyses, including isotope ratios, as well as photomicrographs. Throughout the volume there are only a limited number of references. Another drawback is the lack of an index. Personally, I was pleased to see a section at the end devoted to photographs of many of the contributors. In volumes relating to the history of technology, I think it is important to record something about both the authors and the context of the research.

Anyone interested in ancient glass, early Chinese technology, or Chinese art and archaeology will find this a useful and important volume. □

Pottery Function: A Use-Alteration Perspective. James M. Skibo. Plenum, New York, 1992, 205 pp. \$35 (cloth).

Reviewed by Genevieve LeMoine, Department of Archaeology, University of Calgary, Calgary, Alberta, Canada T2N 1N4

This volume represents the first comprehensive effort to apply techniques of functional analysis to ceramic vessels. Considering the important place of ceramics in many archaeological works, it is indeed high time that we

pay serious attention to the actual ways they were used by the people who made them. In this book, Skibo reports on the results of ethnoarchaeological and experimental research on the function of ceramic vessels among the Kalinga of northwestern Luzon (Philippines). He is to be congratulated for incorporating both ethnoarchaeological and experimental data on tool function, but unfortunately, this work does not always live up to its promise. In particular, his experiments are poorly designed and uninformed by the ethnographic data he collected. Nevertheless, this is an important contribution to the study of archaeological ceramics, if only for pointing the way for many more studies.

"This volume represents the first comprehensive effort to apply techniques of functional analysis to ceramic vessels. Considering the important place of ceramics in many archaeological works, it is indeed high time that we pay serious attention to the actual ways they were used by the people who made them."

The book is presented in eight chapters including brief introductory and concluding chapters. Chapters Two and Three provide theoretical and methodological background, including a very narrow definition of ethnoarchaeology and a denial of the role of analogy, two opinions not widely held by archaeologists. Chapter Four gives background information about the study area and the research project. The study focuses on Kalinga everyday cooking pots, of which there are two types: those used to cook rice and those used to cook meat, vegetables and sometimes sticky rice. Here I will focus on Chapters Four through Seven, in which the data are presented and discussed.

Absorbed residues, in this case fatty acids, are the subject of Chapter Five. Fatty acid residues have been studied on archaeological ceramics by a number of authors, but as Skibo rightly points out, the Kalinga study provided an opportunity to check on the effects of cooking, on the effects of cooking more than one item in a pot, particularly the combination of meat and vegetables, and on the effects of decay after discard. This part of the study was divided into three stages: analysis of control samples, analysis of used Kalinga pots, and analysis of archaeological sherds from a Kalinga midden. The results are ambiguous, partly because of uneven control and reporting of data. The problem begins with the selection and processing of the controls. First, only one sample of each control was tested, leaving one wondering about possible variation within each type. Second, no experiments in which the foods of interest were cooked individually or together in pots were carried out, making any conclusions inferential at best. Finally, selection of controls was also questionable: although the Kalinga use four different types of rice, only one was analyzed for its fatty acid profile. Similarly, five different types of vege-

tables were analyzed, but they are identified by number only, making comparisons by future researchers virtually impossible. (When you consider that both the brand and the size of pantyhose used to wrap pots for shipping to the USA is noted, this oversight becomes even more curious.)

The results of the analysis of Kalinga pots themselves seem also to be more ambiguous than Skibo suggests. As an example, far from being "clearly separate" (p. 95, Figure 5.4), one of three rice pots has an almost identical ratio value to one of the five vegetable/meat pots. The values for fatty acid 14:0, said to be characteristic of rice, are in two of three instances much higher than for the control, are completely missing in the third sample, and are bracketed by values for the vegetable and meat cooking pots. Two important questions remain unresolved by this research. First, what is the impact of cooking on fatty acids, and second, what is the impact of cooking more than one type of food, either separately or together, in the same pot? A larger number of samples, both controls and pots, and analysis of pots used under more controlled conditions are necessary before these data could be used with confidence.

The third component of the fatty acid research, analysis of midden sherds, does little to add to the apparent utility of this type of analysis. Decay of fatty acids appears to have occurred. Discussion of the results of the midden sherd analysis is followed by a brief discussion of the decay of fatty acids and other research on this subject as it pertains to archaeology. Apart from the quibble that this section would have been more instructive had it preceded a discussion of the results, it is poorly related to the rest of the text. In particular, it would have been more useful had we been given more information about the conditions of the midden from which the sherds in question came. They are surely unlike those of the Thule midden cited, where fatty acids were identified in thousand-year-old pottery. The permafrost conditions of a Thule midden (which Skibo does not mention) preserve many things that one would not expect to find in other circumstances.

