



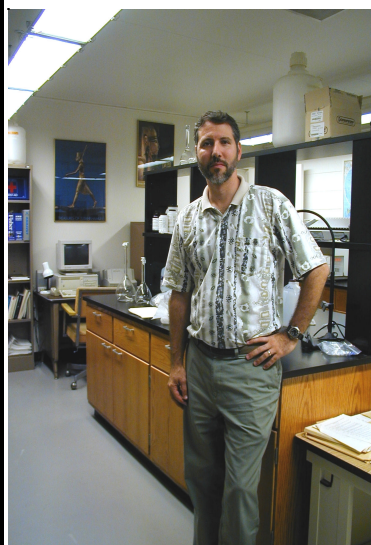
SAS Bulletin

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Last Issue as Editor



This is the last issue of the *SAS Bulletin* for which I have served as the Editor. I began in this position eight years ago, with the July-December 1996 issue (vol. 19 no. 3/4). Since then, besides editing and producing a total of 672 pages, and mailing them to up to 500 members, I have not missed attending and presenting - and promoting participation and membership in SAS - at a single Archaeometry, ASMOSIA, AIA, SAA, UISPP, or

Materials Issues in Art and Archaeology conference (not to mention many others). I have no doubt that the SAS contacts and international communications that developed helped in some ways my own research interests that expanded from Mediterranean obsidian sourcing to world-wide isotopes-and-diet studies.

My stepping down as Editor of the *SAS Bulletin* will not change my involvement with SAS, as I will be the Editor of our new book series, which follows our initial series with Plenum/Kluwer Press. Details will be provided in the next issue of the *Bulletin*, but we are soliciting book proposals already (for both monographs and edited volumes on archaeological science, broadly defined). In addition to the journal discounts and other existing advantages of SAS membership, we hope that these regular future publications will provide an appropriate venue for research and scholarly activity by SAS members, and serve an ever broadening international community.

As I step down as Editor, I would like to thank several SAS Presidents (Patrick Martin, Rob Sternberg, Christine Prior, Arleyn Simon, Greg Hodgins, and Aaron Shugar) and our General Secretaries (Erv Taylor, Rob Sternberg) for offering this position to me in the first place, making their own contributions, and repeatedly reminding me to try and publish

in a regular timely manner. In addition, I especially couldn't have done this without the assistance of the many associate editors that provided me with regular submissions, especially Charlie Kolb (ceramics), Mike Glascock and Mark Hall (book reviews), Sue Mulholland and Colleen Stapleton (calendar), Martha Goodway (Archaeometallurgy), David Landon & Linda Scott Cummings (Bioarchaeology), Donna Kirner and Jack Rink (Dating), Mike Waters and Fred Pearl (Geoarchaeology), Mike Richards and Nora Reber (Archaeological Chemistry), and Apostolis Sarris (Remote Sensing/GIS).

Over the past year, Christian Wells has served as co-editor, in order that the transition be smooth and not lots of work all at once without any experience. He has in fact contributed significantly with the organization, editing, and layout of the last several issues, and am sure that he will do a fine job as the new Editor. I hope that SAS members in general will continue to make regular submissions, and assist Christian with future issues of the *Bulletin*.

Robert H. Tykot

In This Issue

Employment Opportunities	2
Awards and Fellowships	2
Conference News and Announcements	4
IWGP Symposium (K. Borojevic)	6
Synchrotron Analysis (L. Bertrand)	8
Buikstra Wins Pomerance Award (P. Vandiver)	9
Program in Conservation Science (P. Vandiver)	10
Ceramic Laminates from Aguateca (H.F. Beaubien)	11
Remote Sensing and GIS (A. Sarris)	13
Archaeological Ceramics (C. C. Kolb)	13
Book Reviews (M. E. Hall)	
<i>Archaeological Survey</i> (E. Braun)	23
<i>Dictionary of Archaeology</i> (C. Descantes)	25
<i>Journal of Roman Pottery Studies</i> (C.C. Kolb)	25
<i>Statistics in Archaeology</i> (C. Orton)	28
<i>Revista Atlantica-Mediterranea</i> (A.A. Romero)	29
Upcoming Conferences (C. P. Stapleton)	30

Employment Opportunities

The Department of Earth System Science (ESS) at the University of California-Irvine, has an immediate opening for one or more full-time or part-time specialists (junior, assistant, associate or full specialist level depending on qualifications) to support operations of the W. M. Keck Carbon Cycle Accelerator Mass Spectrometer (KCCAMS) and Stable Isotope Facility. We measure ^{13}C and ^{14}C , ^{15}N , ^{18}O , and deuterium in samples of coral, seawater, sediment, organic matter, and air to determine how matter is transferred between the ocean, land and atmosphere. The successful applicant will help with sample preparation at the KCCAMS facility including an Accelerator Mass Spectrometer and two Isotope Ratio Mass Spectrometers (IRMS). Duties will be varied according to the skills of the individual, but may include running mass spectrometers, all stages of sample preparation, data analysis, documentation, assisting and training visitors and new personnel, and some laboratory management. A commitment to working as part of a team and the ability to work well in shared lab facilities is also required. Applicants should have a B.S. or higher degree in Physics, Chemistry or Earth Science, or equivalent experience. Experience in mass spectrometry, particularly IRMS, is desired. A curriculum vitae including names and contact information for three references should be sent to John Southon, Diane Pataki or Sue Trumbore, Dept of Earth System Science, U.C. Irvine, Irvine, CA 92697-3100; email jsouthon@uci.edu, dpataki@uci.edu, or setrumbo@uci.edu. Consideration of applications will begin in late February and continue until positions are filled.

The Center for Cultural and Environmental History and Andrew Fiske Memorial Center for Archaeological Research at University of Massachusetts, Boston is searching for an archaeologist to augment our interdisciplinary research team. This position is a fulltime, permanent appointment as a Research Scientist, beginning fall 2005 (pending final budgetary approval). Ph.D. is required plus 2 years experience in the supervision and completion of archaeology research projects. We seek someone with a commitment to field archaeology and demonstrated research skills in landscape archaeology, soils analysis, geochemistry, GIS, remote sensing, or another specialty that complements existing strengths in paleoethnobotany, zooarchaeology, and materials conservation. Grant writing or publication experience required and historic sites experience preferred. Send application letter, curriculum vitae, and contact information for 3 references to: Dr. Stephen Mrozowski, c/o Office of Human Resources, Search 760b, University of Massachusetts Boston, 100 Morrissey Boulevard, Boston, MA 02125-3393. Application closing date is March 1, 2005.

The Department of Anthropology at the University of California-Los Angeles and the Center for Society and Genetics, seeks highly qualified candidates for a faculty

position. The search is open to candidates from any subfield of Anthropology whose research encompasses the interaction between genetics, culture, and society. Examples of suitable topics include, but are not limited to: use of genetic data from modern and ancient populations to reconstruct demographic or linguistic cultural histories; anthropological studies of the use of genetic information in medicine; impact of new genetic technologies on constructions of family, kinship, and social identity; ethnographic studies of the process of constructing genetic knowledge and its ethical implications; and the interaction between genetic and cultural processes in human evolution. The position will involve teaching, service, and research contributions to both the Center and the department, with the tenure line in the department. The Center for Society and Genetics is an interdisciplinary program that seeks to understand and influence the complex interactions between the burgeoning genetic sciences, on the one hand, and the social world in which they are embedded, on the other. The Center thus seeks to generate new knowledge about the co-evolution of science and humanity by promoting innovative and socially relevant research and education. Applicants should have a major interest in developments in genetics and in concepts and social outcomes associated with them. This initiative encourages scholars to work closely with colleagues in a variety of fields in the humanities and social sciences as well as in the natural sciences and medicine. It presumes, nevertheless, that candidates will possess strong disciplinary grounding and continue to pursue research in their disciplinary area. The Center is seeking to fill four positions over the next few years. We encourage applications from all ranks, but applicants should have completed the PhD by January 2005. In addition, we intend one of these positions to be filled by an individual who will act as Director or co-Director. Any individual interested in the Director/co-Director position should identify their interest and experience in the cover letter. Please send letter of application, c.v., statement of research and teaching interests, names of referees, and samples of scholarship to Chair, CS&G/Anthropology Search, Department of Anthropology, UCLA, Box 951553, Los Angeles, CA 90095-1553.

Awards and Fellowships

The Natural Environment Research Council (NERC) is accepting application to fund PhD studentships at the Department of Geography at the University of Wales Swansea. Potential topics include stable isotope, dendroclimatology, tephrochronology, soil carbon, soil erosion and soil hydrophobicity, remote sensing, glaciology, lichenometry and the role of the silica cycling in regulating Quaternary climate change. NERC provides generous financial assistance to PhD students. Unfortunately full funding is restricted to UK residents. The detailed NERC eligibility requirements may be found at: <http://www.nerc.ac.uk/funding/students>. Further details of the studentships may be obtained from the departmental web-page: <http://geography.swan.ac.uk/pgrdinfo/pgradops2005.htm>. The deadline for applications is 7 March 2005.

2005 SAS Poster Competition at the Society for American Archaeology Annual Meeting. The Society for Archaeological Sciences (www.socarchsci.org) is offering a prize for the best student archaeometric poster presented at the 2005 Meeting of the Society for American Archaeology in Salt Lake City, Utah. The SAS R.E. Taylor Student Poster Award includes a one-year membership in the SAS, including the quarterly SAS Bulletin and a one-year subscription to either the Journal of Archaeological Science or Archaeometry. The student should be the first author and the presenter of the poster. Criteria for the award are significance of the archaeological problem, appropriateness of the archaeometric methods used, soundness of conclusions, quality of the poster display, and oral presentation of the poster. To apply, send a copy of the poster abstract (indicating the student author), a correspondence address, and the name and date of the session in which the poster will be presented. Submit by March 23, 2005 to: Aaron Shugar, Archaeometallurgy Laboratory, Lehigh University, 5 East Packer Ave., Bethlehem, PA 18015, USA, tel 610-758-4701, fax 610-758-3526, a.shugar@lehigh.edu.

2005 SAS Poster Competition at the International Symposium on Archaeometry. The Society for Archaeological Sciences (www.socarchsci.org) is offering a prize for the best student archaeometric poster presented at the 2005 International Symposium on Archaeometry in Beijing, China. The SAS R.E. Taylor Student Poster Award includes a one-year membership in the SAS, including the quarterly SAS Bulletin and a one-year subscription to either the Journal of Archaeological Science or Archaeometry. The student should be the first author and the presenter of the poster. Criteria for the award are significance of the archaeological problem, appropriateness of the archaeometric methods used, soundness of conclusions, quality of the poster display, and oral presentation of the poster. To apply, send a copy of the poster abstract (indicating the student author), a correspondence address, and the name and date of the session in which the poster will be presented. Submit by April 1, 2005 to: Aaron Shugar, Archaeometallurgy Laboratory, Lehigh University, 5 East Packer Ave., Bethlehem, PA 18015, USA, tel 610-758-4701, fax 610-758-3526, a.shugar@lehigh.edu.

The Institute of Archaeology, University College London invites applications for a number of fellowships, funded under FP6 Marie Curie Action EST, for its material-science based postgraduate archaeology programmes. Three different types of fellowships are available: short-term visits of three months, one-year fellowships for Masters programs, and two- to three-year fellowships for MPhil / PhD research students. All fellowships are aimed at training students to become academic researchers and teachers in material-science based archaeology. Fellows will be trained to use scientific instrumental methods for an archaeological research agenda, with particular emphasis being placed on using the Institute's facilities available in the Wolfson Archaeological Science Laboratory and the GIS Laboratory. The programme aims at emerging researchers with less than four years of research experience and prior to obtaining their PhD. The action aims to promote transnational mobility

within the EU as well as to attract the best students from outside the EU. Fellows should not have lived more than twelve months during the previous four years in the UK, and should be EU citizens. A certain number of non-EU applicants can be funded under the rules of FP6. Funding is in accordance with EST rules and includes a monthly living allowance in excess of €1,400, plus a monthly mobility allowance of €500. In addition, a one-off travel allowance will be available, and a further allowance for fellows staying 12 months or more. A contribution to UCL fees is also likely to be part of the fellowship. There is no set application form for these fellowships. However, all applicants will have to set out in writing (mail or email, including cv) their eligibility and their research plans and interests. Applicants for the three-month fellowships should explain how this will benefit their training and research programme. Applicants for the degree programmes need to apply separately to UCL for a place in one of the eligible programmes. The covering letter should contain the application for the Marie Curie funding and state how their planned research (in the case of MPhil/PhD fellowships) or their research interests and career plans (for Masters fellowships) match the aims of this particular EST action. Fellows will be selected on the basis of academic merit and the suitability of their planned research and training for the EST programme, as well as the availability of appropriate facilities and expertise at the Institute of Archaeology UCL. The deadline for applications for the 2005-2006 degree programmes is 30th June 2005, but applicants are encouraged to express their interest in EST funding before this date. Note that applications for funding will only be considered once the applicant has been offered a place in the academic programme by UCL. For short-term visiting fellows, the application deadlines are 30th June 2005 and 31st January 2006. Similar programmes will be running at least until 2007-2008. Contacts: Professor Thilo Rehren: th.rehren@ucl.ac.uk, Lisa Daniel: l.daniel@ucl.ac.uk. Further information: Marie Curie Actions <http://mc-opportunities.cordis.lu/>.

The Institute of Archaeology, University College London "Science, Conservation and Archaeology" project aims to train students to become full-time academic researchers and teachers in material science-based archaeology. The Institute of Archaeology UCL has a unique range of analytical scientific instruments which enables it to train young European archaeologists in the application of scientific methods. The IoA forms already a hub in this field, and the EST program will allow it to further structure the European Research Area as well as promoting mobility of the most promising European and overseas emerging researchers. EST fellows will choose from one of six master programs, selected from the current range of eighteen master degrees offered at the Institute. These programs were chosen for their interdisciplinary combination of scientific methods within an archaeological research agenda. An existing successful infrastructure of Masters and research student training will be used to monitor progress of the fellows, who will enjoy full use of the facilities of the Institute and the wide range of expertise of its 50+ academic staff. Particular emphasis will be laid on the development of individual, multi-disciplinary career paths eventually leading to a PhD. An

existing network of European and overseas cooperation will enable the fellows to gain a European perspective on modern science-based research in archaeology, and to contribute to the development of similar programs in their home countries. The EST program comprises three-month fellowships to foster cooperation with related PhD programs in other European universities by offering short-term visits at UCL; one-year fellowships are offered for training of Masters students, the most able of which may continue into the open competition for two- and three-year PhD programs. Contact: Institute of Archaeology, University College London, Gower Street, WC1E 6BT London, United Kingdom. <http://www.ucl.ac.uk>.

The Conservation Department of the National Museum of the American Indian (Smithsonian Institution, Washington, DC, USA) offers both short-term and year-long Andrew W. Mellon Advanced Conservation Fellowships at the Cultural Resources Center, Suitland, Maryland. The short term fellowships are available to students currently in a conservation training program or recent graduates. The year-long fellowships are available to recent graduates of conservation training programs. Experience gained in these fellowships is relevant to the care, preservation, and conservation of the museum's collection. The conservation department also offers a 12-month pre-graduate program internship to individuals committed to pursuing a graduate level degree in conservation. Experience gained in the internship is relevant to the care, preservation, and conservation of the museum's collection. Contact: Marian Kaminitz, Head of the Conservation Department, NMAI Cultural Resources Center, 4220 Silver Hill Road, Suitland, MD 20746, Tel: 301/238-6624 x6322, E-mail: mkaminitz@ic.si.edu. Website: <http://www.si.edu/ofg/fellowopp.htm>.

The Smithsonian Center for Materials Research and Education (SCMRE) announces its Post-doctoral Fellowships, available for research on problems in the application of techniques of the physical sciences to problems in art history, anthropology, archaeology, and the history of technology. Successful applicants will be chosen on the basis of their submitted research proposals. It is recommended that applicants first contact the appropriate member of the Smithsonian Center for Materials Research and Education (SCMRE) research staff before making a formal application. Telephone 301/238-3700. Contact: Office of the Director, SCMRE, Smithsonian Center for Materials Research and Education, Museum Support Center, 4210 Silver Hill Road, Suitland, MD 20746-2863. Website: <http://www.si.edu/ofg/fellowopp.htm>.

The Smithsonian Center for Materials Research and Education (SCMRE) invites applications for research fellowships relevant to the care, preservation, and conservation of museum collections. The areas of interest typically include the composition of museum objects as they relate to their deterioration and the study of materials and deterioration mechanisms as they relate to methods for preservation. All scientific disciplines are relevant, but proposals from the perspectives of materials science, engineering, and chemistry will be especially considered. Successful applicants will be

chosen on the basis of their submitted research proposals. Pre-doctoral fellowships may be available; applications will also be accepted from persons with a degree or certificate of advanced training in the conservation of artifacts or art objects. Applicants are encouraged to contact the appropriate member of the SCMRE research staff before submitting a formal proposal. Contact with all SCMRE staff can be made through telephone 301/238-3700, and formal applications should be made to: The Office of the Director, Smithsonian Center for Materials Research and Education, Museum Support Center, 4210 Silver Hill Road, Suitland, MD 20746-2863. Website: <http://www.si.edu/ofg/fellowopp.htm>.

Conference News and Announcements

Archaeometallurgy in Sardinia: From the Origins to the Early Iron Age. The Università degli Studi di Cagliari, the Associazione Italiana di Metallurgia and the Associazione per l'Università del Sulcis Iglesiente held a meeting in Sardinia on the 10th and 11th of September to launch the volume *ArchaeoMetallurgy in Sardinia*, by Ulrico Sanna, Roberto Valera and Fulvia Lo Schiavo (2004). The book consists of a multi-authored study dealing with all aspects of prehistoric metallurgy on Sardinia and covers a time span of 3000 years. It collects the work of scholars coming from different fields and specializations. Mining geologists thoroughly studied the territory and evidenced the existing resources, Archaeometry specialists carried out analyses on over 250 finds and commented the results, and archaeologists identified and classified the artefacts and provided the basic historical frame. The volume and the attached CD-ROM, were also presented in Milan, at the International Conference *Archaeometallurgy in Europe*, September 2003. The aims of the workshop were both the critical analysis of the book contents by the invited speakers and the discussion, from different points of view, on the interconnections Sardinia had in this period with other European and Mediterranean cultures. One main topic was the metal sources and the abundance of copper and bronze metal found in the Bronze Age Nuragic settlements. A second theme was the Late Bronze Age metallurgy of Sardinia in connection with the Iberian Peninsula (S. Rovira Lorens), France (M. Pernot), Central Europe (E. Pernicka), Cyprus (V. Kassianidou). J. Muhly and R. Maddin provided the general archaeological and metallurgical overviews. New data on archaeometallurgy in Sardinia, based on analyses, geological and archaeological studies (C. Atzeni, L. Massidda, U. Sanna, R. Valera and F. Lo Schiavo), new analyses and studies on ingots in the Central Mediterranean (A. Giumlia-Mair, F. Lo Schiavo, C. Atzeni, L. Massidda, A. Rivoldini, U. Sanna) and in the Alps (N. Trampuž Orel and A. Jockenhövel) were also presented on the second meeting day.

