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A CALL TO SPEAK UP

Two recent television shows on cable stations in the United States have gain notoriety. This probably comes as no surprise to those who flip past “Jersey Shore” or any episode in the “Real Housewives” franchise. But these programs are relevant to archaeologists in that they both present metal detectorists excavating historical sites for profit. As few members of the public are fully aware of what archaeological laws exist, an uncritical viewing of the shows can encourage similar illegal and unethical activities.

Many of the large professional organizations of archaeologists began to write letters to the television production companies and the channels airing these programs (including the National Geographic Channel). The loudest voices, however, came from the members of the organizations themselves. Messages were flying over Twitter, pages were created on Facebook, and emails were furiously sent. It showed that interested parties, even individuals, can spread a message far and wide in these digital times.

In the case of the National Geographic’s program, that message was heard. At the moment, no new episodes have been ordered. The last rebroadcasts also included a disclaimer that advises all to dig responsibly.

Along the same lines, please speak up with regards to SAS. Send along a contribution to the Bulletin, talk to your students about applying for our awards, follow our listserv and blog, and participate in whatever ways you can. It makes a difference.

James M. VanderVeen, Editor-in-Chief

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ANNOUNCEMENTS

Awards

The inaugural *SAS Student Research International Travel Award* was given to two young scholars:

- Michele D. Stillinger, from University of Minnesota, for her geophysical research in Israel
- Kyle P. Freund, from McMaster University, for his work on obsidian in Italy

The award supports laboratory based or fieldwork based research conducted by undergraduate and graduate students in a country different from their home institution. See more information and find application instructions at <http://www.socarchsci.org/Student%20Research%20Award.pdf>.

The *R. Ervin Taylor Student Poster Award Competition* at the 2012 Society for American Archaeology Annual Meeting yielded many interesting and innovative contributions to the use of scientific technology to archaeological research. The winner was Andrew Zipkin, for his poster “On the Formation and Distribution of Ochreous Minerals in Northern Malawi” (co-authored with Alison S. Brooks, John M. Hanchar, Jessica C. Thompson, and Elizabeth Gomani-Chindebvu). The abstract is as follows:

J. Desmond Clark and colleagues’ Middle Stone Age excavation at Chaminade 1A, Karonga, Malawi during the 1960s yielded utilized ochre artefacts indicative of pigment processing activities. Our 2011 survey of northern Malawi ochre deposits suggested that many potential pigment sources are difficult-to-characterize, sedimentary rocks containing detrital minerals from diverse parent rocks. Here we report a new comparative study of three approaches to ochre provenance geochemistry. Instrumental Neutron Activation Analysis (INAA) and two variants of Laser Ablation – Inductively Coupled Plasma Mass Spectrometry (LA-ICP-MS: 1. Bulk Ochre “Paint Chip” Ablation and 2. Zircon Crystal Ablation) were applied to Malawian ochre source samples in order to test the Provenance Postulate and identify the

minimum sample mass required for reliable characterization. Our results indicate that while INAA is suitable for relatively homogeneous ochre sources, "Paint Chip" LA-ICP-MS is capable of effectively distinguishing amongst multiple heterogeneous ochre deposits. In addition, zircon crystals have been extracted from ochre and ablated successfully for the first time; raising the possibility of routinely conducting trace element analysis on heavy minerals in ochre and dating the formation of ochre parent rocks. A provenance study of the Chaminade 1A ochre assemblage using LA-ICP-MS is warranted in order to investigate preferential mineral resource exploitation and transport distances.

Upcoming Archaeometry Symposium

There is only one session on archaeometry or archaeological sciences scheduled for the *Goldschmidt* conference to be held in Montreal, June 24-29. (See <http://www.vmgoldschmidt.org/2012/index.htm>), but it promises to be interesting. The focus is "Reciprocal interactions between archaeology and archaeometry focusing on the characterization of ancient human settlements and their environmental impacts."

Co-convenors:

- Alain Veron (CEREGE-Aix en Provence)
- Adrian L. Burke (Université de Montréal)
- Jean-Philippe Goiran (Université de Lyon)
- Frédéric Trément (Université Blaise Pascal, Clermont-Ferrand)

Discussant/plenary speaker:

- Joaquin Ruiz (University of Arizona)

This session aims to promote interactions between archaeology and archaeometry to resolve questions related to the development of ancient human activities. Paleo-ecological, geochemical and sedimentological data (pollen, biocoenosis, stable and radiogenic isotopes, geomorphology and stratigraphy) will be presented within well-defined archaeological or geographic research questions that substantiate the need and usefulness of archaeometry. We place an emphasis on interdisciplinary research related but not limited to the characterization and growth of i) Neolithic and Early Bronze age settlements in the Mediterranean basin and late prehistoric settlements (Woodland, Mississippian, Post-Archaic) in the Americas, ii) prehistoric mining activities and their environmental impacts and iii) possible connections between socio-cultural theories and science-based archaeology within the context of mining activities. We also wish to draw special attention to investigations related to i) Native/Aboriginal settlements and associated

industrial remains of organized craft production and metallurgy in the Americas, ii) the founding of ancient Mediterranean harbors, and iii) Western European mining activities during the Late Bronze and Iron Ages.