Chapter Six is devoted to surface attrition of ceramics. Here again, no experiments were performed. Rather, Skibo relies on experimental data presented elsewhere (e.g. Skibo and Schiffer 1989) involving ceramic briquettes abraded in a lapidary tumbler under varying conditions. Three aspects are defined as important: the characteristics of the ceramic, the characteristics of the abrader, and the nature of ceramic-abrader contact. This is fine in principle, but it is not clear to what extent these experiments covered specifically Kalinga pottery, which on other grounds would appear to be unusually porous (see below), or activities such as stirring with a wooden spoon not directly analogous to tumbling in an abrasive matrix either in terms of the abrader or of the ceramic-abrader contact. Some experiments with more suitable materials would be a useful addition to the ethnoarchaeological observations of use.

Attrition traces are discussed according to where they occur on a vessel. The exteriors of all pots are characterized by the same traces, fine scratches associated with washing.

The primary difference between the two types of pots are the presence of thermal spalls on rice cooking pots versus the presence of pits and pedestalled temper on meat/vegetable cooking pots. The latter, as well as slight abrasion which occurs on the interior rim and neck of both types of pots (although this is mentioned in the text on p. 132, but denied in table 6.1) are attributed to serving and especially stirring, an activity frequently performed while cooking meat or vegetables, but not rice. Thermal spalls are attributed to over-cooking rice until all water is absorbed, causing "free water in the vessel wall to vaporize" (p. 135). Thus based on ethnoarchaeological observation, different cooking processes do seem to lead to different traces on ceramic vessels.

Chapter Seven deals with the deposition of carbon on vessels. Skibo begins by describing the pattern of carbon deposition on the interior and exterior of Kalinga vessels. Interiors of both types are characterized by a patch of carbon on the base and the interior about the middle. These carbon patches are due to the charring of food particles adhering to or absorbed into the vessel. Although the processes leading to these patterns are different for the two types of pots (i.e., the cooking processes are different), it is not possible to differentiate them on this basis alone. Exterior carbon deposits, or soot, do provide some information useful for distinguishing the two types of pots. In general, pots show the same pattern, in which the base may be oxidized, the area just above the base is dull gray or black, and the rest of the pot is glossy black. Rice pots sometimes have an oxidized patch on the mid-exterior side, where proximity to the fire while the rice simmers has burned off the soot previously deposited there. This is an ephemeral difference, however, as the next cooking episode can re-deposit soot over this area. Overall, it appears that it would be quite difficult to distinguish between these two types of pots on the basis of carbon deposits, and to do so with an archaeological sample of sherds would be virtually impossible.

Skibo's experiments in soot formation, designed to answer some questions about the sooting patterns on Kalinga pots, are also flawed by poor research design. Sooting experiments were carried out with a ceramic slab which was suspended, upright, over a fire, and with Kalinga vessels. Fires were made with softwoods (piñon pine, Douglas fir and two Kalinga softwoods) and a hardwood (pecan). It is not clear if the woods were fresh or seasoned, nor what state the Kalinga use firewood in. The experiments were designed to investigate three factors: distance from fire, the role of moisture, and the type of wood. Experiments were timed, but the temperature of the fire was not recorded.

Distance from fire has an important effect on the deposition of permanent soot (which would survive in the archaeological record). Close to the fire, soot is initially deposited, and then burned off, while further from the fire, soot is deposited continuously. The role of moisture was investigated using Kalinga pots filled with water. These

developed a glossy soot, similar to that on used Kalinga vessels and unlike the matte soot on the slab. Interestingly, a pot without the typical resin coating on the interior did not get hot enough for water to boil. Apparently Kalinga pottery is so porous that water seeps through to the surface so rapidly that water will not boil. To my knowledge no other ceramic tradition requires such a coating to make cooking pots functional. It would be instructive to know how this porosity influences other aspects of use, particularly attrition. The third set of experiments was designed to investigate the possible role of different types of wood. Although some differences were noted, leading Skibo to infer that the Kalinga wood burned hotter than the other types used (why were temperatures not recorded?—thermocouples are not that expensive), the basic sooting pattern remained the same in all cases. To end, Skibo states: "It is anticipated, however, that other factors such as dryness of the wood and draft in the hearth are just as important in soot formation as wood type" (p. 171). These are factors which could have, and should have, been controlled for.