Society for American Archaeology SAS Sponsored Forum: Bridging the Gap: Integrating Archaeological Sciences and Archaeology, organized by Stacey Lengyel and Amy Margaris. Discussants include Greg Hodgins, David

Anderson, Paul Goldberg, Stacey Lengyel, Elizabeth Miksa, Doug Price, Christian Wells, Julie Stein, A.J. Vonarx, and John Yellen. Abstract: The successful integration of archaeological sciences within broader archaeological investigations has been a recurring goal for both practitioners and consumers of archaeological science. Opening remarks by panelists representing diverse research backgrounds will address problems and progress in meeting this goal in light of the panelists' personal research experiences. The ensuing audience discussions will focus on central issues such as how and when specialists should be integrated into archaeological research projects, what drives archaeometric research, and how to prepare students for careers in archaeological sciences or for effective communication with archaeological scientists. Students are especially encouraged to attend!

The 2005 UK Archaeological Science Conference, Archaeology at the Interface will be held from 13 to 16 April 2005 at the University of Bradford, hosted by the Department of Archaeological Sciences. For additional information, contact Dr. Alex Gibson, Department of Archaeological Sciences, University of Bradford, Bradford, BD7 1DP (Telephone: ++ 44 (0)1274 235385, e-mail: A.M.Gibson1@Bradford.ac.uk) and see details on the Internet at <http://www.bradford.ac.uk/archsci/archsci2005/>.

Prehistoric Technology 40 Years Later: Functional Studies and the Russian Legacy will be held 20-23 April 2005 at Polo Zanolto (Natural History Museum of Verona), University of Verona, Italy. The Internet site <http://www.weartraces.com> has additional information. For more details, contact Dr. Laura Longo (meeting coordinator) info@weartraces.com, 0039 045 800 51 57.

Metallurgy - A Touchstone for Cross-cultural Interaction will be held at The British Museum, April 28-30, 2005. The conference will take place in the BP lecture theatre in the Clore Centre at the British Museum, Great Russell Street, London. The main Conference Reception for delegates will take place in the Enlightenment Gallery at the British Museum on Saturday evening. We are delighted to announce that on the evening of Thursday 28th April there will be talks by Robert Maddin and Paul Craddock, followed by a reception in the Clore Centre in the British Museum. Future updates to the programme, registration details and information on hotels will be posted on the conference web site: <http://www.thebritishmuseum.ac.uk/whatson/events/conferences.html>.

Current Archaeological Propection: Advances for Non-Destructive Investigations in the 21st Century is the National Park Service's 2005 Workshop on Archaeological Propection techniques to be held May 16-20, 2005, at the Hopewell Culture National Historical Park in Chillicothe, Ohio. Lodging will be in Comfort Inn in Chillicothe, Ohio. This will be the fifteenth year of the workshop dedicated to the use of geophysical, aerial photography, and other remote sensing methods as they apply to the identification, evaluation, conservation, and protection of archaeological resources across

this Nation. The workshop this year will focus on the theory of operation, methodology, processing, interpretation, and on-hands use of the equipment in the field. Special topic for this year is the introduction of geophysical techniques in archaeological excavations. In addition to the workshop, there will be an equipment fair on Friday (May 20th) with the major geophysical equipment manufacturers attending. There is a tuition charge of \$475.00. Application forms are available on the Midwest Archeological Center's web page at <http://www.cr.nps.gov/mwac/>.

Archaeological Geophysics announces a special session during the Spring meeting of the American Geophysical Union (AGU) to be held in New Orleans, May 23-27, 2005. Conference information: <http://www.agu.org/meetings/sm05/>; Session information: <http://www.agu.org/meetings/sm05/?content=search&show=detail&sessid=58>

1st Paleopathology Association Meeting in South America, July 27-29, 2005: "Human Dispersal, Adaptability, and Disease." Migration, contacts between different human groups, new natural environments, and cultural changes have all strongly affected patterns of health and disease in past human populations. The different waves of immigrants who entered the Americas over the millennia brought with them certain native illnesses and encountered others throughout the New World. Paleopathology is the scientific study of health as it changes through time and space and adapts to new natural and cultural environments. The 1st PAMinSA will focus on the impact of the peopling of the Americas upon natural and biocultural aspects of health and disease. We invite you to join us for three days in the wonderful city of Rio de Janeiro, Brazil, to discuss recent advances in the investigation of diseases in the past, and to enjoy our warm Brazilian hospitality. Come join us! For more information, visit the website, <http://www.paleopathology.org/sameeting.html>.

4th International Congress of Ethnobotany, Istanbul, Turkey, August 2005. We are now calling for papers for Session 6: "Continuity and change in food and medicine: archaeobotany and the written record." Archaeobotanists, who work with historical and archaeological data, do not have the luxury of asking people what they think about plants, nor can they observe the daily activities that integrate plants into the lives of the people whose remains they study. Ethnobotanists who work with living people rarely have the opportunity to study change beyond the memories of those with whom they work. The written record may complement, contradict or reinforce interpretations based on archaeobotanical evidence. The goal of this symposium is to demonstrate how the long-term perspectives of archaeobotany and historical ethnobotany, focused on patterns of change and stability in the use of plants as food and medicine, can inform the wider ethnobotanical debate. For full information see: <http://www.iceb2005.com/topics.html#6>.

14th Meeting of the Association of the European Geological Societies, Turin (Italy) - September 19 – 23, 2005.

Centro Congressi Regione Piemonte, Corso Stati Uniti, 23 – Torino (Italy). Web Site: www.maegs14.com. Call for abstracts: submission of papers for oral presentations or poster sessions: Dead line May 15th, 2005. On line submission: www.maegs14.com. The general purpose of the organizers is to dedicate equal space/time to scientific and applied topics and to dedicate a third slice of space/time to Public policy and Citizen education/communication concerning Geohazards. The conference will concentrate on the following major themes: 1) Active tectonics and seismic hazard, 2) Floods, landslides and related hazards, 3) Subsidence hazards, 4) Volcanic hazards, 5) Geohazards and public policy, 6) Geohazards and communication.

American Schools of Oriental Research Annual Meeting, Nov. 16-29, Philadelphia, PA. Session: “Artifacts, The Inside Story.” This session welcomes submissions in which the analysis of Near Eastern artifacts by means of physical or chemical techniques has led to a new or re-interpretation of the archaeological record. This year’s theme, “From Processing to Provenience”, includes such topics as raw material acquisition, manufacturing techniques, and product distribution. One session is planned for 4-5 speakers. Papers will be limited to 20-25 minutes. Abstracts are limited to 250 words and should be emailed to the Section Chair: Dr. Elizabeth Friedman, Department of Biological, Chemical, and Physical Sciences, Illinois Institute of Technology, 3101 S. Dearborn, Chicago, IL 60616. Tel: 312-567-7973; Fax: 312-567-3494; Email: friedman@iit.edu. Deadline for abstracts is April 1st, 2005 but the section chair would welcome them sooner. Please check the ASOR website for membership and participation requirements: <http://www.asor.org/>.

The 2005 Australasian Archaeometry Conference will be held December 12-15, 2005, at the Australian National University, Canberra, Australia, hosted by the Department of Archaeology and Natural History, RSPAS, and the Centre for Archaeological Research. Details will be regularly posted on the conference website: http://car.anu.edu.au/archaeometry_conference.html. For further details contact: Andy Fairbairn (andrew.fairbairn@anu.edu.au) or Sue O'Connor (sue.oconnor@anu.edu.au) at the Department of Archaeology and Natural History, RSPAS, Coombs Building, Australian National University, ACT 0200, Australia.

palaeoethnobotanists (archaeobotanists) held every third year in a different European city, since the first meeting in 1968. I had an opportunity to attend several previous symposia, and I was fortunate to attend the 13th IWGP Symposium held in Girona, Catalonia, Spain, May 17-22, 2004.

The principal organizers, Dr. Ramon Buxó of the Museu d'Arqueologia de Catalunya and Dr. Raquel Piqué of the Universitat Autònoma de Barcelona, helped by Alba Solés, the secretary of the symposium, and by the host of colleagues and students put on a splendidly organized symposium in the Catalan city of Girona. The symposium was held in the Auditori de la Mercè – Centre Cultural de la Mercè, a Romanesque church and Cloister within the medieval walls of this beautiful city. There were over 130 participants who attended the symposium, primarily from European countries, but also a few from Argentina, Egypt, India, Israel, Iran, and the USA. The official language of the symposium was English, although there were only a few native English speakers. Local officials and dignitaries from the University of Girona, University of Barcelona, and the city of Girona warmly greeted the participants in the Catalan language.

In the tradition of the IWGP symposia, there were five days of presentations, followed by the Saturday excursion. Similarly to the last symposium in Sheffield, the contributions were grouped according to the themes: Analytic Archaeobotany, Gathering and Cultivation, Historical Archaeobotany, and Ethno-botanical Approaches.

Fortunately, due to the rather small scale of the IWGP symposium still retained, paper, poster, and laboratory sessions were not running simultaneously, allowing each participant to hear and see all the papers and posters and to participate in the lab sessions and discussions. The novelty of this symposium was that almost all presenters used PowerPoint presentations with excellent graphics and, thus, there was less chance of showing long, illegible lists of plant species and of having slides turned upside down. Also this year, there were more posters than in the previous years. Generally, there were many excellent and interesting papers and posters, but I can only mention a few in this short report.

The first day was dedicated to the Analytical Archaeobotany, which included diverse contributions dealing primarily with numeric, quantitative, molecular, and DNA analysis. Molecular approaches and DNA studies are becoming more prominent in the otherwise traditional field of archaeobotany, which primarily relies on morphological identifications. For example, Manen and colleagues described the use of microsatellite DNA sequences of archaeological *Vitis vinifera* to investigate the origin and history of ancient cultivars from France and Hungary. Reales and colleagues from Murcia combined numerical results of Numerical Taxonomic Analysis based on detailed morphological studies of plum stones (*Prunus species*) with chloroplast DNA sequencing of modern specimens in order to assist the inherently problematic identification of archaeological plum stones. Pollmann and

13th International World Group for Palaeoethnobotany (IWGP) Symposium, Girona, Spain, May 17-22, 2004

*Ksenija Borojevic, Department of Anthropology,
University of Alabama, Birmingham*

The International World Group for Palaeoethnobotany (IWGP) symposia are gatherings of primarily European

colleagues from Basel displayed on a poster the use of ancient DNA for more precise identification of waterlogged *Prunus* species from Switzerland. Gyulai and Szabo exhibited the posters showing the analyses of the rescued ancient DNA of common millet and cantaloupe from the Medieval Budapest, and compared them with modern varieties in Hungary. Carbon isotope ($\Delta^{13}\text{C}$) discrimination in archaeological plant remains was employed by Araus and colleagues from Catalonia to infer past climate and agricultural water management in the Mediterranean.

Several contributors in the Analytical Archaeobotanical session employed various aspects of weed analyses for variety of studies, e.g., identifying key regions and periods in which important changes in arable ecology occurred in Eurasia/North Africa (Fuller); distinguishing different crop husbandry practices using functional weed ecology (Jones et al); and locating ancient wheat fields and tracing trade in Ashkelon (Weiss and Faust). The paper by Riehl and colleagues showed that carbonate *Lithospermum* seeds that conspicuously occur in uncarbonized form at various archaeological sites can be radiocarbon dated, indicating that they are contemporaneous with the rest of a plant assemblage, and not recent intrusions, a doubt commonly raised until this study. Hillman's contribution of identifying naked wheats from rachis fragments cautioned us again of all the ambiguities of the morphological identifications. Unfortunately, the desirable level of Hillman's precision probably cannot be attained using current morphological criteria only.

The Gathering and Cultivation session included several interesting papers, including papers on Epipalaeolithic plant economy from Öküzini and Karain B in southwest Anatolia (Martinoli), on evolution and domestication of fig in the Levant (Hartmann), and on the origin and domestication of the olive in southern Spain (Rodriguez and Montes). Several talks dealt with domestication and spread of agriculture in the Near East (Willcox), in Northern and Central Italy (Rottoli), and in Central Spain (Stika), and in Bulgaria and Central Europe (Kreuz et al).

In the Historical Archaeobotany sessions, more traditional papers were presented dealing with archaeobotanical work from various prehistoric and historical sites in the Old World, including papers on the grain storages in the Hittite capital Bogazköy that involved the systematically sampling of 4 tons of carbonized grain (Neef); analysis of medieval wells in Prague (Benes et al); and analysis of 'a poor' late Roman settlement in Italy (Sadori and Susanna). Of particular interest were results of the analysis of the desiccated contents of a basket from in Predynastic Hierkanopolis, including rarely preserved tubers and mericarps, presented by an Egyptian scientist, Fahmy. There were several contributions by archaeobotanists from Southeast Europe, demonstrating that there is growing number of local archaeobotanists. Valamoti presented an interesting paper distinguishing between grain-rich and chaff-rich sites in Neolithic Greece, inferring possible different function of the features (sites). Popova (Bulgaria) described an analysis of prehistoric material from Hotnitsa. Marinova showed the results

from systematically recovered samples (not only storages) from the Bronze Age layers at the famous site of Karanovo in Bulgaria. Megaloudi talked about the ritual burnt sacrificial offerings at Hellenistic Messen in Peloponnesus. Borojevic presented (poster) the results of the first analysis from a medieval site in Serbia, from the fortress of Ras.

Karg and the nine colleagues from the Baltic countries informed us about results of the Hansa-network project that combines interdisciplinary information and connects it, through archaeobotanical research, to the changes in nutrition during the existence of the Hanseatic League (a medieval confederacy of traders originating from Germany). This project predates the entrance of several Baltic countries to the EU, and demonstrates the ability of Karg and her nine female colleagues to cooperate well within the 'Hanseatic archaeobotanical league' of modern times.

The last day of the symposium, papers were dedicated to Ethnobotanical approaches and to an open session. There was a variety of talks on different topics, including the evidence for the Broad Spectrum Revolution based on plant remains (Weiss), water plants as food resources in the Lower Paleolithic at Geshen Benot Ya'aqov, Israel (Melamed), import of the recently identified oil plant *Lallemantia* in Bronze-age Greece (Jones and Valamoti), and exciting new results of the Icemen's last journey (Oeggl). The talks ended with a roundtable discussion on wheat evolution and the relationship between the Mediterranean area and the Central and West Europe.

Generally, there were an increasing number of contributions on molecular and DNA analyses, applied for tracing origins or seeking more precise identification of the Old World crops. Statistics and taphonomy were not featured largely, except for a few papers and posters from the archaeobotanists from the Great Britain by and Switzerland (Bogaard et al, Jones et al, Fuller, Vandorpe and Jacomet). There were more papers on plant remains predating domestication of plants than in the previous symposia, a prospective new trend. Many contributions in the Historic Archaeobotany session integrated well archaeological data and offered broader contextual interpretations than in the previous conferences.

Officially, there were two laboratory sessions during which participants brought the unidentifiable specimens to seek help in identification from the experienced colleagues, specialists in their respective phytogeographical regions, or to share their discoveries of the ambiguous specimens (e.g., *Lallemantia* seeds). The organizers of the symposium succeeded in acquiring microscopes that were available for the participants during the entire duration of the symposium. Dalnoki brought a sample containing charred cereal grains from an archaeological sites in Hungary. She challenged the present archaeobotanists to identify various types of wheat grains in order to evaluate how much the results reflect the subjectivity of the analyst.

The last day there was an excursion that combined visits to botanical and archaeological sites. First, we were shown a

mixture of Mediterranean and continental forest and a field of colorful weeds. Later, we were guided through to the Iberian archaeological site Puig St. Andreu-Ullastret where we had a picnic. Unfortunately, we were not able to visit the Neolithic waterlogged site La Draga due to the sudden heavy rain from the Pyrenees. The site was recently discovered during the constructions of the lake for the Barcelona Olympics in 1992. Well-preserved plant remains from this now famous site are being analyzed by the Dr. Buxó, and Dr. Piqué and their colleagues. Instead of the visit of the site, participants were shown a PowerPoint presentation of the La Draga in the local Museum of Banyoles.

The symposium was well attended and there seems to be more novices in the field - generational change being more evident. There was an increasing number of participants who were outside the traditional cradle of archaeobotany, e.g. from Spain, Italy, Greece, Bulgaria, Egypt, and Iran, where archaeobotanical research was previously carried out usually by archaeobotanists from Central and Western Europe. Unfortunately, there were no participants from Russia and Ukraine. Although there are no more major political and bureaucratic obstacles for crossing the borders, economic difficulties of the countries from the former Eastern Block, prevented many from attending. Those dedicated who came could only afford bus fare, a less expensive means of transportation that involved several days of exhausting bus rides. The Continental divide between the Americas and the Old World seems to have continued-- there was only one scientist from Argentina, and two from the USA.

The symposium was superbly organized, in terms of professional activities, equipment, following time-schedule, cheap accommodation, and cultural and social activities. The success and the generosity of the organizers was also expressed in several receptions, a dinner banquet, and by the gifts that participants received, including two books on prehistoric agriculture published by the Archaeological Museum of Catalonia in Girona. Dr. Buxó and the members of his team were excellent hosts who have set new standards, certainly a challenge for the organizers of the future IWGP symposia, the next one being held in Krakow, Poland in 2007.

First European Training School On the Synchrotron Analysis of Ancient Materials

*Loïc Bertrand, Synchrotron SOLEIL,
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The first European training school on the synchrotron analysis of ancient materials was held at the SOLEIL synchrotron (near Paris, France) from 14th to 18th of December 2004. This initiative was founded by the COST action G8 programme of the European Science Foundation,

the SOLEIL synchrotron and local authorities. The school was held at a time when material characterization using photon beams undergoes a complete revolution due to the development of synchrotron techniques, allowing for an improved analytical sensitivity, coupled characterizations and 2D- (or 3D-) imaging. In January 2004, a specific program on archaeology & cultural heritage was launched at SOLEIL to allow international users from these communities to be granted access and specific synchrotron expertise. This interface aims at informing new users, facilitating contacts between researchers and beamline scientists, adapting SOLEIL to the specific needs, contributing to data processing and co developing new characterization techniques.

The 87 applications received for the training school were reviewed by an independent jury and their decision led to a final group of 31 participants, originating from 19 countries (Europe, USA, Romania, Turkey and Australia). The 5-day advanced course included lectures given by world-class specialists, and was focused on the challenges regarding the analysis of metal artifacts, ancient pigments and organic materials. Three complementary approaches were chosen: current trends in the three cultural heritage fields mentioned, case studies and in-depth presentations of synchrotron techniques. The synchrotron lessons were given by beamline managers and scientists from three distinct synchrotron facilities (SOLEIL, ESRF and SRS). The main characteristics of the synchrotron radiation, and more particularly the parameters users will have to adjust were introduced by Dr. Andrea Somogyi (SOLEIL), followed by the presentation of the optical elements constituting on a synchrotron beamline by Mourad Idir (SOLEIL).

The first session was focused on ancient metal analysis. Current challenges regarding provenance, composition of special alloys and manufacturing techniques were beautifully introduced by Prof. Alessandra Giumlia-Mair (AGM Archeoanalisi, Merano). The synchrotron (diffraction, absorption) analysis of corroded iron artifacts was taught by Dr. Philippe Dillmann (CEA, Saclay) and Dr. Régis Bertholon (Université Paris I) gave a special focus on their "original surface". Synchrotron beams can now be focused to sub-micrometric spots, therefore enabling very precise mappings of composition, structure and chemical information. This point is particularly relevant to ancient materials of archaeological & cultural heritage interest, where a lot of information can be retrieved from the analysis of local heterogeneity (inclusions, surfaces, trace elements, micro-structural defects). Cutting-edge developments in X-ray imaging were presented by Dr Koen Janssens (University of Antwerp, Belgium) and synchrotron absorption theory and techniques were presented by Dr Andy Smith (SRS synchrotron, Daresbury).