Recent SAS Sponsored Symposium on Petrography (Contributed by Mary Ownby and Sophia Kelly)

The SAS sponsored symposium entitled "Petrography's Continued Role in Ceramic Studies: New Advances and Debates" was held at the 77th annual meeting of the Society for American Archaeology in Memphis, TN. The symposium presented a collection of papers that highlighted the importance of petrography for understanding the production, consumption, and distribution of ancient ceramics. The session also provided a forum for discussing the direction of future developments within the field.

The integration of chemical compositional data from ceramics and petrographic data was one major focus of the papers presented. Anabel Ford and Linda Howie provided an introduction to this topic through their analysis of Mayan pottery. Their study demonstrated that an in-depth knowledge of local geology and the distribution of raw materials used in pottery manufacture were essential to understanding chemical variation in NAA data. In fact, due to geological similarities, the chemical data could not separate the pottery, but petrographic analysis showed culturally significant differences related to local and non-local production. Ford and Howie also highlighted the importance of petrographic data in interpreting chemical data on ash-tempered pottery.

Suzanne Eckert and Kari Schleher also combined petrographic and chemical techniques in their study of Santa Fe Black-on-white ware production in the Española Basin, New Mexico. The analyses suggested that although these vessels were produced in only two locales, the pottery were manufactured using several different potting traditions. Several different pottery production groups could be identified using ceramic petrography that cross-cut chemical groups based on NAA data. Mary Ownby's study of Tanque Verde Red-on-brown in southern Arizona revealed a similar result. Through the petrographic analysis of 37 samples and the addition of their chemical data (NAA) to a database of almost 700 samples, three of the chemical groups in the larger data set could be given a suggested provenance along the Tucson Mountains facilitating a better understanding of the production and exchange of this pottery.

Sophia Kelly's paper discussed the use of time-of-flight laser ablation inductively coupled plasma mass spectrometry (TOF-LA-ICP-MS) to identify the source of schist temper in Hohokam red-on-buff pottery in the Phoenix area of Arizona. The chemical data from the schist temper could be matched with specific schist outcrops. However, the resolution and accuracy of sourcing data derived from petrographic examination of sand temper exceeds that of chemical data from schist temper. David Abbott and Christopher Watkins used microprobe analysis to investigate the clay matrix of Hohokam plain ware pottery in the Phoenix Basin. In combination with petrography, the results revealed a complicated network moving pottery from producers to consumers over some distances.

James Heidke also discussed the movement of pottery within Arizona in his sourcing analysis of plain and decorated pottery from the Honey Bee site in Tucson, Arizona. Most importantly, he was able to expand the number of samples that he sourced by using a combination of low-powered binocular microscopy and petrographic analysis. The large sample sizes allowed him to identify patterns in the production and exchange of vessels by ware, vessel function, time, and manufacturing locale.

Several other papers also focused on the production of ceramics. Clare Burke Davies, Peter Day, Anno Hein, John Cherry, and Daniel Pullen examined early Helladic ceramics of Korinthia, Greece. Their analysis demonstrated variation in local, large-scale production of ceramics along with the importation of pottery from the island of Aegina 60 kilometers away. Further research in this area was highlighted by William Gilstrap, Clare Burke Davies, Peter Day, Heather Graybehl and Roberta Mentasana. The importance of petrography was shown in its ability to understand ceramic technology of Early Neolithic and Late Bronze Age storage jars from Crete. The utility of petrographic analysis for identifying provenance was shown through examination of Greek cooking wares from the 6th to 4th century BCE Athenian Agora and the movement of Mycenaean transport jars within Mediterranean trade networks.

Michelle Bettex and Maria Masucci presented their work on the development of ceramic technology from the Early Neolithic to Bronze Age in the Rio Maior Valley, Portuguese Estremadura. They revealed that despite cultural changes in the surrounding area the paste recipes and technology for producing pottery did not change significantly between the two periods, although the ceramic styles did change.