The results of this work ultimately give us little to go on when it comes to identifying the ways in which archaeological pots were used, with one possible exception. One of the problems Skibo was curious about involved large oxidized patches on the bases of worn out pots. He claims that neither experiments nor ethnoarchaeological work (he does not seem to have asked any informants how they decided a pot was worn out) provided an explanation for these patches. Based on the sooting patterns he describes, however, one wonders if the roasting behavior described in Chapter Four, using worn-out pots suspended over a fire at a 45° angle, could be the answer.

To summarize then, this study has shown three things: 1) Fatty acids can be identified in pottery, and although it may be possible to identify particular food types, it is not clear how well these survive either cooking or post-depositional processes; 2) Surface attrition can indicate different cooking techniques, primarily differentiating boiling with frequent stirring, and steaming; 3) Carbon deposits on the exterior of vessels can provide general information about cooking practices, particularly distance from flame. The first technique can presumably be used on potsherds, but the others require whole pots, preferably in large numbers, to be useful.

Overall, this book is something of a disappointment. It is clear that the ability to identify the function of pottery vessels is very important to archaeologists, but Skibo, while pointing the way, does not give us that. Perhaps it is asking too much of what is admittedly a pioneering study, but after reading this book one is left with too many questions, and what is worse, too many ways of answering them. Skibo has done archaeology a great service in bringing ceramic function into the mainstream literature, but one cannot help feeling that it would have been better served by better designed and presented research. □

Publication Announcement

Report on the excavation of Khok Phanom Di

Khok Phanom Di was excavated in 1985 by Charles Higham of the University of Otago and Rachanie Thosarat of the Thai Fine Arts Department. It was formerly located on an estuary when the sea level was a few meters higher than today, on the shore of the Gulf of Siam, 60 km east of Bangkok. It is a unique site in South and East Asia for several reasons. First, the accumulation of prehistoric deposits over its five centuries of occupation from 2000 B.C. was so rapid that it kept pace with human mortality. Consequently, burials are found interred over the ancestors, representing about 18 generations. The cemetery discloses a chequer-board pattern of clusters of graves within wooden or raised mortuary structures, and it has been possible to reconstruct the ebb and flow of personal attainment within family groups over time. Second, the preservation of organic remains is astonishing: wood survived in postmolds and as biers under the dead; shrouds of bark or asbestos fibres were in place. In one or two cases, partially digested stomach contents were found, containing rice, fish bones and scales, even a beetle known to live in rice stores. A human coprolite contained the best preserved rice in Southeast Asia. Every excavated context was subjected to flotation, providing a rich harvest of micro snails, seeds and rice remains. The human remains were superbly preserved, as was the evidence for pottery manufacture and firing on site.

As befits a site of such wealth and interest, as the largest exposure of a Neolithic cemetery in Southeast Asia, it is being fully published in seven volumes by the Society of Antiquaries of London. Volume I (1991) covers the stratigraphy, chronology and burial record; Volume II (1993) describes: the palynology of the area over the Holocene; the shellfish and faunal remains; and the parasites, beetles, coral, stingrays and other biological finds. Volume III (1994) concentrates on the non-ceramic material culture, including the bone, stone and shell artefacts. The fourth volume in this will be published towards the end of 1994. Jill Thompson will describe the plant remains obtained from the flotation of all contexts at this site. This will include a detailed analysis of the rice remains, concluding that the plant was cultivated. Two appendices are included, one describing the phytolith sequence by Lisa Kealhofer and Dolores Piperno, and the second the micro-snails from the flotation recovery procedure, by Graeme Mason. Volume V will describe the human remains (N. Tayles), volume VI the ceramics (B. Vincent), and a synthesis and summary will be published as volume VII.

A special price is offered to readers of the *SAS Bulletin* who wish to order a copy of Volume 4 prior to publication. For further details, contact Charles Higham, Department of Anthropology, University of Otago, PO Box 56, Dunedin, New Zealand, e-mail Anth27@otago.ac.nz. A 10% discount from the published price is also offered to *SAS Bulletin* readers wishing to obtain copies of volumes I, II or III. □

Meetings Calendar

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New listings are marked by a *; new information for previous listings indicated by a +. More information on some meetings is given in previous bulletins as indicated, e.g., "17(1):2" for volume 17, number 1, page 2.