The session on the analysis of paint layer was introduced by Dr. Marika Spring (National Gallery, London) who presented the current trends in pigment alteration and identification analysis, as well as the recent identification of powdered glass probably used as siccative in paint layers. Dr. Trinitat Pradell

(Universitat Politècnica de Catalunya, Barcelona) emphasized the interest of micro-diffraction techniques to map pigment distribution in paint layer and uncover their manufacturing process. The basics of synchrotron X-ray diffraction were presented by Dr Sylvain Ravy (SOLEIL). A case study, taught jointly by Prof. Jean-Louis Hodeau (President of the French crystallography association) and Dr. Eric Dooryh  e (both from Lab. de cristallographie de Grenoble, France) gave a very clear illustration of the benefit that could be brought by synchrotron fine structural analysis, from phase identification to texture analysis.

Synchrotron analysis of ancient organic materials, from art materials to biological materials such as food remnants, wood and paper, was dealt with by Marine Cotte (ESRF synchrotron, France). Chemical function mapping, using the capabilities of new synchrotron infrared microscopes, and subsequent data analysis were presented by Dr Paul Dumas (SOLEIL).

Finally, illustrations of the coupling of synchrotron techniques were given by Dr Jean Doucet (Lab. de physique des solides, Orsay, France). The recent development of specific cultural heritage programs in synchrotron facilities was presented by Dr Manolis Pantos (SRS) and Dr Lo  c Bertrand (SOLEIL).

Additional scientific events included the widely-appreciated visit of the former SuperACO synchrotron, and that of the Laboratory of research on historical monuments (LRMH, Champs-sur-Marne), after a warm welcome by its director, Isabelle Pallot-Frossard. The school official dinner was organized at the Palais de Tokyo, preceded by group visits of the museum. The feedback of the participants was very positive (more than 17/20) and a new school should be organized towards the end of 2005 / beginning of 2006 at SOLEIL. A different focus will be chosen (topics and public). For more information, see the websites: <http://www.synchrotron-soleil.fr/heritage>, <http://srs.dl.ac.uk/arch/cost-g8>, or contact: Lo  c Bertrand, cultural heritage officer, loic.bertrand@synchrotron-soleil.fr.



SOLEIL Synchrotron

Buikstra Wins Pomerance Award

Pamela Vandiver, Department of Materials Science and Engineering, University of Arizona

Jane Buikstra is the recipient of the 2005 Pomerance Award for Scientific Contributions to Archaeology. Professor Buikstra is a founder of the study of bioarchaeology— a field that combines forensic anthropology, paleodiet, paleopathology and the study of their social dimensions, especially as regards mortuary behavior. She is well known for contributing to our understanding of the biological impact of European colonization in the Americas. Her research emphasizes the intensive study of prehistoric skeletal populations, emphasizing both micro-evolutional change and biological response to environmental stress. The book, *The Bioarchaeology of Tuberculosis: A Global View on a Reemerging Disease* (2003), that she co-authored, is considered a classic. She has conducted field research in Argentina, Brazil, Canada, Honduras, Peru, Spain, Turkey and the United States and has coupled these field studies with intensive laboratory research. The research achievement we celebrate is based in part on her versatility and skill in adapting a wide range of scientific techniques to bear on biological problems. For instance, she has used radiographic, microscopic and chemical analyses to study osteological remains, strontium isotopes to study prehistoric migration and mortuary ritual, and carbon isotopes to study paleodiet and agricultural intensification. Prof. Buikstra has pioneered in the reconstruction and interpretation of bone preservation and modification in a variety of soil conditions. She has studied the relationships of paleodiet and nutrition to variations in status, gender, bone pathology and even hair chemistry.



Dr. Jane E. Buikstra, Leslie Spier Distinguished Professor of Anthropology, University of New Mexico

Early in her career she helped establish standards for licensing professional archaeologists. As one of the editors of the monograph, *Standards for Data Collection from Human Skeletal Remains* (1994), she aimed to establish forensic standards. She has worked in historic cemeteries (for example, the 2004 book, *Never Anything So Solemn: An*

Archaeological, Biological and Historical Investigation of the 19th Century Grafton Cemetery) as well as at ancient tombs with elaborate rituals, for instance, at the early classic site of Copan ("Tombs from Copan's Acropolis: A Life History Approach," 2004). As an advisor at the American School of Classical Studies in Greece she helped shape a new direction for the lab; she has mentored students and has authored the soon-to-be published article, "Bioarchaeological Approaches to Aegean Archaeology."

Prof. Buikstra has conducted 17 projects in the North American Midwest since her PhD. thesis research at the University of Chicago, where she received the M.A. in 1969 and Ph.D. in 1972. Her doctoral thesis was entitled, "Hopewell in the Lower Illinois River Valley: A Regional Approach to the Study of Biological Variability and Mortuary Activity." From 1970 to 1984 she taught at Northwestern University, when she became Resident Scholar at the School of American Research. From 1986 to 1995 she was Professor of Anthropology at the University of Chicago. As added tasks, she became research associate at the Field Museum and at the National Museum of the American Indian. From 2003 she was George E. Burch Fellow in Theoretic Medicine and Affiliated Sciences at the Smithsonian Institution. Professor Buikstra has been a member of the National Academy of Science since 1987, and a Distinguished Professor at the University of New Mexico since 1995. She has authored 153 publications since 1973, of which 15 are books or monographs.

New Graduate Program in Heritage Conservation Science at the University of Arizona

*Pamela Vandiver, Department of Materials Science and
Engineering, University of Arizona*

We are at a unique point in our history in which much of the world's cultural heritage is in peril, and many of the underlying technologies are being lost. To preserve our inheritance, a workforce of scientists trained to work with conservators and other specialists is critical to solve the problems of stabilizing and preserving art, artifacts and sites. The University of Arizona's Department of Materials Science and Engineering is initiating a graduate program in Conservation Science and an undergraduate track in cultural materials analysis. The three aspects of this program are conservation science, archaeological materials analysis and architectural preservation. The underlying concept is to put materials research at the foundation of preservation.

This program is special for many reasons. The degradation of cultural heritage has many complex and interconnected processes that must be analyzed and deconstructed, and the range of their variation must be characterized. These processes include the technologies of how things are made and used, the

materials selected and transformed, corrosion and weathering processes, storage and burial conditions and previous restoration and mitigation efforts. Constraints on sampling of museum objects require taking miniscule amounts of material and then processing it through several characterization tests, often synthesizing and artificially aging standards for comparison. Often on-site resource surveys and ethno-archaeological reconnaissance are required to understand the context of a production and/or use technology. Sometimes anomalous aspects are selected for modeling and testing in controlled experiments. The program is also special because it is the only one in the United States, as the program in conservation science at the Johns Hopkins University has been cancelled. Two graduate students currently are funded in the program, and proposals have been submitted that concern refinements of dating, microscopic and chemical testing of the degree of materials degradation and the development of new treatment and preservation methods.

The University of Arizona is an ideal location for this program because of the multi-disciplinary, materials-based studies that are shared among several departments. A long record of excellence in archaeological science and materials-based cultural studies in the Department of Anthropology is now being broadened by an NSF IGERT program that aims to produce multi-disciplinary graduates. Geosciences, chemistry, physics and materials science all share in this endeavor, and they support the new program as well. In addition, the School of Architecture offers a master's degree in Architectural Heritage Preservation that defines legal and ethical issues and that trains graduates in documentation and methods of stabilization and preservation. A conference, The Vernacular Architecture Forum, is to be held this spring.

The core of the program is a close collaboration between me, Pamela Vandiver, a new professor in the Materials Science and Engineering Department, and Nancy Odegaard, Head of the Arizona State Museum Conservation Laboratory, a center in the southwest for conservation excellence. The state of Arizona, because of its long and continuous tradition of Native American cultures, has been the repository for important collections from these early and modern American cultures. The new program coordinates closely with conservators and others at the Arizona State Museum and will take advantage of its unique collections to train and educate students. Agreements are being established with other museum laboratories to provide further research and training opportunities outside of the southwest. In the near future, we intend to participate in the dialog that will lead to the drafting of legislation to implement the new UNESCO charter on the preservation of intangible cultural properties, such as craft knowledge, and to be able to share some of the knowledge we have derived from our studies with both museum and academic professionals as well as with craft practitioners here and in other parts of the world. For further information, contact P. Vandiver at vandiver@mse.arizona.edu, N. Odegaard, odegaard@email.arizona.edu, or, for specific admissions information, Elsa Morales, elsam@u.arizona.edu.

Ceramic Laminates: Introduction to the Craft Technology behind Aguateca's Mask

Harriet F. Beaubien, Smithsonian Center for
Materials Research and Education

Painted and sculpted renditions of elite activities provide detailed examples of ceremonial headgear, but archaeological evidence of their materials has been scarce. Stone and ceramic, the materials of some excavated mortuary masks, and wood, cited as a mask material in ethnohistoric records (e.g., Tozzer 1941:111), have been suggested as possibilities, but known examples do not display the highly sculptural qualities typical of the artistic renderings. These materials also seem impractical choices for regalia worn during actual ceremonies. Until recently no plausible alternatives have been known.

In 1993, the first group of fragments of an unusual material was found in unstratified ritual deposits from the Classic period at the site of Cueva de los Quetzales, a cave underlying the ceremonial center of the site of Las Pacayas in the Petexbatún region (El Petén, Guatemala) (Brady and Rodas 1995). The discovery in 1998 of a similar material, in a royal residence at the site of Aguateca in the same region, made an important contribution to the dataset (Inomata et al. 2001). Thanks to the circumstances of the site's attack and abandonment in about 800 AD, careful excavation and conservation attention, the fragments could be reassembled, permitting a more extensive investigation of the material from a technological perspective. Several reconstructed objects appear to be ceremonial costume elements, including a face mask and elements of a headdress, of a stylistic type known only from painted or carved depictions of ceremonial scenes. The objects' large surface areas, as well as the variety of fragments in the deposits, were invaluable in permitting technological aspects of their craft material, termed "ceramic laminate," to be elucidated.

This article briefly summarizes the current hypotheses about this craft technology, based on information obtained from the conservation of the Aguateca artifacts, technical analysis of samples, replication experiments, and collections-based research, which has identified additional examples of this material.

Conservation. The large deposits from the royal residence at Aguateca received conservation attention both in the field and subsequently in the laboratory (Beaubien 2003a). After careful cleaning *in situ*, any contiguous fragments were lifted together by applying facing tissues with a temporary adhesive. Later in the laboratory, after numerous tests, the fragments were carefully cleaned to remove accretions, and completely consolidated so that they could be handled during the reassembly process. A more complete reconstruction was possible in the case of the face mask,



Face mask found in Str M7-22, Aguateca, Guatemala

producing the most complete, identifiable laminate object recovered to date, and the best evidence of production steps. Temporary supports used during the reassembly process were ultimately replaced with a thin unifying tissue support adhered to the back side, and areas of loss were filled to strengthen the object as a whole. To provide added protection in storage and on display, a rigid support was fabricated and attached to the back side. All materials used in the conservation of the mask elements were chosen for their stability over time and ability to be removed if necessary.

Technical investigations. Technical investigations of samples from Cueva de los Quetzales and the Aguateca masks, carried out at the Smithsonian Center for Materials Research and Education, elucidated key aspects of their material and technology (Beaubien et al. 2002; Kaplan 1994; Shah 2000). Analytical techniques included: microscopical inspection of samples, including embedded cross-sections; scanning electron microscopy (SEM) imaging and energy-dispersive x-ray spectroscopy (EDS) analysis of components; Fourier transform infrared spectroscopy (FTIR) of possible organic components; and x-ray diffraction analysis of inorganic components. Physical properties of hardness and inertness to wetting were carried out, and refiring tests (up to 850°C) were carried out on several original samples. These investigations were supplemented with replication experiments, for comparison with features seen in original examples (Beaubien 2001; Beaubien et al. 2002). Tests included laminate construction using textiles of a variety of fibers, shaping using convex and concave molds, manipulations after drying, and firing tests (350°C to 1150°C). Samples were inspected with a microscope and various physical properties were evaluated.

Collections-based research. Enlarging the number of known examples emerged as a priority to establish the ceramic laminates as a craft technology, and to develop a more complete view of its production and history of use. With grant support from the Foundation for the Advancement of Mesoamerican Studies, collections-based research was conducted in 2002 and

2003 to locate additional samples (Beaubien 2003b). Several collections housed temporarily in project laboratories and in several storerooms of the Instituto de Antropología e Historia de Guatemala were examined. New samples were identified and, together with the previously reported ones, bring to six the number of sites with ceramic laminates.

Results. Research in selected archaeological collections has now verified the presence of a previously unrecognized material at six archaeological sites – Aguateca, Arroyo de Piedra, Las Pacayas/Cueva de los Quetzales, Nacimiento, Piedras Negras and Tamarindito – allowing it to take its place among the craft technologies of the ancient Maya. Bearing superficial resemblance to ceramic sherds, with a thickness between 2 and 10mm, all fragments were made of multiple layers of woven textile and clay slip. These components were laminated (layered) and shaped on a mold or support to form objects. The products were allowed to dry, modified (e.g., with localized wetting to add features such as perforations), and then heat-hardened. This last step incinerated the fabric component and produced a rigid ceramic that was exceptionally porous and light-weight.

Many factors might explain the material's archaeological elusiveness thus far, including inherent preservation problems, deceptive appearance, and excavation practices that might not permit its recognition. With a low-fired porous material, the burial environment, the process of excavation, and subsequent handling could adversely affect the number of samples making it into archaeological collections. As a material type unknown to those excavating it, laminate samples carry the obvious risk of going unrecognized, especially if they display considerable variation in visual characteristics. The diagnostic features of laminates are sometimes subtle, and the use of magnification is strongly recommended to aid in recognizing them.

The small size of the data set and the selectivity of the collections reviewed impose a serious limitation on what can be inferred about the ceramic laminates. Even so, the discreet locations and low fragment count may still be regarded as a useful indication that the laminate was not an everyday material. While textiles, clay and the technological processes were available to non-elites, and the material versatile enough to make a range of objects, the majority of fragments were found in high status contexts. These included royal buildings, elite buildings or other areas (including middens) closely associated with royal or elite activities, both private and public. If, as we propose, it was highly restricted or specialized in its use, the laminates would be expected to have a limited presence in the archaeological record.

The relative abundance of samples offered by Aguateca might suggest that it was a laminate production center, but factors other than cultural ones are also at work. The site's depositional circumstances were favorable for comprehensive recovery, and archaeological processing included availability of conservation assistance to help with retrieval and interpretation of problematic materials. For the laminates, there

may have been an additional advantage from the site's burning, which could have further hardened the ceramic component, boosting its archaeological survival. The contextual picture that emerges reinforces the ceramic laminates' use for elite, ceremonial purposes. As shown by the fragment groups that could be at least partially reconstructed, the Aguateca artisans well understood the material's characteristics, producing elaborately formed, lightweight and quite durable products. These qualities are just those that would be useful for elements of headdresses, and it is probable that we will continue to find evidence of this special use of the laminate in ancient Mesoamerica.

An increase in sample numbers is still a priority. The addition of Piedras Negras to the roster – by serendipitous recognition of a fragment as a result of recent personal communications – serves to illustrate the value of even singular examples. It places for the first time the material's distribution outside of the Petexbatún region, a process that is likely to be repeated as awareness of the craft technology increases, and the material is properly identified when found.

Acknowledgments. This investigation has benefited from the participation of numerous archaeologists, many of whom were connected with site excavations that yielded laminate samples. I would like to thank several whose input was particularly helpful: J. E. Brady, M. Urquizú Sánchez, and especially A. Foias, T. Inomata and D. Triadan. This work would not have been possible without the help of personnel in the Departamento de Monumentos Prehispánicos of the Instituto de Antropología e Historia de Guatemala, and support from the Foundation for the Advancement of Mesoamerican Studies. Most of all, I am grateful to the Smithsonian Center for Materials Research and Education, which has granted me the time and made available the expertise of colleagues and general resources of the laboratory for the Archaeological Conservation Program. Interns and fellows working under the aegis of this program contributed substantially to this project, including S. E. Hornbeck, E. C. Robertson, J. M. Boyer, M. Shah and C. C. Griggs, who helped conserve the Aguateca objects during the 1998, 1999 and 2000 seasons; M. Shah, with her technical study of Aguateca samples, and especially E. Kaplan, whose 1994 investigation of the Las Pacayas samples first identified this composite material by name.

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more detailed course description see http://www.enamcenter.org/pages/events_future_EPOCHcourse.html or contact eva.roels@enamcenter.org.

American Geophysical Union (AGU) Meeting 2005 - Archaeological Geophysics Session. For the very first time, the Spring meeting of the American Geophysical Union (AGU) to be held in New Orleans, May 23-27, 2005 will include a special session on Archaeological Geophysics. The session will emphasize interdisciplinary studies focusing in the applications of geophysics in archaeology, the current methodological advances, their relation in enhancing and modifying the environmental awareness and regulations designed to protect existing resources and other novel applications. For a more detailed description see <http://www.agu.org/meetings/sm05/>.

GIS Planet 2005. The 2nd round of GIS PLANET 2005 call for papers is now open until March 5, 2005 (submissions have to be received before midnight - USA west coast time). GIS PLANET is a global, independent and open event dedicated to Geographic Information. The venue for GIS PLANET 2005 is located in Estoril, a small village of the Metropolitan Area of Lisbon, the capital city of Portugal. Proposals can be submitted through the form available from www.gisplanet.org at the call for papers <http://www.gisplanet.org/hw02.htm> page. The Call for workshops is also open until February 25, 2005. All required information is available at the call for <http://www.gisplanet.org/hw03.htm> for workshops page. Social and human context of GIS, Microgeography, Interoperability and Social sciences are among the themes that have been selected for particular emphasis to serve as the basic program structure.

Archaeological Prospection and Satellite Remote Sensing

Apostolos Sarris, Associate Editor

International Course in Cultural Heritage Practices.

The Ename Center organizes an international course entitled "An Introduction for Cultural Heritage Technologists to the Field of Heritage, its Structure and Practice in Europe Today" (March 13th-20th, 2005, Ename-Brussels-Ghent-Bruges, Belgium). "The course is designed for advanced or graduate level students in cultural heritage technology and will offer an introduction and basic background to the structure of European heritage institutions and the formulation of heritage policy. Participants will gain familiarity with the major cultural units of the European Commission as well as heritage organisations on local, regional, national and international levels. The purpose of this course is to provide a deeper understanding of, and context for the work of cultural technologists within current European cultural heritage administration and policy." For a

Archaeological Ceramics

Charles Kolb, Associate Editor



The column in this issue includes nine topics: 1) Reviews of Books on Archaeological Ceramics; 2) New Publications; 3) Forthcoming Publication; 4) Previous Meetings; 5) Forthcoming Meetings; 6) Announcement; 7) Exhibitions; 8) Miscellaneous News: Nuclear Magnetic Resonance; and 9) Other News.

Reviews of Books on Archaeological Ceramics

John N. Miksic (ed.), *Earthenware in Southeast Asia: Proceedings of the Singapore Symposium on Premodern Southeast Asian Earthenwares*. Singapore: Singapore University Press, National University of Singapore. xxiii + 370 pp., tables, maps, figures, bibliography, and index, 2003. ISBN 9971-69-271-6, \$65.00 US.