Zachary Gilmore's petrographic examination of Florida's earliest pottery technology (ca. 4700-3500 B.P.) consisting of orange ware showed that different traditions could best be separated by looking at variation in the sand, fiber, and spicule inclusions. The differences suggested pottery produced by several groups may have been brought to shell-mounds, where ritual activities probably took place.

The combination of petrography and ethnographic research proved very useful for understanding ceramic production and exchange. The research of David Hill showed that pottery traditions in the northwestern part of New Mexico remained similar over a long period of time with the use of clays tempered only with crushed sherds known as *grog*. The ability to combine his research with ethnographic data allowed for a much clearer understanding of raw materials use. Another study that utilized ethnographic information from modern day potters was that by Isabelle Druc and Kinya Inokuchi for Andean ceramics from the 1st millennium B.C. The petrographic data suggested that some of the pottery throughout this period was not locally produced at the site of interest, Kuntur Wasi. This pottery was probably produced to the north of the site and brought to sell at Kuntur Wasi by the potters.

Several symposium presentations focused on new approaches to petrography including image analysis. Patrick Livingood and Ann Cordell suggested that by photographing a cut cross section of sherds in different light and combining these images, information on shell tempering can be gained. For certain research questions, this fast and inexpensive method may be more suitable than full-scale petrography. Image analysis by Chandra Reedy, Jenifer Anderson, and Yimeng Liu focused on experimental clay test tiles with set proportions of quartz sand. Their survey of test tiles with known amounts of temper allowed them to establish image protocols for quantifying ranges in size, shape and amounts of temper grains that are useful for examining ceramic technological attributes.

Overall, the session facilitated a fruitful exchange of approaches and ideas on the importance of petrography to the study of ancient ceramics. Most papers presented in the session used a combination of petrography, ethnographic data, and raw material analysis to explore ancient ceramic production and distribution. While some pottery traditions remained stable through time, others appeared to change rapidly. Potters could use a wide range of materials and in many cases these were locally available. The combination of case studies from numerous periods and localities highlights the great utility

of petrography for understanding the role of ceramics in past societies.

**DIGITIZATION OF THE LAWRENCE
BERKELEY LABORATORY
ARCHAEOMETRIC ARCHIVES: STATUS
UPDATE AND AVAILABILITY
ANNOUNCEMENT**

*Matthew T. Boulanger
Archaeometry Laboratory, U. Missouri Research Reactor*

Introduction

The *Nuclear Archaeology Program* at Lawrence Berkeley National Laboratory (LBNL) was one of the first-generation archaeometry laboratories in the world, operating between the 1960s and early 1990s (Asaro and Adan-Bayewitz 2007). During operation, the Berkeley program generated compositional data for over 12,000 archaeological and geological specimens. Most of these data were generated using neutron activation analysis (NAA) and X-ray fluorescence (XRF). Though primarily known for their studies of pottery from the Near East and Mediterranean, the Berkeley program analyzed over 300 ceramic specimens from the Americas and over 800 specimens from Africa.

Irradiation of archaeological specimens for NAA ended at LBNL shortly after the decommissioning of the Berkeley reactor in 1989; however, archaeometric research continued at the laboratory through the irradiation of specimens at other facilities, and through expanded and refined use of XRF (Asaro and Adan-Bayewitz 2007). Following his official retirement in 1991, Frank Asaro transferred the archives of the LBNL program to the University of Missouri (MURR) Archaeometry Laboratory in 2006 (Asaro and Adan-Bayewitz 2007). The LBNL archives include surplus specimen powders, 5000+ pages of handwritten records, 20 volumes of 12" x 18" dot-matrix printouts of elemental abundances, and COM microfiche archive of channel counts for every gamma-ray count conducted by the laboratory. Considerable effort had been made to digitize the LBNL compositional database during the 1980s; however, when the floppy disks supposedly containing digital versions of these data were examined in 2006, they were found to be unreadable.

Since receiving the LBNL archives in 2006, the MURR laboratory has worked to preserve these compositional, descriptive, and contextual data so as to facilitate their

preservation and potential use with new and ongoing archaeometric research (Boulanger and Glascock 2009, in press). Our efforts have focused primarily on stabilizing the archives and generating a digital copy of elemental-abundance data generated by NAA. Data generated by XRF at LBNL awaits similar processing. Because of other obligations at the MURR laboratory, work on the LBNL archives between 2006 and 2011 was largely a part-time effort funded mostly through the laboratory's normal operating budget. In 2011, the laboratory applied for and received a grant from *Digital Antiquity* (<http://www.digitalantiquity.org/>) to support finalizing our work on the archives and to prepare the entirety of the archives for distribution through *the Digital Archaeological Record* (tDAR; <http://www.tdar.org/>). Here, we present a brief summary of the present status of the LBNL archive project, and announce the availability of these data through tDAR. An in-depth description of our work on the LBNL data is in preparation.