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- Nov. 12-14. Symposium, Wooden Artifacts Group. Williamsburg, Virginia, USA. Valerie Dorge, The Getty Conservation Institute, 4503 Glencoe Avenue, Marina Del Rey, CA 90292, USA; tel: 310-822-2299; fax: 310-821-9409.
- Nov. 13-18. Soil Science Society of America, Annual Meeting. Seattle, Washington. Soil Science Society of America, 667 S. Segoe Road, Madison, WI 53711, USA; tel: 608-367-4373.
- * Nov. 14. Human Gene Geography: A Multidisciplinary Approach. Royal Geographical Society, Kensington Gore, London SW7, UK.
- * Nov. 16-18. ENVIROSOFT 94: Development and Application of Computer Techniques to Environmental Studies. San Francisco, USA. Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton, S04 2AA, UK; tel: 44-0-703-293223; fax: 44-0-793-292853; e-mail: CMI@uk.ac.rl.ib.
- Nov. 28-Dec. 2. Materials Research Society, Fall Meeting. Boston, Massachusetts, USA. Materials Research Society, 9800 McKnight Road, Pittsburgh, PA 15237, USA; tel: 412-267-3003; fax: 412-367-4373.
- Nov. 30-Dec. 2. American Anthropological Association, Annual Meeting. Atlanta, Georgia. American Anthropological Association, 1703 New Hampshire Avenue NW, Washington DC 20009, USA; tel: 202-232-8800. Includes symposium on isotopic and elemental analyses of bone, organized by Robert H. Tychot (address on back page).
- Dec. 4-11. 3rd World Archaeology Congress. New Delhi. Shri M.C. Joshi, Director General, Archaeological Survey of India, Janpath, New Delhi 110011, India; tel: 91-11-3014821; fax: 91-11-3019821; e-mail (contact Vanessa Balloqui, University of Southampton, UK): ness@soton.ac.uk 17(2):22.
- * Dec. 11-13. Climate-model Applications in Paleo-environmental Analysis. Seattle, Washington, USA. SEPM Continuing Education Department, Box 4756, Tulsa, OK 74159-0756, USA; tel: 918-743-9765; fax: 918-743-2498.
- * Dec. 14-16. Theoretical Archaeology Group, 16th Annual Conference. Bradford. TAG Organising Committee, Department of Archaeological Sciences, University of Bradford, Bradford BD7 1DP, UK; tel: 44-274-383533; fax: 44-274-385-190.

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- * Jan. 3-6. Institute of British Geographers Conference: Environmental Change in Middle and Low Latitudes. University of Northumbria, Newcastle, UK. S.E. Metcalfe, School of Geography and Earth Resources, University of

Hull, Hull, HU6 7RX, UK.

- * Jan. 3-7. Evolution of the East Asian Environment International Meeting. Hong Kong. Evolution of the East Asian Environment Secretariat, Centre of Asian Studies, University of Hong Kong, Pokfulam Road, Hong Kong; fax: 852-559-5884; e-mail: caslib@hkucc.bitnet.
- + Jan. 4-7. Joint Mathematics Annual Meetings. San Francisco, California, USA. H. Daly, American Mathematical Society, PO Box 6887, Providence, RI 02940, USA; e-mail: meet@math.ams.org.
- Jan. 4-8. Annual Conference on Historical and Underwater Archaeology, Society for Historical Archaeology. Washington DC. Henry Miller, Historic St. Mary's City, PO Box 39, St. Mary's City, MD 20686, USA; tel: 301-862-0974; fax: 301-862-0968.
- * Feb. 20-25. South Asia Geological Congress. Colombo, Sri Lanka. N.P. Wijayananda, GEOSAS II Secretariat, NARA, Crow Island Mattakkuliy, Colombo 15, Sri Lanka; tel: 94-1-522008; fax: 94-1-522932.
- * March 5-10. Pittcon '95 - Pittsburgh Conference and Exposition on Analytical Chemistry and Applied Spectroscopy. New Orleans, Louisiana. Pittsburgh Conference, Dept. CFP, 300 Penn Center Boulevard, Suite 332, Pittsburgh, PA 15235-5503; tel: 412-825-3220; fax: 412-825-3224.
- March 15-19. Association of American Geographers, Annual Meeting. Chicago, Illinois. Association of American Geographers, 1710 16th Street NW, Washington DC, USA; tel: 202-234-1450.
- + March 17-19. Sardinian Stratigraphy and Mediterranean Chronology—17th annual Tufts University Colloquium on Sardinian Archaeology. Medford, Massachusetts. Prof. Miriam S. Balmuth, Department of Classics & Archaeology, Tufts University, Medford, MA 02155, USA; tel: 617-627-3216; fax: 617-627-3610; e-mail: MBalmuth@emerald.Tufts.edu. An international colloquium designed to treat both the archaeology of Sardinia and synchronism in the Mediterranean basin. Topics include: advances in laboratory dating techniques; roundtable discussion of newly discovered contacts with areas outside the island; Sardinian bronze figurines; chronological implications of stylistic development.
- March 26-30. 8th Conference on the Scientific Use of Statistical Software. Heidelberg, Germany. SoftStat '95, ZUMA, Postfach 12 21 55, D-68072 Mannheim, Germany; tel: 49-621-1246-174; fax: 49-621-1246-100; e-mail: softstat@zuma-mannheim.de.
- * April. Meeting on Early Smelting. Bochum, Germany. Dr. Andreas Hauptmann, Institut für Archäometallurgie, Deutsches Bergbau Museum, Lohrheidestrasse 57, D-4630, Bochum 6, Germany; tel: 49-23-27-3704.
- * April. Central Asian Rock Art: Methodology for the Study of Petroglyphs. Paris, France. Henri-Paul Francfort, CNRS-UPR No. 315, 27 rue Damesme, 75013 Paris, France; tel: 33-1-45-80-27-77; fax: 33-1-45-80-15-53; e-mail: francfor@centrasie.msh-paris.fr.
- April 2-7. Archaeological Chemistry Symposium, American Chemical Society National Meeting; sponsored by the Subdivision of Archaeological Chemistry, Division of the History of Chemistry, ACS. Anaheim, California. Mary Virginia Orna, Department of Chemistry, College of New