The goal of this 22-chapter volume, admirably assembled and edited by John N. Miksic (Associate Professor, Southeast Asian Studies Program, National University of Singapore), is to readdress the lack of communication between scholars who work on earthenware, according to Miksic, “the most important material in Southeast Asian archaeology” (p. xix). Scholars working with glazed ceramics, porcelains, celadon, and other wares or artifact assemblages would likely disagree. Nonetheless, the lamentable lack of diagnostic earthenware artifact assemblages and workable temporal and spatial units compounds the problem of a lack of regional archaeological integration. To address these circumstances, the Singapore Symposium on Premodern Southeast Asian Earthenwares was organized and held 9-11 July 1998 as a collaboration of the Southeast Asian Ceramic Society, the Asian Civilizations Museum, and the Southeast Asian Studies Programme of the National University of Singapore. Papers from the symposium, as well as others solicited later, in order to achieve a comprehensive coverage, were contributed and span the prehistoric and historic periods and are accompanied by papers on ceramic ethnoarchaeology. With the exception of a few introductory chapters, the contributions generally report research undertaken within modern political boundaries; hence, there is a nationalism and lack of integration. This volume is an initial step in righting that problem.

The book has a brief preface and a five-page introductory essay, as well as lists of the 19 tables, 23 maps, 159 figures, and 29 contributors (the author of Chapter 10, Hilda Soemantri, is not included in the tabulation). The black-and-white maps and figures — either line drawings or halftone photographic images — are clear but frequently do not provide appropriate verbal or graphic dimensional scales. The bibliography (pp. 336-366) is an especially valuable resource with 781 entries. A basic four-page double-column conflated index with proper nouns and topical entries completes the volume (pp. 367-370).

The two initial chapters are written by Wilhelm G. Solheim II (Archaeological Studies Program, University of the Philippines), recognized both as a long-time editor of the journal *Asian Perspectives* and as the foremost scholar of the region. Moot testimony of his efforts in documenting and interpreting Philippine and Southeast Asian prehistory may be seen in the book’s bibliography which lists 95 Solheim publications, the first dating to 1951. I shall summarize the salient points from each of the 22 chapters before providing an overview of the volume and its significance to Southeast Asian studies.

Miksic has assembled the major experts from nearly every nation in Southeast Asia and challenged them to provide a synthesis of current information on archaeological and historic earthenwares from the region. Some contributions are little changed from their oral presentations but others have been emended, expanded, and take into account information from other symposium presentations (Solheim’s first chapter, for example). For the most part, the essays are strong on description rather than interpretation but the volume does provide a new and essential baseline for future studies and analyses that will,

hopefully, lead to the creation of diagnostic ceramic assemblages and temporal and spatial units that transcend national boundaries.

Solheim’s initial chapter, “Southeast Asian Earthenware Pottery and Its Spread” (pp. 1-21, 12 figures), is a masterful synthesis spanning the period from the earliest pottery, Hoabinhian (8400 BP) in Thailand and Vietnam to Taiwanese Corded Ware, and more recent materials from Niah Cave in Sarawak. He provides a synthesis of the earliest pottery from island Southeast Asia and Micronesia, comments on known chronologies and methods of decoration and fabrication. There is a splendid discussion of Lapita pottery and its relationship to a series of pottery traditions in the islands of the southwest Pacific. The Bau-Malay pottery tradition of mainland Southeast Asia is also assessed, and Solheim ends with a consideration of James Ford’s (1969) thoughts about transpacific contact — Japan to Ecuador, ca. 3000 BC — as hypothesized by Meggers, Evans and Estrada (1965) based on their work at the Valdivia site.

In “History of the Study of Southeast Asian Earthenware” (pp. 22-31), Solheim begins with his 1951 analysis of earthenware pottery from Fiji excavated by E. W. Gifford. Solheim’s contributions become clear as he methodically considers pottery research undertaken subsequently, ranging from a curiosity about paddle and anvil fabrication to field surveys and site excavations, and the publication of his research. He explains his “archaeological philosophy” and notes that his paper about past and present pottery functions (presented at Fred Matson’s “Ceramics and Man” symposium [1965]) was the first of its kind for Southeast Asia. Likewise, he cites the work of Carl Hutterer, Laura Junker, and Brian Vincent, and he comments in detail about pottery typologies and classification and has a few choice comments about the “New Archaeology” and its successors.

Wilfredo Ronquillo (Archaeology Division, National Museum of the Philippines) contributes “Philippine Earthenware Pottery from the Early Prehistoric Period” (pp. 32-38, 1 map), a summary of evidence dating >2,000 BP from seven undisturbed archaeological sites in the Philippine archipelago. Most are cave, rock shelter, or shell midden sites; four are on Luzon, two from Palawan, and one on Tawi-Tawi. The physical characteristics, chronologies, and archaeological evidence from each site are described. Notably, the practice of jar burial, frequently associated with both cave and open sites, is common during the prehistoric period in the Philippines. He concludes that prehistoric sites are widespread and the radiocarbon chronologies encompass a wide temporal range.

Elizabeth A. Bacus (Institute of Archaeology, University College London) in “Styles of Alliance: Decorated Earthenwares in Late Prehistoric and Protohistoric Philippine Polities” (pp. 39-51, 2 maps, 1 table, 4 figures, 3 endnotes) examines decorated pottery from 82 prehistoric (first millennium AD) and protohistoric (11th-16th centuries AD) sites. From her stylistic, technological, and distributional analyses, five

decorative styles are defined and production locales elaborated. She also describes elite alliances in the early historic period (16th-early 17th centuries) and chiefly-sponsored feasts and rituals, and suggests that some of the decorations may be iconographic styles related to interchiefly alliances or shared identity.

Another contribution to Philippine earthenwares is by Eusebio Z. Dizon (Curator, Archaeology Division, National Museum of the Philippines) who wrote "Anthropomorphic Pottery from Ayub Cave, Pinol, Maitum, Saranggani Province, Mindanao" (pp. 52-68, 1 map, 6 figs.). He describes the results of five years work by the Maitum Archaeology Project at Ayub Cave and characterizes the physical setting, general archaeology, excavation procedures, and stratigraphy. Thirty anthropomorphic burial jars were recovered, each individually unique but in three definable styles, which, in turn, contained secondary burial jarlets, glass beads and bracelets, and human remains. Radiocarbon dates (spanning 5 BC-AD 370) confirm a "Metal Age" placement (500 BC-AD 500).

In "Prehistoric Earthenwares of Indonesia" (pp. 69-79, 1 map, 1 table, 3 figures, 1 diagram), Santoso Soegondho (Pusat Penelitian Arkeologi Nasional), reports that prehistoric earthenwares consist of simple vessels (bowls, pots, *tempayan* [jars], and *kendi* [water pitchers]). Neolithic wares and sites (6000-3500 BP) and "paleometallic site" pottery (3500-1500 BP) are described in terms of production technology and probable functions (cooking, storage, eating, and drinking); earthenware bowls were also used in rituals.

David Bulbeck (Department of Archaeology and Anthropology, Australian National University) and Genevieve Clune (Centre for Archaeology, University of Western Australia) contributed "Macassar Historical Decorated Earthenwares: Preliminary Chronology and Bajai Connections" (pp. 80-103, 1 map, 3 tables, 8 figures, 1 appendix). The authors provide a chronology of motifs on 42,980 decorated earthenware sherds, mainly relating to 13th to 17th century burial sites at Macassar and Soppeng, South Sulawesi. They provide an analysis of 29 decorative elements (simple geometric motifs arranged in horizontal bands) and vessel forms for each of ten centuries (11th to 20th). Comparative frequencies and chronologies are related to various motifs (long-lived, Protohistorical, Imperial, and Islamic/Colonial); wider comparisons are attempted using limited data, and the authors speculate about the historic period.

D. Kyle Latinis (Southeast Asian Studies Programme, National University of Singapore) and Ken Stark (Department of Anthropology, Kwantlen University College) contributed "Roasted Dirt: Assessing Earthenware Assemblages from Sites in Central Maluku, Indonesia" (pp. 103-135, 1 map, 2 tables, 8 figures, 12 endnotes). The authors summarize the prehistory of the region and provide a context for their analysis. Assemblages from the sites of Tomu, Hatusua, and Lanarisi provide comparative data. They describe the earthenware assemblages from these pre-16th century archaeological sites

and provide comparative information on the clays, aplastic inclusions, and production techniques, which included the use of molds. Eleven vessel forms are characterized and include mostly jar and bowl forms but also ring-stands, *anglo* or *tungku* (charcoal ovens), oil lamps, and "mystery pieces." This unique Central Malukan pottery tradition appears to have extra-local origin and production. The authors move beyond ceramic description to examine complex sociocultural issues such as contact, diffusion, production, replication of non-local forms and design motifs, exchange, distribution, and consumption.

Mundarjito (Research Centre for Humanities Science, Fakultas Sastra Universitas Indonesia), and Ingrid H. E. Pojoh, and Wiwin Djuwita Ramelan (both, Department of Archaeology, Fakultas Sastra Universitas Indonesia) focus on Central Java and replicate a field procedure devised by Ben Bronson in 1975. In "Forgotten Small Things: Early Historic Earthenware of Java (7th to 10th Centuries)" (pp. 136-145, 1 map, 1 table) the authors report nine vessel forms (pots, cups, bowls, jarlets, *tempayan* jars with restricted necks], *kendi* [water vessels], basins, lids, and oil lamps) recovered from nine temple sites (some Buddhist, others Siwaist). The lack of stratigraphic contexts poses a problem for chronological determinations.

Hilda Soemantri (affiliation unlisted) is the author of "The Terracotta Art of Majapahit" (pp. 146-161, 11 figures, 9 endnotes) in which she documents coil, sculptural, and molded methods of fabrication in central Java, ca. 10th to 14th centuries. Literary sources (including *tantri* tales) are related to a "preoccupation" with love scenes and ascetism, mountain caves, mythical persons, animals, and buildings.

In "Historic Period Earthenware from the Island of Sumatra" (pp. 162-172, 5 figures, 3 endnotes), E. Edwards McKinnon (Ciumbuleuit, Bandung, Indonesia) reviews historic pottery traditions and significant sites (Kota Cina, York Fort, and Pondok Kapur) before turning to an assessment of vessel shape and use, chronology, and summarizing previous reports on contemporary pottery making. Fourteen types of earthenwares were recovered from Kota Cina and are reported in terms of pastes, vessel shapes, decoration, and chronologies; and sometimes firing procedures. >From Palembang, he reports two- and four-spouted *kendi* and provides general observations on brickmaking.

Leong Sau Heng (History Department, University of Malaya) is the author of "Tripod Pottery on Mainland Southeast Asia" (pp. 173-186, 2 tables, 4 figures, 13 endnotes) in which he focuses on Early Neolithic Ban Kao culture sites from tin-mining areas of west-central Thailand where 11 of 44 burials contained tripod vessels. The use and misuse of the term "tripod pottery culture" is assessed and vessels are related to pollen analysis and radiocarbon dates. Comparisons are made to tripod pottery from Peninsular Malaya and other regions.

Stephen Chia (Centre for Archaeological Research Malaysia, Universiti Sains Malaysia) reports on earthenware from a significant Neolithic site ("Skull Hill") that he documented

in his dissertation. In “Prehistoric Pottery Production and Technology at Bukit Tengkorak, Sabah, Malaysia” (pp. 187-200, 2 maps, 5 tables, 7 figures, 1 endnote) Chia summarizes briefly the excavation, artifacts recovered (20,236 sherds), and radiocarbon dates. Three chronological phases (Early, Middle, and Late) are defined as 4340-1284, 1200-900, and 900-50 BC. The earthenware pottery industry is defined and he refers to XRD and thin section studies prior to reporting the forming and firing procedures, and pottery types and rim forms. The 4340 BC date identifies Bukit Tengkorak pottery as one of the earliest in island Southeast Asia and Chia states that the site was one of the major prehistoric pottery making and trading centers in the Sulu Archipelago and that objects ultimately reached the Philippines and Melanesia.

Nik Hassan Shuhaimi Nik Abd. Rahman and Asyaari bin Muhamad (both, Institut Alam Tamadun Melayu (ATMA), Universiti Kebangsaan Malaysia) wrote “Protohistoric Earthenwares from Kuala Selinsing, Perak” (pp. 201-207, 4 figures). Kuala Selinsing (Perak) is one of three area of Malaysia that has evidence of human settlement during the protohistoric period. The authors describe the site and archaeological research that began in 1927, and then illustrate 105 decorative motifs (organized into seven groups). The sample size used to derive theses is not given and the author refer (without attribution) to an XRD study undertaken by Mohd. Amar Fauzi.

Miriam T. Stark (Department of Anthropology, University of Hawai'i) contributed “The Chronology, Technology and Contexts of Earthenware Ceramics in Cambodia” (pp. 208-229, 1 map, 2 tables, 6 figures) in which she documents premodern earthenware (5th millennium BC to 14th century AD). Pottery from the Hoabinhian (5200-3000 BC), Neolithic/Bronze Age (3000-500 BC), and Prehistoric to Early Historic transition (500 BC-AD 500/800) is characterized as are 13 discrete ceramic groups, among them Burnished Earthenware, Fine Orangeware, Cord-marked Earthenware, and Fine Buffware. She observes a void in our knowledge about Cambodian earthenware from 9th to 14th centuries because the French researchers had discarded unglazed ceramics from the Angkorian period site excavations. She next reviews manufacturing skills and the production, distribution, and culinary and ritual use of earthenware artifacts for the Prehistoric, Early Historic, and Angkorian periods. This extremely valuable, systematic assessment provides a significant baseline for other research.

In “Earthenware in Prehistoric Thailand” (pp. 230-248, a map, 16 figures), Brian Vincent (Dunedin, New Zealand) reviews earthenware assemblages from the Central Highlands, Central Plains, Khorat Plateau, and Southeast Coast for the 2nd and 1st millennium BC. Major sites such as Non Nok Tha (850 vessels from mortuary contexts), Khok Charoen in the Pasak Valley (with two “late” TL dates), Ban Chiang Hian and Ban Na Di (both with radiocarbon dates and the latter with SEM data), Ban Chiang (430 vessels from 10 chronological phases), and Khok Phanom Di (three million sherds), are

discussed, and there is a synthesis of data on vessel forms, clay preparation, and tempers.

Amara Srisuchat (Fine Arts Department, Bangkok) prepared a chapter entitled “Earthenware from Archaeological Sites in Southern Thailand: The First Century BC to the Twelfth Century AD” (pp. 249-260, 2 maps, 7 figures), in which eight southern Thai sites are characterized as early historic polities. These sites and early earthenware pots and bowls date to the 1st century BC to the 2nd century AD. Other clay items (pellets, spindle whorls, figures, miniature temples, etc.), fabrics and tempers, and products from 12th century AD Pa-O kilns are also reported.

Ruth Prior (Institute of Archaeology, University College London) and Ian C. Glover (Ditton Priors, Shropshire, UK) wrote “The Late Prehistoric to Early Historic Earthenware of Central Vietnam” (pp. 261-284, 2 maps, 1 table, 19 figures, 7 endnotes). This period corresponds to the Sa Huynh-Early Chan transition period seen in the excavation and surveys at Tra Kieu. Petrographic studies (203 thin sections, 90 using grain size analysis) confirmed local manufacture and lead to the identification of 16 fabric groups. The authors consider earthenware (burial jars, footed bowls, and lamps) from the lower Thu Bon Valley of central Vietnam for the period 200 BC-AD 600, and the ceramic assemblage excavated from Tra Kieu (37,317 sherds in eight major vessel forms), dating to the 1st centuries BC and AD. One sherd is similar to Indo-Roman Rouletted Ware and compared closely with XRD data from the Indian site of Arikamedu.

Myo Thant Tyn (Khattiya Institute of Technical Services Co., Ltd.) and U Thaw Kaung (Director, University Libraries, Yangong University) contributed “Myanmar Historic Earthenware” (pp. 285-299, 2 maps, 11 figures). Information about prehistoric Neolithic and Bronze Age earthenware is summarized briefly prior to a detailed discussion of historic materials from the Pyu civilization (1st-9th centuries AD); five vessel types and three sites are discussed. Glazed ceramics (7th century AD ff.) and their related cross-draft kilns (Bago and Myaung Mya) are detailed, as is the Myanmar tin-glaze tradition (a chemical analysis is mention for the latter).

The first of three contributions to ceramic ethnoarchaeology is by Leedom Lefferts (Department of Anthropology, Drew University) and Louise Allison Cort (Freer Gallery of Art & Arthur M. Sackler Gallery, Smithsonian Institution) who wrote “A Preliminary Cultural Geography of Contemporary Village-based Earthenware Production in Mainland Southeast Asia” (pp. 300-310, 1 map, 6 figures, 15 endnotes). Since 1992 the authors have been documenting the contemporary production of earthenware vessels by women in nearly one hundred villages in Mainland Southeast Asia (Thailand, Laos, Cambodia, Vietnam, and peninsular Malaysia). They found an unexpected diversity in ceramic production methods even in small regions such as northeast Thailand. Six production techniques based on motor behavior (documented in the field by drawings, still images, and video) are described and their geographical

distributions plotted. Ethnic identification is, apparently, unrelated to these fabrication processes.

Charlotte Reith (Alexandria, Virginia, USA) prepared an ethnoarchaeological paper entitled "A Comparison of Ground Firing Techniques in Contemporary Myanmar Villages" (pp. 311-321, 1 map, 6 figures) in which she reports some results of her documentation of contemporary Burmese pottery producers in 26 villages since 1991. The paper focuses on stacking or arranging pottery vessels for firing as observed in six areas of Burma. In 26 villages she found 26 distinct ways of stacking but found no tribal or ethnolinguistic correlations with firing methods.

In "Potters and Pottery of the Assam Region" (pp. 322-335, 1 map, 1 table, 9 figures) by Dilip K. Medhi (Department of Anthropology, Gauhati University), pottery-making in the former northeast Indian state of Assam (now divided into 7 polities) is presented. He reports that pottery manufacture is a subsidiary occupation in agrarian communities and that hand-building dominates among both tribal and non-tribal peoples, but that only a few ethnic groups and the members of three castes still fabricate earthenware. Aluminum and cast iron vessels are rapidly replacing pottery containers.

Collectively, these papers span the history of earthenware pottery studies from prehistoric periods to contemporary producers. Solheim's two chapters provide essential historical perspectives, while the three ceramic ethnoarchaeological contributions (by Lefferts and Cort; Reith; and Mehdi) provide a splendid baseline for continuing assessments. The contributions are balanced (nine are predominantly descriptive and eight incorporate varying degrees of sociocultural interpretations of the archaeological evidence). There are three chapters each on the Philippines, Indonesia, and Thailand; two each on Java and Malaysia; and one each on Sumatra, Cambodia, Vietnam, and Myanmar. XRD studies are mentioned by two authors (Rahman and Muhamad on Malaysia, and Prior and Glover on Vietnam), thermoluminescence is noted in one chapter (Vincent on Thailand), and thin section studies are notable in Prior and Glover's contribution. The introductory essay might benefit from the inclusion of a chronological chart that places the 22 contributions in perspective. Southeast Asian earthenware was previously little understood but its significance is now established by Miksic and his colleagues. Scholars from the region and researchers concerned with ceramics are indebted to them for providing this framework for understanding this basic material culture and for explicating the place of earthenware in Southeast Asian culture history.

Ceramics in America, Robert Hunter (ed.), Hanover and London: Published by the Chipstone Foundation, Distributed by University Press of New England. Chipstone Foundation distributed by University Press of New England, 2004. vii + 336 pp., ISBN 0-9724353-3-6, \$55.00 (paper). Rob Hunter, the editor of *Ceramics in America*, has shepherded the publication of three outstanding volumes in this annual, and the issue for 2004 is no exception. He has assembled a splendid

collection of significant articles dealing with an array of topics from the excavation of important pottery production sites (primarily factories and kilns), to research on ceramic history and the recreation of technological process (an engine-turning lathe). These are accompanied by splendid color photographs created by Gavin Ashworth. There are ten major articles (pp. 1-245) authored, respectively, by scholars of ceramics and history: Al Luckenbach; Norman W. Barka; Martha McCartney and Edward Ayers; Ross Ramsey, Judith A. Hansen, and E. Gael Ramsay; Jonathan Rickard and Donald Carpentier; Don Horvath and Richard Duez; Emmanuel Cooper; Kurt C. Russ; and Ivor Noël Hume. In "New Discoveries" (pp. 247-290), Merry Abbitt Outlaw edited thirteen brief contributions that elucidate new ceramic types and provide recent information others.

Overall the major articles and shorter pieces vary from a report on the excavation of a seventeenth century pipe kiln in Maryland (the earliest one excavated to date) to contemporary ceramics produced by the legendary Bernard Leach (1887-1979), but a majority of the 23 contributions deal with American-made stoneware and redware. Norm Barka's article on excavations at the site of the "Poor Potter" of Yorktown and McCartney and Ayers's new research on this potter document clearly the problems faced by Colonial period potters in establishing their trade and provide relevant evidence of this potter's success. Ivor Noël Hume contributes a splendid analysis of 18th to 20th century English brown stoneware mugs and jugs decorated with sprigged scenes of hunting. He relates these "hunting wares" to three overlapping chronological periods: 1714-1820, 1792-1950s, and 1800-1956. Book Review Editor Amy C. Earls provides six timely reviews (pp. 291-308) and her "Checklist of Articles, Books, and Electronic Resources on Ceramics in America Published 1998-2004" (pp. 309-329). The volume concludes with a 16-page index (pp. 321-336).

The major contributions include: "The Swan Cove Kiln: Chesapeake Tobacco Pipe Production, Circa 1650-1669" by Al Luckenbach (pp. 1-14); "Archaeology of a Colonial Pottery Factory: The Kilns and Ceramics of the 'Poor Potter' of Yorktown" by Norman F. Barka (pp. 15-47); "Yorktown's 'Poor Potter': A Man Wise Beyond Discretion" by Martha W. McCartney and Edward Ayres (pp. 48-59); "An 'A'-Marked Covered Porcelain Bowl, Cherokee Clay and Colonial American's Contribution to the English Porcelain Industry" by W. Ross. H. Ramsay, Judith H. Hansen, and E. Gael Ramsay (pp. 66-70); "The Little Engine That Could: Adaptation and Use of the Engine Turning Lathe in the Pottery Industry" by Jonathan Rickard and Donald Carpentier (pp. 78-99); "The Potters and Pottery of Morgan's Town, Virginia: The Earthenware Years, Circa 1790 to 1854" by Don Horvath and Richard Duez (pp. 100-129); "Bernard Leach in America" by Emmanuel Cooper (pp. 130-132); "Henry Remmey & Son, Late of New York: A Rediscovery of a Master Potter's Lost Years" by Luke Zipp (pp. 143-156); "The Remarkable Stoneware of George N. Fulton, Circa 1856-1894" by Kurt C. Russ (pp. 157-178); and "A Hunting We Will Go! From Vauxhall to Lambeth 1700 - 1956" by Ivor Noël Hume (pp. 179-245).

Merry Outlaw provides a brief introduction to "New Discoveries" (pp. 247-248). The thirteen papers include: "A New Look at Old Stoneware: The Pottery of Tildon Easton" by Barbara H. Magid (pp. 249-252); "James Miller, Lost Potter of Alexandria, Virginia" by Brandt Zipp and Mark Zipp (pp. 253-261); "Relatedness and Fluidity among Stoneware Potters of Washington County, Virginia" by Christopher T. Espenshade (pp. 262-264); "Jar or Jug?: A Handled Stoneware Storage Vessel from the Delaware Valley" by William B. Liebeknecht (pp. 264-265); "William Pecker Jar" by John Kille (pp. 265-268); "Excavations at the Minton Factory: Shedding New Light on 19th-century Pottery Kilns" by Jonathan Goodwin (pp. 268-271); "If This Pot Could Sing" by Al Luckenbach (pp. 272-273); "THIS I MAD FOR YOY AND MOOM" by Robert Werowinski (pp. 274-275); "New Acquisitions at Chipstone" by Robert Hunter (pp. 275-277); "A Pernicious Influence? Japanese Water Drop Ware" by Mary C. Beaudry (pp. 278-281); "An Investigation into "Ghosts" and Gilding on a Kangxi Porcelain Pot in the J. Paul Getty Museum" by Lisa Ellis (pp. 281-285); "Sherds of Chinese Porcelain Found at Old Mobile" by Linda Shulsky (pp. 286-288); and "The John Dortch Site: Anglo Elegance on the Spanish Louisiana Frontier" by Sarah A. Hahn (pp. 288-290).

The six book reviews are: Ivor Noël Hume's *If These Pots Could Talk: Collecting 2,000 Years of British Household Pottery*, reviewed by Geoffrey Godden (pp. 291-292); Louana Lackey's *Rudy Autio*, reviewed by Glenn Adamson (pp. 293-295); Richard D. Mohr's *Pottery, Politics, Art: George Ohr and the Brothers Kirkpatrick*, reviewed by Ellen P. Denker (pp. 295-299); Richard L. Spivey's *The Legacy of Maria Poveka Martinez*, reviewed by Dwight P. Lanmon (pp. 299-302); Bai Ming's *The Traditional Crafts of Porcelain Making in Jingdezhen*, reviewed by William R. Sargent (pp. 302-304); and R. K. Henrywood's *Staffordshire Potters, 1781-1900: A Comprehensive List Assembled from Contemporary Directories with Selected Marks*, reviewed by Miranda Goodby (pp. 304-308). Comparing the previously announced Table of Contents with the actual published volume, one finds a change in the order of the papers and a retitling of Hahn's paper on the Dortch site. Two book reviews listed in the original contents (Thomas V. Litzenburg, Jr., and Ann T. Bailey, *Chinese Export Porcelain in the Reeves Center Collection at Washington and Lee University*, review by Kee Il Choi; and Andrew Popp, *Business Structure, Business Culture, and the Industrial District: The Potteries, c. 1850-1914*, review by Regina L. Blaszczyk) are not published in this volume but Goodbye's review of Henrywood's *Staffordshire Potters, 1781-1900* does appear. The volume may be ordered from the University Press of New England online at <http://www.upne.com/0-9724353-3-6.html> or by telephone toll-free at 800/421-1561; or from the Chipstone Foundation's Internet site at <http://www.chipstone.org/framesetpublications.html>.

New Publications

Chalcolithic Site of Ujjain Region: Mahidpur by Rahman Ali, Ashok Trevedi, and Shirendra Solanki (New Delhi:

Sharada Publishing House, 2004. 128 pp., 53 plates, index, ISBN 8188934232). This volume is a comprehensive report of the excavations conducted at the open-air Chalcolithic site of Mahidpur, located on the bank of the Shipra River, District of Ujjain, M. P., India. The site mound is also known as Bhasmatekari. Chapter Four, "Pottery," concerns the ceramic assemblage which includes Red-pottery (painted with white pigments), Black and Red Ware (painted and plain variants), Red-slipped Ware, Lustrous Red-ware, and Malwa Ware. Chapter Six, "Terracotta Figurines," details the figurines as well as ear-discs, studs, stoppers, bangles, and beads.

Peter Magee (C. C. Lamberg-Karlovsky, gen. ed.) is the author of *Excavations at Tepe Yahya, Iran 1967-1975: The Iron Age Settlement*, American School of Prehistoric Research Bulletin 46, Cambridge, MA: Harvard University, Peabody Museum of Archaeology and Ethnology (2004). Among the chapters is Peter Magee and Peter Grave's "Ceramic Analysis and Composition," pp. 21-27.

Science and Civilisation in China: Volume 5, Chemistry and Chemical Technology, Part 12, Ceramic Technology by Rose Kerr and Nigel Wood, with additional contributions by Ts'ai Mei-fen and Zhang Fukang (Cambridge and New York: Cambridge University Press, 2004. 968 pages, 75 line diagrams, 55 tables, 85 colour figures, index. ISBN: 0-521-83833-9, \$195.00, hardcover). This long awaited fifth volume of Joseph Needham's immense undertaking was published in November 2004 and covers the subjects of chemistry and chemical technology. The twelfth part of the volume explores a range of questions concerning Chinese ceramic technology, including how were Chinese pots made, glazed and fired. Among other issues reported are why and how China discovered porcelain more than one thousand years before the West, and the effects of China's influence on world ceramics? These questions (and many more) are answered in this well-illustrated history of Chinese ceramic technology. The authors employ historical texts, archaeological excavation reports, and the principles of ceramic science in this massive treatise. Other chapters consider the formation of clays and their relation to the underlying geologies of China, and document firing, manufacturing methods and sequences, glazes, pigments and gilding, and the impact of Chinese ceramic technology around the world, from the seventh to the twenty-first centuries. The volume is unique in its coverage, which brings together for the first time research materials in several languages.

Forthcoming Publication

Handbook of Archaeological Methods, edited by Herbert D. G. Maschner (Idaho State University) and Christopher Chippindale, (Cambridge University), Walnut Creek, CA: Altamira Press, ISBN 0-7591-0078-0, \$119.95 (cloth), 1,312 pp., scheduled for publication in September 2005. This handbook is a collection of original, authoritative articles from leading archaeologists to compile in a single place the latest thinking about archaeological methods. Topics range from theoretical models undergirding research to concrete strategies for field

work and laboratory analysis. Public archaeology topics such as curation, collaboration, funding, and publication are also included among the 34 chapters in the book. The chapters are authored by well-known scholars from both sides of the Atlantic, including Fagan, Hodder, Chippindale, Kvamme, McManamon, and many others. An extensive bibliography accompanies each chapter. As a single reference for current information on contemporary archaeological field methods, this volume (according to the publisher) is “unmatched.” Herbert D.G. Maschner is Associate Professor of Anthropology at Idaho State University. Christopher Chippindale is Curator for British collections at the Cambridge University Museum of Archaeology and Anthropology, and Research Professor in Archaeology at Cambridge, as well as the former editor of the journal *Antiquity*. Four chapters are of particular interest to readers of this column: Chapter 7, “Ethnoarchaeology” by John W. Arthur and Kathryn J. Weedman; Chapter 18, “Pottery” by Carl Knappett; Chapter 25, “Geoarchaeology” by Christopher L. Hill; and Chapter 26, “Craft Production” by Cathy Lynne Costin.

Previous Meetings

The *Ceramic Petrology Group* (CPG) meeting to be held at the British Museum scheduled for 25 November 2004 (mentioned in the last SAS Bulletin) has been postponed according to the CPG Hon. Secretary Ian K. Whitbread (School of Archaeology & Ancient History, University of Leicester, Leicester, LE1 7RH, UK; telephone +44(0)116 223 1086, e-mail ikw3@leicester.ac.uk). Several speakers had to withdraw and there was limited interest in attendance by non-speakers. Having discussed the situation with other members of the Group's managing committee, a decision was made to postpone the planned meeting until a later date, probably May 2005.

The annual meeting of the *American Anthropological Association* originally scheduled for 17-21 November 2004 in San Francisco, California was cancelled and moved to 15-19 December 2004 in Atlanta, Georgia due to a hotel management and labor union dispute. Information about the reasons for this change of city and date are available on the AAA Internet site at <http://www.aaanet.org/mtgs/2004/update10-29-04.htm>. Unfortunately, the new date conflicted with many academic attendees' end of the semester/term obligations. Hence, the entire meeting was smaller than normal and only a few papers on archaeological ceramics were presented. AAA meetings generally have attendances of upwards of 5,500 but there were approximately 500 persons attending this meeting. One poster on ceramics was to have been presented at the original meeting in San Francisco: Ian Calder (University of Kwa-Zulu-Natal) and Frank Jolles (University of Natal) “Continuity and Change of Zulu Beer-pottery”; and there was also to have been a paper by Jolles and Calder, “Beer Containers in 19. Century Zululand: Baskets and Pots.” No other ceramics papers were scheduled at the original meeting or in Atlanta except for a diminished Ceramic Ecology 18 symposium (discussed in the last SAS Bulletin). On December 18, 2004, in Atlanta, five of the original

11 papers were given; the session included an introduction to the symposium by Charles Kolb, and papers by Christophe Descantes (University of Missouri, Columbia), Michiko Intoh (National Museum of Ethnology, Osaka, Japan), Hector Neff (California State University, Long Beach), and Michael Glascock (University of Missouri, Columbia, MURR) “Yapese Clay Procurement: Contributions from Chemical Characterization Data”; Timothy J. Scarlett (Michigan Technological University) “Pottery, Economy, Science, and Religion: the Latter-Day Saints' Nineteenth-Century Pottery Industry”; Marilyn Beaudry-Corbett (Cotsen Institute of Archaeology, UCLA) and Jeanne Lopiparo (University of California, Berkeley) “New Approaches to Publishing Ceramic Data: Pottery of Prehistoric Honduras”; Karen Anderson (University of California, Santa Barbara) “Technological Style and the Impact of the Tiwanaku State in the South Central Andes: The Case from Cochabamba”; and Louana M. Lackey (Maryland Institute College of Art) “Shards or Sherds – Old World or New: Current Research in Ceramic Studies.” Kolb also served as discussant. A general discussion with audience participation lasted for more than two hours and focused primarily on Lopiparo's presentation of an electronic database of Honduran ceramics and Scarlett's ethnoarchaeological data on the Mormon pottery industry.

The *Archaeological Institute of America's 106th Annual Meeting* took place in Boston, Massachusetts from 6-9 January 2005. There were 274 presentations (31 posters and 243 oral papers); among these were two posters and 16 oral papers on ceramic topics. These included: “Settlers or Symposiasts? Attic Imported Pottery at Tel Dor, Israel, and Its Implications for Greek Trade and Settlement” by Andrew F. Stewart (University of California, Berkeley); “Consumption in the Roman World: The Case of Wine in North Africa” by David L. Stone (Florida State University); “The Characterization and Importance of Tablewares in Late Roman Seaborne Cargoes” by Sebastian Heath (American Numismatic Society); “Cooking in the Eternal City: Five Centuries of Cookwares from Ancient Rome” by Janne P. Ikäheimo (University of Helsinki).

“Women, Genre, and Hellenistic Terracotta Figurines” by Jean Sorabella (Adelphi University); “The Palatine East Pottery Project: A Holistic Approach to the Study and Publication of an Excavated Pottery Assemblage from Rome” (poster) by J. Theodore Peña, Larissa Busch, Adam Hyatt, Amanda Leins, James McCaw, and Samantha Scaringe (University of Buffalo, SUNY); “Aeginetan Ware Technology, Production and Exchange: An Archaeological Reappraisal” (poster) by Christine M. Shriner, James G. Brophy, and Haydn H. Murray (all Indiana University) and George E. Chrisidis (Technical University of Crete); “The Cypriot Ceramic Cargo of the Uluburun Shipwreck” by Nicolle Hirschfeld (Trinity University); “Assessing the Shipboard Profile of a Regional Ceramic Assemblage: The Aegean Pottery from the Uluburun Shipwreck” by Jeremy B. Rutter (Dartmouth College); “A Microbotanical Analysis of the Uluburun Cargo: The Ceramic Assemblage” by Nancy G. DeBono (Texas A&M University); “On Land and Sea: The Kyrenia Amphora Cargo and Early

Hellenistic shipping” by Marl K. Lawall (University of Manitoba); “Becoming Ancient Stevedores: How Do We Fit In All Those Amphoras?” by Susan W. Katzev (Kyrenia Ship Project); “Observations on the Unpublished Mycenaean Pottery from Tell Atchana (Alalakh)” by Robert B. Koehl (Hunter College, CUNY); “Bronze Age Ceramics from the Skoteino Cave, Peliada, Crete” by Loeta Tyree (American School of Classical Studies at Athens), Athanasia Kanta (Archaeological Institute of Crete), and Costis Davaras (former Ephor of Antiquities, KD Ephora); “Black-Figure on the Black Sea: Athenian Pottery from Berezan” by Tyler Jo Smith (University of Virginia); “Sinop Regional; Archaeological Project 2003-04” by Owen O. Doonan IV (California State University, Northridge), Alexander Bauer (University of Pennsylvania), and Aksel Vasson (University of Washington); and “The Classical Greek Tavern: An Archaeological Perspective” by Clare F. Kelly-Blazeby (University of Leicester).

Forthcoming Meetings

The 2005 UK Archaeological Science Conference will be held from 13 to 16 April 2005 at the [University of Bradford](http://www.bradford.ac.uk), hosted by the [Department of Archaeological Sciences](http://www.bradford.ac.uk). For additional information, contact [Dr. Alex Gibson, Department of Archaeological Sciences](mailto:Dr.Alex.Gibson@Bradford.ac.uk), University of Bradford, Bradford, BD7 1DP (Telephone: ++ 44 (0)1274 235385, e-mail: A.M.Gibson1@Bradford.ac.uk) and see details on the Internet at <http://www.bradford.ac.uk/archsci/archsci2005/>.

Prehistoric Technology 40 Years Later: Functional Studies and the Russian Legacy will be held 20-23 April 2005 at Polo Zanutto (Natural History Museum of Verona), University of Verona, Italy. This four-day meeting is organized by the Museo di Storia Naturale di Verona and the University of Verona, and coordinated by Dr. Laura Longo (Curator of the Prehistory Department of the Museum) with the advice of an international and a national scientific committee. The meeting will be devoted to the main topics of functional analysis that recognize the significance of Semenov's traditional research. Sessions will be dedicated to presentations of researches devoted to integrated works, based on synergic analogical reasoning, with some of the principal heuristic approaches through which functional analysis developed from: use-wear analysis, ethnoarchaeology analogies and experimental archaeological reconstruction and checking. Topics are not restricted to theoretical and methodological issues of use-wear analysis but the organizers propose that it would be more productive to bring together archaeologists, anthropologists, ethnoarchaeologists, use-wear analysts and experimental archaeologists, to discuss the application of the named principal heuristic approaches to the reconstruction of prehistoric artefacts production and use in a more behavioral context. Proposals (oral or poster presentations) will be considered by a review committee and publication of the proceedings is anticipated by a worldwide academic distribution publisher. The Internet site <http://www.weartraces.com> has additional information including the official Call for Papers and the Application Form. For further information, contact Dr. Laura

Longo (meeting coordinator) info@weartraces.com, 0039 045 800 51 57.

Announcement

A course entitled *Ceramics in Archaeology*, designed for beginners and professionals will be held at the Achill Archaeological Field School (Ireland) from 28 March-1 April 2005. Conducted by Nick Brannon, it will be an intensive course in the identification and classification of ceramics from the Neolithic to the Post Medieval period. Further information is available from Achill Archaeological Field School, Achill Folklife Centre, Dooagh, Achill Island, Co. Mayo, Ireland; telephone +353-98- 43564, FAX +353-98-43595, Internet site: www.achill-fieldschool.com.