- Rochelle, New Rochelle, NY 10805, USA; tel: 914-654-5302; fax: 914-654-5387. 17(1):19.
- April 3-7. Geological Society of South Africa Centennial Geocongress. Johannesburg, South Africa. Congress Secretariat, Centennial Geocongress, PO Box 36815, Menlo Park, 0102, South Africa; tel and fax: 27-12-47-3398.
- April 17-21. Materials Research Society, Spring Meeting. San Francisco, California, USA. Materials Research Society, 9800 McKnight Road, Pittsburgh, PA 15237, USA; tel: 412-367-3003; fax: 412-367-4373.
- May 17-19. Geological Association of Canada-Mineralogical Association of Canada Joint Annual Meeting. Victoria, British Columbia. Chris Barnes, General Chair, SEOS, University of Victoria, PO Box 1700, Victoria, BC V8W 2Y2, Canada; fax: 604-721-6200.
- * May 24-28. 21st Annual Conference and Training Workshop, International Institute for Conservation-Canadian Group. Calgary. Heather Dumka, HC-CG Conference '95, Glenbow Museum, 130 9th Avenue SE, Calgary, Alberta, T2G 0P3, Canada; tel: 403-268-4185.
- July 3-5. Archaeological Science Conference; held in cooperation with the Council for British Archaeology Archaeological Science Committee. Liverpool. The Science Conference Organisation, Department of Archaeology, 14 Abercromby Square, University of Liverpool, PO Box 147, Liverpool, L69 3 BX, UK. Abstract deadline: November 1994. Papers invited on all aspects of the applications of science within archaeology.
- July 11-18. International Workgroup for Palaeoethnobotany, 10th Symposium. Innsbruck. Dr. Klaus Oegg, Institut für Botanik der Leopold-Franzens-Universität Innsbruck, Sternwartestrasse 14, A-6020, Innsbruck, Austria.
- * July 17- Aug. 11. AMS-SIAM (American Mathematical Society-Society for Industrial and Applied Mathematics) Summer Seminar in Applied Mathematics. Park City, Utah. AMS-Summer Seminary Conference Coordinator, AMS Meeting and Conference Department, PO Box 6887, Providence, RI 02940; e-mail: dls@math.ams.org.
- * Aug. International Symposium: Alternative Pathways to the Early State. Vladivostok. Dr. Nikolay Kradin, Institute of History, Archaeology and Ethnology, Far Eastern Division, Russian Academy of Sciences, 89 Pushkinskaya Street, Vladivostok, 690600, Russia.
- * Aug. 3-10. XIV INQUA Congress. Berlin, Germany. Applications for travel grants available from Anne Linn, USNC/INQUA-HA-460, National Academy of Sciences, 2101 Constitution Avenue NW, Washington DC 20418; tel: 202-334-2744. Application deadline, including abstract and vita: 31 Jan. 1995.
- * Aug. 30- Sept. 8. International Rock Art Congress. Pinerolo-Torino, Italy. Robert G. Bednarik, Australian Rock Art Research Association, PO Box 216, Caulfield South, Vic 3162, Australia.
- * Sept. 4-8. From the Jomon to Star Carr: Hunter-gatherers of East and West Temperate Eurasia. Universities of Cambridge and Durham. Peter Rowley-Conwy, Department of Archaeology, University of Durham, 426 Sadler Street, Durham, DH1 3NU, UK; tel: 91-374-3632.
- * Sept. 14-19. Prehistory of Mining and Metallurgy. London and Bangor, UK. Dr. Paul Craddock, Department of Scientific Research, British Museum, London WC1B 3DG, UK; tel: 44-71-323-8797.
- Oct. 9-11. ASMOSIA IV Conference. Bordeaux, France.
- Universite de Bordeaux III - CNRS, Maison de L'Archeologie, Applied Physic Lab, CRIAA, F-33405 Talence Cedex, France; tel: 33-56-84-51-60; fax: 33-56-84-51-57.
- Nov. 6-9. Geological Society of America, Annual Meeting. New Orleans, Louisiana. Vanessa George, Geological Society of American, 3300 Penrose Place, Boulder, CO 80301, USA; tel: 303-447-2020; fax: 303-447-1133.
- Nov. 15-19. American Anthropological Association, Annual Meeting. Washington DC., USA. American Anthropological Association 4350 North Fairfax Drive, Suite 240, Arlington, VA 22203, USA; tel: 703-528-1902.

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- * May 20-24. International Symposium on Archaeometry. Urbana-Champaign, Illinois. Sarah Wisseman, ATAM Program, University of Illinois, 116 Observatory, 901 S. Mathews, Urbana, IL 61801, USA; tel: 217-333-6629; fax: 217-244-0466; e-mail: wisarc@ux1.cso.uiuc.edu
- * Aug. 4-14. 30th International Geological Congress. Beijing. Secretariat Bureau, 30th International Geological Congress, PO Box 823, Beijing 100037, P.R. China; tel: 86-1-8327772; fax: 86-1-8328928. Special symposia include: sea-level changes during the Holocene and the human-historic period; new advances in remote-sensing technology; new techniques in geochronology (including those for young sediments). Symposia include: paleoanthropogenesis; archaeology—weathering and protection of historical remains; soil erosion, desertification, salinization, and swamp-formation; trace elements and human health; volcanic activities and their effects on environments. Field trips include: Quaternary speleo-stratigraphy and paleoanthropological relics in Zhoukoudian, Beijing; Quaternary geology and palaeoenvironment of desert and loess plateau in northern China.
- + Sept. 8-14. 13th Congress of the International Union of Prehistoric and Protohistoric Sciences. Forlì. Alla Segretaria del XII Congresso U.Z.S.P.P., Casa Saffi, Via S. Marchesa 12, I-47100 Forlì, Italy; fax: 39(0)-543-35805. □

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The University of Nevada, Reno offers a program of continuing education short courses in cultural resource management. Each session carries optional graduate-level university credit not included in the workshop fee. The courses include:

Lithic Analysis, Jan. 18-20, 1995, instructed by Daniel S. Amick, \$375 fee, registration deadline 16 Dec.

An Overview: Analytical Methods in Archaeology, March 8-11, 13-15, 1995, including dendrochronology, faunal analysis, paleoenvironmental techniques, obsidian sourcing, dating techniques, GIS, geomorphology, and site analysis, \$795 fee, deadline 8 Feb.

Geographic Information Systems in Archaeology, May 1-2, 1995, instructed by Frederick Limp, \$250 fee, registration deadline 3 April.

For registration and more information, contact Cultural Resource Management, Division of Continuing Education/048, University of Nevada, Reno, NV 89557-0024; fax: 702-784-4801. □



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Deadlines for Submissions:

No. 1 November 15 No. 2 February 15
No. 3 May 15 No. 4 August 15

Printed on recycled paper

Published quarterly by the Society for Archaeological Sciences.

Distributed to subscribers: \$75.00/year individual (with Journal of Archaeological Science), \$15.00 student (without JAS), \$30.00 institution; lifetime and associate memberships available. Payable with major credit cards (+7%); provide card number and expiration date. ISSN 0899-8922.

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