Exhibitions

Iraq and China: Ceramics, Trade and Innovation is an exhibition at the Arthur M. Sackler Gallery, Smithsonian Institution, Washington, DC scheduled from 4 December 2004 through 24 April 2005. The exhibition focuses on revolutionary and enduring changes that took place in Iraqi ceramics during the 9th century as the humble character of Islamic pottery responded to a wave of luxury Chinese goods, imported by Arab and Persian merchants. During this period, Iraq became a center for Islamic ceramic production as new technologies transformed common earthenware into a vehicle for complex multi-colored designs. Chinese ceramics were admired in Iraq for their shiny white surfaces and hard body. As neither the essential raw materials nor the appropriate firing technology were locally available, Islamic potters therefore created their own versions by covering finely potted yellow clay hemispherical bowls with a glaze that turned opaque after firing, creating ceramics that were described as “pearl cups like the moon.” This technique offered the potters an ideal canvas for bold decorative designs, first in cobalt blue and then with “luster”; mixtures of copper and silver that were painted onto the glaze then fixed in a second firing. Following the gradual disintegration of the Abbasid Empire after the 10th century, migrating Iraqi potters transmitted these techniques to Egypt and Iran from whence they traveled to Europe, giving rise to the great “Majolica” tradition in medieval Spain and Renaissance Italy. In China, 14th century experiments with cobalt blue from the Islamic world led to Yuan and Ming blue-and white. “Reflection,” a 50 foot-long boat excavated from a harbor in Japan and resting on broken fragments of porcelain deities from Dehua, China by the celebrated contemporary Chinese artist Cai Guo Qiang, complements the exhibition. For additional information, see <http://www.asia.si.edu/exhibitions/default.htm>.

Black & White Chinese Ceramics from the 10th to 14th Centuries is an exhibition that began at the Freer Gallery of Art, Smithsonian Institution, Washington, DC, and will run indefinitely. The exhibition showcases the remarkably rich variety of glossy black-glazed wares and brilliant white porcelain, as well as eye-catching combinations of both colors on single vessels, created during the Song (960-1279) and Yuan

(1279-1368) dynasties. These objects — produced as the result of important developments in Chinese ceramic technology — elicited lyrical commentary by contemporary users, who compared the streaked dark glazes to “hare’s fur” and likened the bluish-white “qingbai” ware to “icy jade.” Most of the 58 objects on view are tablewares, wine jars, and vases and range from extremely handsome everyday goods to examples fit for an emperor. Drawing on the strengths of the Freer Gallery collection (notably its Ding, Cizhou, Jian, and Jizhou wares), this exhibition presents the aesthetic, social, and technical dimensions of these ceramic achievements by highlighting their variety of color and effect. In some of the most striking works, the color of the clay or texture of the glaze itself is the focal point of the otherwise undecorated object. Other works feature modes of decoration that emerged to suit the colors and materials including black-on-black painting, black-on-white painting, incisions through the glaze or into the body, and mold-impression. Additional information is in the Internet at <http://www.asia.si.edu/exhibitions/default.htm>.

Islamic Art from the Madina Collection includes 200 works from the Dr. Maan Madina Collection at the Los Angeles County Museum of Art beginning 1 February 2005. Madina (Arabic and Islamic Studies, Columbia University) assembled a world-class private collection of 700 objects that he donated to the museum in 2002. The exhibit, according to *Saudi Aramco World* 55(6):49 (2004), will display ceramics, glass, wood, stone, textile, and metalwork from Egypt, Syria, Iraq, Turkey, and Iran. For further information, visit <http://www.lacma.org/>.

Internet Resources

The Seljuk Han in Anatolia is a useful website that provides a brief history of the Seljuks of Anatolia (1077-1307 CE), their architecture, trade, and decorative arts (including woodworking and painting, stonework sculpture, metalworking, glazed tiles and ceramic wares, glass, textiles and carpets). There is also a list of museums and collections and a substantive bibliography. This Internet site was developed by Katharine Branning (kbranning@earthlink.net), a librarian and art historian from New York. See <http://www.turkishhan.org/homebase.htm>. The Seljuk *han* or *caravansaray* is a building (saray = palace) to house a brief overnight stop-over of a caravan, which is a body of merchants who travel together for greater protection. Hence, it is a way station or overnight inn for traveling merchants. The general name of these buildings in Turkish is “*han*”. The typical Seljuk *han* is a monumental stone building with a huge, highly-decorated main portal which provided access to a large open courtyard and a vaulted hall to the rear and frequently has ceramic tile decoration. For the section on Seljuk ceramics, visit <http://www.turkishhan.org/ceramics.htm>.

The Digital Archaeological Archive of Chesapeake Slavery (DAACS), built and maintained by the Department of Archaeology at Monticello, includes information on archaeological sites, artifacts, and research (conference papers and reports) available at <http://www.daacs.org/>. Among the latter are two ceramic-related papers: “*An Elemental*

Approach to Ceramic Stylistic Analysis” by Jillian Galle and Fraser D. Neiman (Thomas Jefferson Foundation), and “*Following the Yellow Brick Road: The DAACS Munsell Color Range System*” by Beatrix Arendt and Jesse Sawyer (Thomas Jefferson Foundation). Both contributions were presented at the Society for Historical Archaeology Annual Meeting, January 8-12, 2002, in Mobile, Alabama. See <http://www.daacs.org/research/?PHPSESSID=3e9362e930099c03026d69e8af35da9b>.

The Foundation for the Advancement of Mesoamerican Studies, Inc. (FAMSI) made 42 grants in 2004, among these are four that directly involve ceramics (see <http://www.famsi.org>): C. Elson, “Aztec Elites and the Postclassic Economy: Neutron Activation Analysis of Museum Collections from Chiconautla, México,” Grant 03019, \$5,600; M. Pérez Galindo, “Corpus de la Cerámica Clásico Terminal Proveniente de Moldes, de la colección Dieseldorff, Guatemala,” Grant 03074, \$6,650; E. San Román, “La Cerámica de Palenque, México,” Grant 03097, \$4,640; and K. Sullivan, “Making and Manipulating Ritual in the City of the Gods: Figurine Production and Use at Teotihuacán, México,” Grant 03021, \$7,000. One ceramic-oriented report has just been posted on the FAMSI Internet site: Michael E. Smith (2004), *Postclassic Urbanism at Calixtlahuaca: Reconstructing the Unpublished Excavations of José García Payón*. Report submitted to the Foundation for the Advancement of Mesoamerican Studies, Inc. (FAMSI), 11-17-04, <http://www.famsi.org/reports/01024/index.html>.

Miscellaneous News: Nuclear Magnetic Resonance

In a copyrighted article (© 2004 John Wiley & Sons) “NMR’s big comeback” on spectroscopyNOW.com, researchers at Caltech report that they have developed a novel approach to NMR they call BOOMERANG. Better observation of magnetization, enhanced resolution and no gradient was developed by Professor Daniel Weitekamp and his colleagues in the Arthur Amos Noyes Laboratory of Chemical Physics (California Institute of Technology, MC 127-72, Pasadena, CA 91125). Their research may lead to the development of portable NMR instruments and the ability to examine solids and surfaces even on microscopic and nanometre scale samples.

“Weitekamp and his team built their NMR spectrometer to measure magnetic force rather than the usual radio signals and gets results that are very different from conventional NMR spectrometers and magnetic resonance imagers. They place their sample between two magnets that generate a spatially uniform field and apply pulses of radio waves. They then record the attractive force between the sample and the magnets and convert this into a spectrum or image. The team has demonstrated proof of principle by making chemically specific measurements with force-detected NMR identifying signals from hydrogen and fluorine in a liquid. They also reveal success with ^1H and ^{19}F NMR in both solid and liquid samples, including time-domain Fourier transform NMR spectroscopy, multiple-pulse echoes, and heteronuclear *J* spectroscopy. The principal

motivation for the work is to develop an NMR method with sensitivity that scales well to smaller samples and devices while still retaining the ability to do the wide range of experiments that has made NMR the most incisive and widely used method for studying molecular structure and dynamics,” Weitekamp reported. “Work is proceeding toward devices for micron-scale and smaller samples, where the advantage over conventional NMR will be realized.” For further information, including images of the equipment and Weitekamp’s homepage and e-mail (weitekamp@caltech.edu), see <http://www.spectroscopynow.com/Spy/basehtml/SpyH/1,1181,5-5-7-0-99297-ezine-0-2,00.html>

This report is based on an article in the Proceedings of the National Academy of Sciences of the USA for August 31, 2004: *PNAS* 101(35):12804-12808. The abstract is online at <http://www.pnas.org/cgi/content/abstract/101/35/12804?view=abstract> “Observation of Force-detected Nuclear Magnetic Resonance in a Homogeneous Field” by L. A. Madsen, G. M. Leskowitz and D. P. Weitekamp. “We report the experimental realization of BOOMERANG (better observation of magnetization, enhanced resolution, and no gradient), a sensitive and general method of magnetic resonance. The prototype millimeter-scale NMR spectrometer shows signal and noise levels in agreement with the design principles. We present ^1H and ^{19}F NMR in both solid and liquid samples, including time-domain Fourier transform NMR spectroscopy, multiple-pulse echoes, and heteronuclear J spectroscopy. By measuring a ^1H - ^{19}F J coupling, this last experiment accomplishes chemically specific spectroscopy with force-detected NMR. In BOOMERANG, an assembly of permanent magnets provides a homogeneous field throughout the sample, while a harmonically suspended part of the assembly, a detector, is mechanically driven by spin-dependent forces. By placing the sample in a homogeneous field, signal dephasing by diffusion in a field gradient is made negligible, enabling application to liquids, in contrast to other force-detection methods. The design appears readily scalable to μm -scale samples where it should have sensitivity advantages over inductive detection with microcoils and where it holds great promise for application of magnetic resonance in biology, chemistry, physics, and surface science. We briefly discuss extensions of the BOOMERANG method to the μm and nm scales.” © NAS of the USA.

Other News: Nuclear Magnetic Resonance

Persian Journal News Article: “Iran: Oldest Adobe Fragment Discovered.” November 3, 2004. “The oldest fragment of an Iranian adobe, dating back almost 3,000 years, was recently found in Khuzestan province. The fragment belonging to the Elamite era was discovered at the foot of the royal gate of the Chogha Zanbil Ziggurat (temple tower) in Khuzestan. Following recent excavations at the site, the 50 cm x 20 cm piece was unearthed by experts who were doing restoration work at a site dating back 3,000 years. ‘The discovered fragment bears important information on how the venerable structure of Chogha Zanbil has been preserved since

ancient times and proves that adobe was used as a durable material in ancient times,’ said site director Hamid Fadaei. In making the mud-straw mix, an equal amount of sand and clay and a smaller amount of straw was used, according to other officials who are currently studying the fragment.” http://www.iranian.ws/iran_news/publish/printer_4337.shtml.

“Metallurgic Ceramics as a Key to Viking Age Workshop Organisation” by Anders Söderberg appeared in *Journal of Nordic Archaeological Science* 14:115-124 (2004) <http://www.archaeology.su.se/arklab/jonas/jonas14.html>. Abstract: “Metallurgic ceramics form a common group of Iron Age/Early Medieval workshop finds. These highly specialized refractory ceramics carry a lot of information; telling us not just about the blacksmiths’ and goldsmiths’ skills in handling ceramic materials, but also about production and workshop organisation. This paper mainly deals with the question of heating trays, interpreted as vessels used in fire assay, or the refining and analysis of silver. A general connection between assaying and means of payment is briefly discussed, and a hypothesis is put forward that the presence of heating trays may provide information on Viking control over the means of payment and trade, in the same way as the presence of weights and weighing does. The Viking weight economy was dependent on methods for weighing the silver used for payment and methods for checking its purity. Analyses of heating trays from 9th–10th century Birka and of trays from the 10th–11th century mint in Sigtuna are made and an experimentally produced heating tray is analysed for comparison purposes.”

“Formations and Transformations of Ethnic Identities in the South Central Andes, AD 700–1825: A Multidisciplinary Study of Tangible and Intangible Patrimony” is a research project in Bolivia that is overseen by Antti Korpisaari, Risto Kesseli, and Martti Pärssinen from the Ibero-American Center, University of Helsinki, Finland. Working with Bolivian colleagues, Korpisaari and Pärssinen covered a cache of polychrome painted, molded ceramic spouted and drinking vessels from excavations on an island in Late Titicaca. The vessels depict clothing styles, jewelry, and tattoos. The excavation is mentioned in *Science* 306(1129) (12 November 2004) and one vessel is illustrated. A report and other images are available on the university’s Internet site at <http://www.helsinki.fi/hum/ibero/research/andes/index.html>.

NetIran (Cultural Heritage News) for 23 November 2004 carried an article entitled “Inscribed Bricks Unearthed South of Iran” ([http://netiran.com/?fn=nwt\(2181,1\)&PH_PSESSID=0d68bacf9_d4608b78e99b996ae378ac7](http://netiran.com/?fn=nwt(2181,1)&PH_PSESSID=0d68bacf9_d4608b78e99b996ae378ac7)) which reported that “In the latest round of archeological excavations at the historical site of Enshan, Fars province, Iranian and American archeologists have unearthed several inscribed bricks and a seal dating back to the mid-Elamite era (1100 BC). Enshan is regarded as one of the capitals of the Elamites and is rich in cultural heritage artifacts ranging from the Elamite to the Achaemenid era (3500 BC to 500 AD). Dr. Kamyar Abdi, an instructor of Dartmouth College in the United States told Cultural Heritage News (CHN) agency that in the course of excavations

in the past several weeks, his team unearthed six bricks dating back to 3,000 years bearing inscriptions identical with those from the Elamite era. He said that the bricks are baked and studies on them will reveal useful information about the mid-Elamite era which is of special significance in archeological studies. Abdi said that the bricks will be handed over to the experts of inscriptions for deciphering. Meanwhile, American explorations have so far led to the discovery of 25 bricks bearing inscriptions whose translation indicated that Melian historical mound is the same place as Enshan historical city. The third round of excavation at Enshan historical city was carried out by 20 experts who included two American archeologists from Michigan University [e.g., University of Michigan] and Dartmouth College. Specialists from Iran's Cultural Heritage and Tourism Organization (ICHTO) from Tehran, Abhar and Marvdasht are accompanying them. In addition to the bricks, one clay seal was also unearthed. Abdi said that portrait of a human being has been inscribed on the seal. Studies will be carried out to identify the date of the seal.

McMaster University: Research on Italian Neolithic ceramics by archaeologist Kostelena Michelaki and two colleagues in materials engineering, David Wilkinson and Patrick Nicholson, at McMaster University in Hamilton, Ontario is featured in an article in *Science Daily* for December 13, 2004: <http://www.sciencedaily.com/releases/2004/11/041123161910.htm> The article is based upon a November 23rd press release from *McMaster Daily News*, <http://dailynews.mcmaster.ca/story.cfm?id=2846#> Traditional analyses and replication studies were supplemented with XRD and SEM at Brockhouse Institute for Materials Research at McMaster.

University of Pennsylvania Museum of Archaeology and Anthropology: Pat McGovern and his colleagues at Penn and in China have collaborated on research on winemaking in Neolithic China, perhaps the earliest in the world. This early evidence of winemaking is derived from the analysis of bronze wine jars dating from 7,000 BCE in northern China. Previously the oldest evidence of fermented beverages was dated to 5400 BCE and was found in ceramic containers at the Neolithic site of Hajji Firuz Tepe, in Iran. The archeological site of Jiahu, in the Yellow River Basin is also renowned for its cultural and artistic artifacts, including houses, kilns, turquoise carvings, stone tools and flutes made from bone. McGovern analyzed samples of 3,000-year-old wine from hermetically sealed bronze vessels found in Shang Dynasty burial tombs from the Yellow River Basin. The liquid was preserved because a thin layer of corrosion had sealed the bronze jars completely. A small sample of the wine, a clear colorless liquid, had a faint aroma similar to nail polish remover or varnish. McGovern stated that when he first smelled the wine it was floral scented, flavored with herbs and flowers or tree resins, and placed in the tombs of high-ranking individuals to sustain them in the afterlife. One of the ancient jars contained a liquid that had traces of wormwood, suggesting the beverage might have been an early version of absinthe. The article "Fermented Beverages of Pre- and Proto-historic China" is co-authored by Patrick E. McGovern, Juzhong

Zhang, Jigen Tang, Zhiqing Zhang, Gretchen R. Hall, Robert A. Moreau, Alberto Nuñez, Eric D. Butrym, Michael P. Richards, Chen-shan Wang, Guangsheng Cheng, Zhijun Zhao, and Changsui Wang (*Proceedings of the National Academy of Sciences USA*, 10.1073/pnas.0407921102, December 8, 2004). Abstract: "Chemical analyses of ancient organics absorbed into pottery jars from the early Neolithic village of Jiahu in Henan province in China have revealed that a mixed fermented beverage of rice, honey, and fruit (hawthorn fruit and/or grape) was being produced as early as the seventh millennium before Christ (B.C.). This prehistoric drink paved the way for unique cereal beverages of the proto-historic second millennium B.C., remarkably preserved as liquids inside sealed bronze vessels of the Shang and Western Zhou Dynasties. These findings provide direct evidence for fermented beverages in ancient Chinese culture, which were of considerable social, religious, and medical significance, and help elucidate their earliest descriptions in the Shang Dynasty oracle inscriptions."

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Book Reviews

Mark Hall, Associate Editor

Archaeological Survey. Edward Banning. Klewer Academic/Plenum Publishers (Manual in Archaeological Method, Theory and Technique), New York, Boston, Dordrecht, London, Moscow, 2002. 273 pp., 38 figs., 3 tables, index. No price indicated (paper). ISBN: HB:0-306-47347-X, PB: 306-47348-8.

Reviewed by Eliot Braun, Israel Antiquities Authority, POB 586, Jerusalem, 91004, Israel, eliot@israntique.org.il

For anyone interested in understanding the potential of archaeological surveying, or about to undertake a survey, this new volume is an invaluable aid. The author, claiming that archaeological surveying is '...uniquely able to address some research questions excavation alone will never answer.', then goes on to make a strong case to support this view. This volume approaches the subject on several levels. In the most basic way it is a highly detailed handbook (one in a series on method, theory and technique) on how to conduct surveys virtually anywhere on the globe and under any conditions. However, it is far more than a mere handbook of archaeological surveying practices. It includes well-developed discussions on the theories behind them and the pros and cons of each method.

Banning's approach is basically dialectical, a method that causes the reader to consider and question some of the most basic premises of archaeological practice, including such primary concepts as definitions of 'artifact' and 'site'. Each aspect of archaeological survey is introduced together with the theory on which it is based, followed by a discussion of applicability and problems likely to be encountered in interpretation of data yielded. The reader will particularly benefit from these discussions, obviously based on the author's considerable personal experience and a broad knowledge of the subject, amply reflected in an extensive and highly eclectic bibliography.

As textbook and manual, it is unlikely this work will be read cover to cover, but the introductory chapter (I), with its series of brief, theoretical discussions outlining following chapters, should be perused before its other contents. It stresses the author's concept of archaeological surveying as ways to obtain "models of cultural distribution" (basically arrays of archaeological materials of every sort as they are found in relation to the modern surface), the basis for all that follows. In addition, it alerts the reader to the enormous diversity in types of archaeological deposits and the tasks to which archaeological surveying may be set, while offering some particularly thought-provoking presentations concerning different types of models, labeled: 'off-site', 'non-site', 'place' and 'paleolandscape'. The chapter also introduces the reader to a theme appearing throughout the work, the problem of how to interpret archaeological data retrieved through surveying. A final section stresses the importance of research designs. Subsequent chapters address these issues in detail with reference to specific situations.

Chapter II, while continuing the theoretical discussion, also introduces practical applications. Goals of surveying are listed and specific methods to achieve them suggested. Three basic methods are defined by the author, 'prospection', 'statistical surveys' and 'spatial surveying', with indications of when and how to apply them. Here, and elsewhere in later chapters, the author stresses a simple, common sense approach to choosing methods for achieving desired goals. Although never explicitly stated, a principal corollary to this approach is an archaeologist's need for intimate knowledge of the object of his survey before any method is chosen. Stressed also is the importance of 'methodological consistency', so that data from one survey may be compared with those derived from other projects.

Chapter III, entitled 'Discovery of Archaeological Materials', is a distillation of what is surely the author's intensive and extensive field experience in archaeological surveying. Seminal, invaluable commentaries accompany discussions that indicate how to discern the archaeological record; no easy matter. They suggest how, through surveying, it may be 'milked' for information, and then how to interpret the data. Sections on 'visibility' (the surveyor's ability to recognize archaeological material), 'obstrusiveness' (the degree to which archaeological materials can be distinguished from their surroundings by visual and non-visual means) and 'post depositional factors' indicate

some of the most problematic aspects of surveying. This chapter also offers detailed discussions of surveying strategies and procedures useful for formulating approaches to surveying. A discussion on 'factors affecting archaeological detection' indicates just how problematic surveying and its interpretation can be.

Remaining chapters expand on the aforementioned topics in breadth and in depth. They offer additional approaches to surveying with detailed explanations and rather importantly, they stress their inherent limitations. In a series of short presentations the reader is offered the chance to pick and choose from numerous and varied options for virtually all aspects of surveying under most conditions. Chapter IV explains how to determine spatial units, intrinsic to all surveys, while Chapter V deals with statistical surveys and sampling procedures. Some of these last are rather sophisticated and may tend to put off readers wary of mathematical models, but the text explains their utility and how they can yield results more comprehensible than those other approaches might produce. 'Prospective surveys' (Chapter VI) are associated with models that allow results to be better understood. Diagrams, equations and concrete examples accompany the above-mentioned discussions, making them explicit and relatively simple to understand.

Chapter VII, devoted to 'spatial structure', defined by Banning as ... 'the pattern which sites, buildings or artifacts are distributed in space...' offers more theoretical and practical discussions. Definitions and models in this chapter will be of special interest to practitioners of landscape archaeology, as will be Chapter IX that offers detailed instructions on what to do in the field. Archaeologists working in 'cultural resource management', (especially in the English-speaking regions of Britain and North America) will find these chapters particularly helpful in addition to Chapter VIII, devoted to this specialization.

Chapter X, a must read, is chock full of invaluable suggestions for procedures that allow control and evaluation of surveys. Chapter XI offering suggestions on directions archaeological surveying will take in the future, will also be of interest to those planning projects. Finally, an appendix offers excellent advice for preserving the health and safety of surveyors in the field.

This volume is a practical handbook for archaeological surveyors and may be used as a guide for conducting them virtually any place in the world, and under any conditions. Its brief, to the point descriptions and advisories, complete with pros and cons, include very specific directions for application. This format allows the reader to make intelligent choices from a very full complement of possibilities, with insight into their strengths and weaknesses and their applicability to specific needs.

For ease of use, the text is organized in numbered chapters with headings and sub-headings that may be searched in a detailed table of contents and in an index. This is fortunate

because the author's order and progression of subjects are not always obvious, nor easy to follow, and occasionally the cart is put before the horse. Technical jargon found in the introductory chapter included concepts such as 'sinusoidal distribution', 'contagious distribution', 'Poisson process' and 'Neyman Type A distribution' that, to the uninitiated reader (myself included) are not as obvious as to the author. A short fishing expedition in the index provided full explanations of them and their use in subsequent chapters. However, such instances are few and only slightly detract from the utility of this treatise.

This work should find its place on the shelf of any serious archaeological surveyor, fledgling or seasoned hand especially interested in modern, scientific approaches. It offers the reader a virtual banquet of information that treats the subject in a comprehensive manner with surprising depth for a volume of relatively modest proportions. In addition, it is a good sourcebook with numerous citations and a large bibliography useful for directing additional queries and research. Its theoretical content, and especially the questions it raises concerning basic concepts, will be of interest to any archaeologist.

The Concise Oxford Dictionary of Archaeology. Timothy Darvill. Oxford University Press, Oxford, UK, 2003.

Reviewed by Christophe Descantes, University of Missouri

Professor Timothy Darvill should be commended for his work, *The Concise Oxford Dictionary of Archaeology*. All aspects of archaeology are well covered. Students and practitioners of archaeology, particularly those interested in the archaeology of Britain and the Old World, will find this reference source (over 4,000 entries) most useful. The geographical breadth of this easy to read dictionary is wide; it is a rare term not found in this reference source. Besides the coverage of acronyms, archaeologies, archaeologist biographies, British and American antiquities legislation, cultural periods, key sites, methods, theories, and tools of the trade is thorough. Notably, this concise dictionary defines many words dealing with world prehistory. Ten quick-reference sections are located at the end of this carefully edited book including international conventions and recommendations concerning the preservation of archaeological resources, chronological charts for geological and cultural phases, and a listing of Roman and Egyptian rulers and dynasties.

Theoretical terms abound in this dictionary, and not solely from the discipline of archaeology, but also from anthropology, evolution sciences, social theory, kinship, and others. The listed sources for many of the theoretical terms are invaluable, and provide avenues for those interested in gaining more information. In addition to providing the meaning of archaeological theories, the limitations of such theories, at times, are also presented (e.g., see Direct Historical Approach). Darvill does not shy away from the acronyms in archaeology. Did you

know that "BANANA" stands for "Build Absolutely Nothing Anywhere Near Anything"?

Archaeologists find artefacts (or artifacts); naturally the plethora of terms for these finds fills this dictionary; examples are also often given. The complex word "ecofact" has numerous examples supplied. The harder to find (in the archaeological record) cultigens of prehistoric peoples are well represented in this dictionary.

Biographical sketches of archaeologists who have made major contributions to the field are described in the dictionary. Sadly, there are no biographical entries for any living archaeologists, but Darvill makes up for it by mentioning their contributions when defining theories, sites, and discoveries.

I have only minor quibbles with this dictionary. A couple words did not have their American spellings included: haematite (hematite) and Caenozoic (Cenozoic) era. As an Oceanist (an underrepresented small group in a very large region) and archaeometrist, I did find a few terms unfortunately not listed, such as: Lapita, taro, breadfruit, historical linguistics, inductively-coupled-plasma mass-spectrometry (ICP-MS), and mitochondrial DNA (mtDNA). However, the meaning for "moai", the Rapanui term for a large Easter Island statue, is here as is "patu", the Maori word for "club". I might add that the term "provenience" in American Archaeology has taken on a new meaning, where it refers to the origin (or source) of materials as opposed to the exact location of an artifact as it does in British Archaeology (see Neff 1992). In other words, "provenience" in its American usage is equivalent to the non-American use of the term "provenance".

Darvill's dictionary is a worthy companion for anyone interested in archaeology – students, professionals, researchers, and amateur enthusiasts – faced with grasping the terms and jargon used in archaeology and prehistory today.

References

Neff, Hector (1992). Introduction. In Neff, H. (ed.) *Chemical Characterization of Ceramic Pastes in Archaeology*, Monographs in World Archaeology No. 7, Prehistory Press, Madison, Wisconsin, pp. 1-10.

Journal of Roman Pottery Studies, Volume 10: Amphorae in Britain and the Western Empire. Judith Plouviez and Robin P. Symonds, editors, Oxbow Books, Oxford, UK, 2003. vi + 138 pp., 82 figures, 6 tables. Price: \$45.00 or £24.00 (softcover). ISBN 1-84217-095-3, ISSN 0958-3491.

Reviewed by Charles C. Kolb, National Endowment for the Humanities, Washington, DC 20506 USA

Amphoras, the rather plain, unglazed, double handled ceramic storage containers generally pointed at the bottom,

were used to transport and store wine, oil, fish, and other commodities in the regions around the ancient Mediterranean and even northwestern Europe, particularly in Greek and Roman times. Students of these eras are aware of *The Amphoras Project* <http://www.chass.utoronto.ca/amphoras/cgi-bin/well> initiated at the University of Toronto, which provides a bibliography of scholarly works on locating, identifying, and studying Greek and Roman amphoras and the trade they carried. This Internet site also includes passages in ancient Greek literature on the use of amphoras (quoted in English), translations into English of works (or parts of works) published in Russian on amphoras, and links to other Internet sites with amphora information and/or images (excavations, wrecks, etc) and other sources of bibliography (with search capabilities) <http://www.chass.utoronto.ca/amphoras/www-amph.htm>.

These vessels appear during the Roman era (1st c. BCE - 4th c. CE) in the United Kingdom and have been documented by Paul Tyers in "Roman Amphoras in Britain" *Internet Archaeology* 1 (1996) http://intarch.ac.uk/journal/issue1/tyers_toc.html and in his book, *Roman Pottery in Britain* (London: Batsford, 1996). The web source provides a survey of the principal classes of amphoras circulating in Britain during the Roman period. The form, fabric, sources, contents and dating of each type are described in a series of atlas pages, accompanied by a series of computer-generated maps. These can also be accessed through a clickable map, based on the source of the amphoras, through a time-line, showing which types are circulating at any period, a visual index, as well as through a full text search. A bibliography and distributional database accompany the narrative.

The study of Roman amphorae is highly advanced in Britain in comparison to studies undertaken on materials from continental Europe, and accounts for one of the specialized research groups who study ceramic materials (there are also groups which emphasize prehistoric, medieval, and Anglo-Saxon pottery and ceramic architectural and building materials). The Study Group for Roman Pottery (SGRP) was formally established in 1971 as a forum for the discussion of all matters related to Roman pottery found in Britain, and this organization has published (on a more or less annual basis) the *Journal of Roman Pottery Studies* since 1986.

The SGRP provides a forum for the presentation and discussion of the latest research, and of issues affecting the subject and its practitioners. An annual conference and regional meetings promote contact between specialists and provide the opportunity to study pottery from different regions. The SGRP is a leader in the study of Roman ceramics and provides guidance to best practices in excavating and collection Roman wares. The group has also published *Research Frameworks for the Study of Roman Pottery* (collated and edited by Steven Willis, October 1997, <http://www.sgrp.org/Rfwork/001.htm>) and *Guidelines for the Archiving of Roman Pottery* (edited by Margaret J. Darling, 1994, <http://www.sgrp.org/Guidelines/Contents.htm>) and is assisting English Heritage in the revision of the 1980 publication *Guidelines for the Processing and*

Publication of Roman Pottery from Excavations. The SGRP also collaborates with specialist groups including "United Kingdom Ceramic Thin-Section Database" (1997, http://www.eng-h.gov.uk/archrev/rev96_7/certs.htm) and Minimum Standards for Project Designs and assessments. The group maintains an informative Internet site at <http://www.sgrp.org>

There is additional information available on the Internet at <http://www.potsherd.uklinux.net/atlas/links/classified.php>, including discussions and illustrations of the amphora types, including those identified by Heinrich Dressel (*Corpus Inscriptionum Latinarum*, Bd. XV, Berlin, 1899).

Your reviewer's task is to comment on the 16 papers presented in this tenth and latest issue of the journal which derive, in the main, from a conference on Roman ceramics held 23-24 January 1994 that was organized by members of the Museum of London Archaeological Service (MoLAS) and the Department of Early London History and Collections of the Museum of London, and sponsored by English Heritage. The conference had 12 oral and four poster presentations and was attended by nearly 100 persons from ten countries.

The editorship of the volume fell to Judith Plouviez and Robin Symonds, assisted by Paul Bidwell, Paul Booth, Francis Grew, Ros Sherris, Lindsay Rollo, and Alexandra Croom. The initial contribution (pp. 1-9) is a "Combined Bibliography for the Amphora papers (pp. 10-116)" which has 414 entries.

The first essay is by A. P. Fitzpatrick, "Roman amphorae in Iron Age Britain" (pp. 10-25, 13 figs.), who summarizes evidence about amphora recovered in British contexts by documenting vessel typology, chronology, and commodities transported. Roman Republican period wine amphorae (Dressel 1A, 1B and 1C) and wine vessels of Imperial date (Pascual 1, Dressel 2-4), as well as Rhodian, Gauloise, and Italian Camuldonum, wine amphora; olive oil amphorae (Oberaden 83, Dressel 30 and 6), and fish-based products (Beltrán 1/ Dressel 7-11) are considered. Vessels whose contents are not known (Haltern 70, Kingsholm 117, Richborough 527, and Camulodunum) are reviewed, and there is a valuable discussion of problems of methodology and identification. David Williams's contribution titled "Cretan wine in Roman Britain" (pp. 26-31, 2 figs.) draws attention to a distinctive form of Roman amphora (Dressel 43) that has often been misidentified as "Rhodian" but is now known to originate in Crete. The author discusses the result of thin section analyses of all nine specimens found in Britain and assesses potential production centers.

"Amphorae and vineyards from Burgundy to the Seine" by Fanette Laubenheimer (pp. 32-44, 17 figs. 1 table) summarizes the evidence on Gaulish amphora production at Gueugnon (a 10 ha. workshop area with 46 known kilns) and other locales dated to the first century CE. She discusses XRF data and the importation of these wine vessels to Britain versus possible local amphora production in London, and the possibility of the "repackaging" wine from larger to smaller vessels. The evidence suggests that amphorae were produced in the

Burgundy region and were subsequently transported to the Rhine Valley and to London. Armand Desbat's article, "Amphorae from Lyon and the question of Gaulish imitations of amphorae" (pp. 45-49, 2 figs. 1 table), provides an assessment of Lyon vessel types (1, 2, 3, and 4), Dressel 16 and 28, and Haltern 70. Fabric analysis suggests that local potters imitated existing forms rather than creating their own originals.

Robin Symonds addresses the issue of Dressel 2-4 and Gauloise 4 amphorae copies from the site of Verulamium in the article "Romano-British amphorae" (pp. 50-59, 6 figs. 1 table). The author describes the site and contexts, and amphorae made in London (Sugar Loan Court Ware). Symonds concludes that the more well-attested Romano-British products were likely imitations of Gaulish forms in local fabrics. Fitzpatrick's second contribution, "The place of Gaulish wine in the military supply of amphorae-borne commodities to Roman Scotland" (pp. 60-63, 6 figures), characterizes the Roman occupations of Scotland: the Flavian era, CE 79-100), the Antonine occupations (CE 142/3-170/80), and the Severan campaigns (CE 208-211). Italian Dressel 2-4 and 20 and French Gauloise flat-based amphorae 4-5 are considered and provisional comments made about frequencies and contents being transported. César Carreras Monfort and David Williams are the authors of "Spanish olive oil trade in late Roman Britain: Dressel 23 amphorae from Winchester" (pp. 64-68, 2 figs.) in which Dressel 20 and 23 forms are reviewed and two separate fabrics identified through thin section analysis. Diachronic changes in vessel types and tentative hypotheses are postulated.

"Fish-sauce amphorae from the Iberian peninsula: The forms and observations on trade with the north-west provinces" by Stefanie Martin-Kilcher (pp. 69-84, 12 figs., 2 tables) outlines the varieties and chronologies of major forms produced in Baetica and Lusitania. In addition, she discusses and critiques the archaeological data and provides an assessment of the distribution of fish-sauce amphorae. Among the forms considered are Beltrán I-IV and 72, Almagro 50-51, Dressel 7-10, and Augst 28-30. Data from 17 sites and distribution maps for northwest Europe suggest that fish sauces were imported for both military and civilian consumption, with a market system for the latter. César Carreras's contribution "Haltern 70: A review" (pp. 85-91, 4 figs) characterizes the form, its mid-first century BCE date, and distributions, provides descriptions of painted inscriptions, and suggests preserved olives as the contents. In "Ver 1908 amphoras introduced" (pp. 92-95, 1 fig.), Paul R. Sealey defines a new category of Roman amphora from Spain known from the City of London and dated CE 55-67 that have some similarities with Haltern 70 and Dressel 20 but have a characteristic off-white slip.

Philippe Borgard and Madeleine Cavalier wrote "The Lipari origin of the 'Richborough 527'" (pp. 96-106, 6 figs., 1 table), with three appendices: Distributions (prepared by the senior author), laboratory studies [in French] (by Maurice Picon), and a study of a stamped vessel sherd (by Roberta Tomber). This ceramic was fabricated in Lipari in the Aeolian Islands and

spans three centuries (second quarter of the first century BCE to CE mid-third or into the fourth century). Particularly illuminating are the distribution map and the appendix listing eight underwater sites (located in Croatia, France, Italy, and Malta) and 68 terrestrial sites (in Belgium, France, Germany, Italy, Portugal, Spain, Switzerland, Tunisia, and the United Kingdom); 14 of the latter are British. Four ceramic groups (1a, 1b, 2a, and 2b) are identified on the basis of morphological criteria while Picon's XRF analysis of 527 specimens documents two distinct groups. The stamp identified by Tomber from the Cannon Street in London is Borgard's Type 2b. In "Two unusual amphora types from the Museum of London" (pp. 107-108, 1 fig.), Roberta Tomber reports on Peacock and Williams Class 40/Benghazi Middle Roman I and Peacock and Williams Class 44/British Bii specimens. J. H. van der Werff's article "The third and second lives of amphoras in Alphen Aan Den Rijn, The Netherlands" (pp. 109-116, 9 figs.) considers the use and disposition of 38 specimens (Dressel 2-4 and 20, and Pélichet 47) including vessel reuse, conversion to tubs, as building material or fill, and as a ground for graffiti.

Joanna Bird provides "Samian Studies, 1985-96: A Review" (pp. 117-124), an assessment of general contributions and discussions of Italy and early factories in Gaul, South Gaul, Central Gaul, East Gaul, and Britain, emended by a 73-item bibliography). Steven Willis's article, "The character of Lyon ware distribution (with particular attention to the evidence from the Midlands and the North of Britain)" (pp. 125-138, 1 fig.), considers the nature of the evidence, discusses typology and chronology, and provides distributions of forms (cups, beakers, and other forms), and quantifies specimens by weight. An addendum dates 2001 is appended. The article provides a bibliography with 150 entries and four appendices: Incidences of the ware by site and county, incidences of cups, incidences of beakers, and the incidence of specimens in Wales.

The *Journal of Roman Pottery Studies* began in 1986 as a modest 79-page publication with five articles; subsequent issues contained upwards of a dozen articles, but beginning with the seventh publication in 1997, there has been a trend toward whole number thematic issues: I. Betts et al. "A corpus of relief-patterned tiles in Roman Britain" *JRPS* 7:1-167 (1997); J. R. Perrin (comp.) et al. "Roman pottery from excavations at and near to the Roman small town of Durobrivae, Water Newton, Cambridgeshire, 1956-58" *JRPS* 8:1-141 (1999); and P. C. Buckland et al. "Roman pottery kilns at Rossington Bridge excavations 1956-1961" *JRPS* 9:1-96 (2001).

The illuminating, well-written contributions in the tenth issue cover the gamut from traditional typological classifications to geographic distributions of particular wares and types, and incorporate some thin section and XRF analyses. These also add to *The United Kingdom Ceramic Thin-section Database* (see *English Heritage Archaeological Review: 1996-1997*, http://www.eng-h.gov.uk/archrev/rev96_7/certs.htm). The SGRP's editors and authors must be congratulated for again producing another fine addition to ceramic studies in Britain and beyond.

Statistics in Archaeology. Michael Baxter, Hodder Arnold: London, UK, 2003. xi + 292 pp., 44 figures, 25 tables, two appendices, index. Price: £45.00 (cloth). ISBN: 0-340-76299-3.

Reviewed by Clive Orton, University College London Institute of Archaeology, 31-34 Gordon Square, London WC1H 0PY, UK

This book is a comprehensive account of the statistical techniques used in archaeology in the UK, the USA, and to a lesser extent in continental Europe. It is explicitly not an introductory text, and many archaeologists are likely to find the level of the mathematics challenging, to say the least. The author's aim is to bring to the attention of both statisticians and archaeologists the wide range of statistical techniques that have been applied to archaeological situations. Some are old, some relatively new, some have been used extensively while others must still be regarded as experimental. The author argues that it is through experience that we learn the value and limitations of techniques, and encourages this view in his readers. Field archaeologists may feel that there is a slight bias towards the author's specialism in archaeometry, but this does not at all mean that other areas of application have been neglected.

An introductory chapter sets out the place of statistics in archaeological research, and gives a historical account of its development, including a résumé of some of the main debates along the way. The remaining chapters are divided between expositions of particular families of statistical techniques, and discussions of topics of special archaeological interest. The former cover kernel density estimates (ch. 3), sampling (ch. 4), regression (ch. 5), an introduction to multivariate methods (ch. 6), principal components analysis (ch. 7), cluster analysis (ch. 8), discrimination and classification (ch. 9), missing data and outliers (ch. 10), analysis of tabular data [i.e. chi-squared, log-linear analysis, correspondence analysis] (ch. 11), computer-intensive methods (ch. 12), spatial analysis (ch. 13), and Bayesian methods (ch. 14). Topics covered by the latter are the nature of archaeological data (ch. 2), absolute dating (ch. 15), relative dating (ch. 16), quantification (ch. 17), lead isotope analysis (ch. 18), the megalithic yard (ch. 19), comparing assemblage diversity (ch. 20), and shorter studies (ch. 21). Two appendices list resources available on the Web.

The expository chapters are of a uniformly high standard. The explanations are clear and accurate (though necessarily mathematical), and are well linked to archaeological case studies. In the space available, only the outlines of techniques can be given, but there are plenty of references for readers who want to follow up points of detail. Indeed, the thorough referencing is one of the strong points of this book. Archaeologists, however, may bemoan the relative paucity of illustrations, particularly in the chapter on spatial analysis, which has none at all. Even if they are not strictly necessary to an explanation, they do help those who may be struggling with the mathematics by giving them something visual to which they can relate. There are no major omissions, though I would like

to have seen some account of non-parametric univariate statistics, particularly the Kolmogorov-Smirnov test, which is a valuable yet simple tool for many archaeologists. The location of classification as an apparent sub-set of discrimination (pp. 116-8) may strike archaeologists as rather odd, as many multivariate techniques (such as principal components analysis and cluster analysis) are used as aids to archaeological classification. The answer is that classification is treated here in a narrower, mathematical, sense, and in particular refers to the technique of classification trees.

The choice of archaeological topics for discussion is naturally more subjective. Absolute and relative dating are obvious choices, and the former will enable archaeologists to get up to speed on the new Bayesian approaches which are, thanks to the user-friendliness of the *Oxcal* software, revolutionising the subject. It is good, too, to have a calm overview of the sometimes vexed topic of quantification, looking at the different approaches that have been developed for different classes of material. Diversity is another topic that can generate more heat than light, and a dispassionate account of the various approaches is welcome. Lead isotope analysis and the megalithic yard may be more surprising choices. The former can be seen as an example of the importance of examining, and if possible justifying, the assumptions that lie behind the use of any technique. As such it is of wider interest than its apparently narrow remit suggests. The latter is an historical cameo, illustrating the different ways in which archaeologists and mathematicians may look at the same issue, and to me it highlights the need for close dialogue and the understanding of each other's position. The only serious omission seems to be of the techniques developed by Hodson for his analyses of the Hallstatt cemetery, which under the name Social Status Analysis have been widely used in the study of the structure of cemetery assemblages. A subject that could have usefully been promoted from a case study (pp. 139-141) to a discussion topic is that of archaeological numismatics, where great progress has been made in recent years through the use of (mainly multivariate) statistics, but is little known outside a very small field of workers.

The tone of the book is calm, fair and even-handed throughout. Possibly too even-handed, I thought occasionally, though this may just have been my partisan feelings coming through about certain topics. At times, I longed for the author to come off the fence and say what he really felt about something. But on reflection, I can appreciate his restraint. This book will have a long shelf-life, and anything said too dogmatically now may become a source of embarrassment in a few years' time. This will be a standard work of reference for a long time, and should be in every archaeological library. It is not clear to me who else will buy it; those who can understand it probably know most of it already, and those who do not, but who might benefit much from it, will be deterred by both the mathematics and the price. However, even those who 'know it all' will find it useful, whether to check up on a formula that has escaped their memory, to find a reference that they need from the excellent bibliography, or to discover how to get access to useful and affordable software. It deserves a wide audience,

but perhaps it will be extensively borrowed rather than purchased outright.

Revista Atlántica-Mediterránea de Prehistoria y Arqueología Social (RAMPAS)

Reviewed by A. Alzola Romero, Oxford OX1 2DL, UK.

Archaeology's ivory tower is known to be a particularly lofty one, and so archaeologists—especially archaeological scientists—are often regarded as some of the most detached and less socially aware of scholars. In this respect, *Revista Atlántica-Mediterránea de Prehistoria y Arqueología Social (RAMPAS)* certainly defies the stereotype. Revolving around the concept of 'Social Archaeology' (i.e. 'the analysis of the past as the main building block of the project for a social future'), this incipient annual publication aims to provide a space for articles that stimulate intellectual debate in Archaeology beyond traditional positivistic and cultural-historical approaches.

Addressed to the archaeological and historical academic communities, the journal is published by the Prehistory Department of the University of Cádiz (Province of Cádiz, Andalusia), specifically by the *Grupo de Investigación del Plan Andaluz de Investigación*, who are currently undertaking a long-term project entitled 'A study of the prehistoric economic and social formations in Cádiz's Atlantic coast'. The editorial board is composed of a dynamic and politically engaged group of Archaeology lecturers and doctoral candidates.

RAMPAS contains papers that examine interpretive and empirical issues in Archaeology, ranging from theoretical reconstructions of Roman-indigenous relations to geoarchaeological analyses and hierarchised landscapes. Archaeometry, archaeozoology, geoarchaeology, and critical historiographical reviews constitute some of the more common subjects. The journal focuses heavily on the Prehistory of the Iberian Peninsula's southern territories, with an emphasis on Spanish Archaeology's traditional relation (or perhaps boundedness) to the discipline of History.

The articles are generally of regional, scientific, and/or theoretical interest, although they constitute a rather heterogeneous picture in terms of approaches, contents, and contribution. For instance, focusing on theoretical issues, Ana Pajuelo Pando and Pedro M. López Aldana (volume 4, 2001: 229-255) examine the emergence of idols (defined in this context as a physical manifestation of the Marxist concept of 'ideology') in the Low Guadalquivir Valley during the third millennium BCE. They associate this phenomenon with processes of social hierarchisation, the management of agricultural products, and political control exercised from the settlement of Valenciana de la Concepción. Regardless of the reservations that some scholars may have with regard to focusing the study of idols exclusively from the perspective of social and political control, the authors of this paper fail to justify the debatable extrapolation of Marxist un-

derstandings of ideology and its socio-political implications to the context of the Low Guadalquivir Valley in the third millennium BCE. Elements such as idolatry, political control, production systems, funerary rituals, and social alienation are loosely connected throughout the text, making it a difficult task for the reader to recognise the logic that has been used to infer a particular past socio-political structure from the original distribution rates of the idols. Moreover, there appears to be a lack of archaeological evidence to substantiate the authors' suggested model.

On the other hand, inquiring into more methodological aspects of the discipline, Jordi Estévez Escalera (volume 3, 2000: 7-28) provides an overview of the possibilities and limitations involved in archaeozoological analyses, particularly in relation to palaeoecological reconstructions, palaeoeconomic research, and cross-cultural studies. The author leads us through a series of relevant theoretical considerations, outlines the archaeotaphonomic formation processes and the more suitable analytical methods for the data that they can yield, illustrates this with a number of case studies, and concludes by reaffirming his professional opinions in this field of archaeological practice. Key issues such as the importance of contextual information, the need for an awareness of the social and cultural processes revolving around biological manifestations of the archaeological record, the advantages of adopting inter-disciplinary approaches in the study of faunal remains, and the caution required when establishing cross-cultural models are also highlighted. The paper thus puts forward a series of thought-provoking considerations and useful methodological guidelines laid out in a balanced, clearly structured, and effective text.

This inconsistency with regard to the quality of the articles throughout the journal likely stems from the fact that many of the contributors are young students who are still at an early stage of their careers and therefore not as constant (or perhaps predictable) in terms of the contents and contribution of their texts as the more experienced scholars. Being a developing and relatively small-scale journal, *RAMPAS* contains virtually no contributions from well-established or internationally renowned academics.

In terms of meeting its aims, the publication has succeeded in certain areas, although a few important aspects might require closer attention. The concept of 'Social Archaeology' constitutes an interesting project and many of the contributors have efficiently confronted the complex task of linking the dominant social and political issues of today with archaeological practice and its repercussions. On the other hand, *RAMPAS* will publish papers submitted in French, German, English, or Spanish and is keen on stimulating intellectual debate as a forum for the discussion of empirical and theoretical issues in Archaeology. Still, thus far, only articles in Spanish have been published, the participation of international contributors remains manifestly low, and there are no responses to articles, correspondence sections, or active debates.

Despite the journal's principal objective, positivistic and cultural-historical influences can still be found implicitly in several of the articles in the form of unquestioned assumptions, uncritical extrapolations, social and cultural evolutionist understandings of humanity, the inaccurate use of terminology, and deterministic portrayals of social behaviour.

The editing process in general would benefit from more careful attention: typographic, grammatical, and spelling mistakes are recurrent in some of the papers to the point that they detract from the main argument. Moreover, the quality of the graphics is variable, ranging from non-annotated blurred tracings to detailed colour illustrations.

RAMPAS will challenge even the most open-minded readers' expectations of what to find in an archaeological journal by railing in its preface against issues as seemingly unrelated to Archaeology as unjust wars in the Middle East, the Argentinean economic crisis, cultural imperialism, political incompetence, and the Established Order. Disconcerting as it may seem at a first glance, this constitutes a refreshing initiative for a discipline that is only just becoming aware of the real need to interact more closely with the broader community in order to justify its role and ensure its own survival.

However, if this incipient journal aims to develop and set itself up to the standards of more established publications with similar thematic areas such as *Trabajos de Prehistoria* or *Madrider Mitteilungen*, *RAMPAS* might need to consider undergoing a series of modifications in terms of its editing, a more active organization of debates, the overall quality and contribution of its articles, and the genuine up-to-dateness of its theoretical stands.

CALL FOR CONTRIBUTIONS

The *SAS Bulletin* Editors invite readers to contribute short research articles (1500 words or less), calls for papers and summaries of conferences on archaeological science, relevant news items, and information about jobs, grants, and fellowships in archaeometry.



Submissions should be composed using 11 pt. Times New Roman font with full justification. Please refrain from using bold, italic, or underline typeface. We prefer Word for Windows, but work produced using other word processing programs will be accepted. Submit materials electronically to Christian Wells, cwells@cas.usf.edu.

Upcoming Conferences

Colleen P. Stapleton, Associate Editor

2005

Mar. 21-24, Computer Applications in Archaeology, Tomar, Portugal. Abstract deadline: 31 Jan 2005. Contact: Secretary, Instituto Politecnico de Tomar, Departamento de Gestao do Territorio, CAA 2005, Av. Quinta do Contador, 2300 Tomar, Portugal. Email: caa2005@ipt.pt. General information: www.caa2005.ipt.pt/index.html.

Mar. 30-Apr. 3, Society for American Archaeology Annual Meeting, Salt Lake City, USA. Themed session on "Lithic Reduction Analysis and Problems of Prehistory", contact Harry Lerner harry.lerner@mail.mcgill.ca. General information: www.saa.org/meetings/index.html.

Apr. 13-16, UK Archaeological Science Conference, University of Bradford, UK. Abstract deadline: 29 Oct 2004. Email: ArchSci-Conference@Bradford.ac.uk. General information: www.brad.ac.uk/archsci/archsci2005.

Apr. 13-16, 2nd International Conference on Late Roman Coarse Wares, Cooking Wares and Amphorae in the Mediterranean: Archaeology and Archaeometry, Aix-en-Provence-Marseille-Arles, France. Abstract deadline: 30 Oct 2004. Email: lrcw2@msh.univ-aix.fr, tel.: +33 4 42 52 42 68, fax +33 4 42 52 43 75. Congres LRCW2, MMSH, 5 Rue du Chateau de L'Horloge, BP 647, 13094 Aix en Provence Cedex 02, France. General information: www.msh.univ-aix.fr/lrcw2.

Apr. 19-22, Archeometrie 2005, Institut National des Sciences et Techniques Nucleaires (INSTN), Saclay, France. Abstract deadline: 1 Dec 2004. Contact: Secretariat: Anne Morel, Archeometrie 2005, Laboratoire Pierre Sue, Bat 637, CEA Saclay, 91191 Gif sur Yvette, fax : 01 69 08 69 23. General information: www.ladiri.cnr.fr/GMPCA2005/.

Apr. 20-23, Prehistoric Technology 40 Years Later: Functional Studies and the Russian Legacy, Polo Zanoto (Natural History Museum of Verona), University of Verona, Italy. For more information, visit the website, <http://www.weartraces.com>, or contact Dr. Laura Longo, Meeting Coordinator, info@weartraces.com.

Apr. 28-30, Metallurgy - A Touchstone for Cross-Cultural Interaction, British Museum, London, UK. A conference to celebrate Paul Craddock's contributions to the study of metal through the ages. Contact: Susan La Niece: laniece@thebritishmuseum.ac.uk. General information: www.thebritishmuseum.ac.uk/science/whatsnew/metals%20conf%201.htm.

May 15-19, 8th International Conference on Non-Destructive Testing and Microanalysis for the Diagnostics and Conservation of the Cultural and Environmental Heritage, Lecce, Italy. Abstract deadline: 31 Oct 2004. Contact: Scientific Secretariat, Istituto Centrale per il Restauro (ICR), attn. Marcella Ioele Piazza San Francesco di Paola, 9, I 00184 ROMA, tel +39 06 4889 6270/6233, TFX +39 06 4815 704, e-mail: art2005@beniculturali.it. General information: www.dsm.unile.it/art05.

May 16-20, Archaeological Prospection: Advances for Non-destructive Investigations in the 21st Century, National Park

Service, Hopewell Culture National Historic Park, Chillicothe, Ohio, USA. Application forms and more information are available from <http://www.cr.nps.gov/mwac>.

May 23-27, Archaeological Geophysics, American Geophysical Union, New Orleans, Louisiana. Conference information: <http://www.agu.org/meetings/sm05/>.

Jun. 5-10, CANQUA (Canadian Quaternary Association), Winnipeg and Regina, Canada. Contact D. Sauchyn (sauchyn@uregina.ca) or J. Teller (tellerjt@ms.umanitoba.ca), co-chairs. General information: www.mun.ca/canqua/index.html.

Jun. 8-13, 33rd American Institute of Conservation (AIC) Annual Meeting, Minneapolis, USA. General information: aic.stanford.edu/meetings/index.html.

Jun. 28-Jul. 1, Heritage, Microbiology and Science, Portsmouth, UK. Contact: Dr. Alison Webster, HMS Secretariat, email: hms2005@port.ac.uk, tel: +44 2392842072, fax: +44 2392842070. General information: www.hms2005.org.

Jul. 25-29, 11th International Conference on Luminescence and Electron Spin Resonance Dating (LED 2005), Kardinal-Schulte-Haus, Bergisch-Gladbach, Cologne, Germany. General information: www.uni-koeln.de/LED2005.

Jul. 27-29, Human Dispersal, Adaptability, and Disease, Paleopathology Association Meeting, Rio de Janeiro, Brazil, South America. For more information, see <http://www.paleopathology.org/sameeting.html>.

Aug. 28-31, 5th International Bone Diagenesis Meeting, University of Cape Town, South Africa. Abstract deadline: 31 January 2005. Contact: Julia Lee Thorp, jlt@science.uct.ac.za, Convenor & Chair of the Organising Committee. General information: www.cmc.uct.ac.za/conferences/2005/boneddiag/info.html.

Sep. 12-16, 14th ICOM-CC, The Hague, The Netherlands. Contact: Congress ICOM-CC 2005, Floortje Kok, Keizersgracht 497, PO Box 76709, 1070 KA Amsterdam, The Netherlands, tel: +31 20 305 45 20, fax: +31 20 305 45 00, email : icom-cc2005@icn.nl. General information: www.icom-cc2005.org/intro/harikete/.

Sep. 12-16, 22nd International Meeting on Organic Geochemistry, Seville, Spain. Papers sought on "New Trends in Organic Geochemistry", including studies from archaeology, biochemistry, and DNA. Abstract deadline: 7 Jan 2005. General information: www.imog05.org.

Sep. 19-23, 14th Meeting of the Association of the European Geological Sciences, Turin, Italy. Website, <http://www.maegs14.com>. Deadline for on-line abstract submission is May 15.

Sep. 26-29, Archaeometallurgy Session, Materials Science & Technology 2005 (MS&T '05), Pittsburgh, PA, USA. The third in a series of multidisciplinary annual conferences held by and for professionals in the metals and materials community. Sponsored by TMS, the Association for Iron & Steel Technology, ASM International, the American Ceramics Society, and the American Welding Society. Session organizers: Mike Notis, Heather Lechtman, Pam Vandiver, Martha Goodway. Contact: TMS Meetings Services, 184 Thorn Hill Road, Warrendale, PA, 15086; tel: (724) 776-9000, ext. 243; fax: (724) 776-3770; e-mail: mtgserv@tms.org. General info: www.matscitech.org.

Sep. 28-29, Metallurgy in Southeast Europe from Ancient Times till the End of 19th Century, Sozopol, Bulgaria. Abstract deadline: 30 Jan 2005. Union of Bulgarian Metallurgists, 108 Rakovsky Street, 1000 Sofia, phone/fax: (+3592) 986 2964, e-mail: bum@ttm.bg. General information: www.bum.ttm.bg/3thIntSymposium_en.htm.

Sep. 29-Oct. 1, 3rd Forbes Symposium on Scientific Research in the Field of Asian Art, Freer Gallery of Art, Washington, DC, USA. Abstract deadline: 31 Jan 2005. Email: dcscr@asia.si.edu; fax: 202-633-9474. General information: www.asia.si.edu/visitor/dcsrSymposium.htm.

Oct. 25-29, European Meeting on Ancient Ceramics (EMAC 05), Lyon, France. First circular. Contact: EMAC' 05, Laboratoire de ceramologie, UMR5138, Maison de l'Orient et de la Meditteranee, 7 rue Raulin, 69365 LYON cedex 7, FRANCE; tel: 33 (0)4 72 71 58 71, fax: 33 (0)4 78 69 82 31, email: emac05@mom.fr.

Nov. 16-29, Artifacts: The Inside Story, American Schools of Oriental Research Annual Meeting, Philadelphia, Pennsylvania, USA. Please check the ASOR website for membership and participation requirements, <http://www.asor.org>.



35th International Symposium on Archaeometry Beijing, China, May 10-15

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