Present Status of the LBNL Archives

As of this publication, MURR has digitized descriptive, contextual, and compositional data for nearly 6600 individual archaeological specimens analyzed by NAA at LBNL. Elemental abundance printouts for roughly 2500 additional specimens were located during the Fall of 2011, and these data are currently being digitized. Once completed, we anticipate that greater than 80% of the total sample analyzed at LBNL will have been located, digitized, and made freely available to the scientific community.

Digitization Process

Digitization of these data involved transcription of abundance values for 38 elements and sequence values for irradiation positions from the LBNL data printouts. Once transcribed, each of these values were verified to minimize data-transcription errors. All values were transcribed as shown in the original paper records. No effort was made to adjust these data for changes in laboratory procedures such as changes in standard-comparator abundance values made during the 1980s (see Asaro and Adan-Bayewitz 2007), or to normalize so as to facilitate inter-laboratory comparisons. Our goal here was to create a "master" digital copy of the LBNL database in a state as original as possible, so as to avoid potential confusion in the future.

Once abundance data were transcribed and verified, descriptive and contextual data—when present—were transcribed. These data include information on the archaeological provenience (e.g., site, unit, level) and descriptions of the ceramic specimens (e.g., pottery type,

ware, decoration). As with the elemental abundance data, contextual and descriptive information was transcribed as written in the LBNL archives. Once all of elemental-abundance data was transcribed, we opted to transcribe all of the remaining descriptive and contextual data to produce a database of samples that we knew had been analyzed, but for which compositional data had not yet been located.

In addition to the elemental, descriptive, and contextual data in the archives, there are more than 20 three-ring binders containing correspondence and miscellaneous notes associated with projects and analyses at LBNL, and 2100 photographs of specimens analyzed there. Rather than transcribing all of these documents, we opted to generate digital images to provide stable digital archival copies that provide a primary source archive of the LBNL records. Scanned documents were assembled into Portable Document Format (*.PDF) files and arranged according to the original LBNL binders. Photographs were scanned as uncompressed high-resolution Tagged Image File Format (*.TIFF) images. Copies of these images were downsampled into low-resolution Joint Photographic Experts Group (*.JPEG) files to facilitate on-screen and web-based viewing.

Identification of Data not Present in Archives

Prior to receiving the Digital Antiquity grant, we had determined that the paper archives provided by Asaro contained compositional data for roughly 4500 specimens. Compositional data for an additional 600 specimens were contained in digital format in the archives of the University of Manchester archaeometry archives provided to MURR in 2005 (Newton, et al. 2007). Even with the addition of data from the Manchester archives, the total number of specimens analyzed at LBNL for which MURR had compositional data was roughly half of the estimated 10,000 archaeological specimens reportedly analyzed by the LBNL group as reported by Asaro and Adan-Bayewitz (2007).

Throughout the course of work with the LBNL archives, we have attempted to locate these “missing” data so as to ensure as complete an archive as possible. Though data for approximately 1000 specimens were located in various journal and monograph publications, the lion’s share of data has been provided by individuals who previously worked at or collaborated with LBNL. Data for a roughly 2500 specimens were provided by various individuals during 2011. We presently anticipate that all of these data will be digitized and added to the LBNL database by 2013.

Items Uploaded to tDAR

Our primary goal with the LBNL archive was to preserve it and make it available for future use. However, throughout the course of our work, we realized that digitization of these data was only one step in the preservation effort. That is, we recognized that even though we may digitize these records, we were not ensuring their long-term availability. What would become of the LBNL archives when, just as at LBNL, our own laboratory eventually shuts its own doors? We had taken some steps to ensure that these data would be preserved in perpetuity by arranging to have the entirety of the archives transferred to the University of Missouri’s Museum of Anthropology. While this ensures that the records are preserved, it does not make them easily available for use by researchers.

The Digital Archaeological Record (tDAR) is a repository for digital archaeological data, and it ensures long-term preservation of such data. Housing and distribution of the LBNL archive through tDAR ensures that not only are these data preserved, they are also publicly available to the greater archaeological community. All files generated during the course of our work on the LBNL archives have been uploaded to tDAR and organized by country-level provenience. This on-line digital archive comprises 23 country-level projects, each with an accompanying dataset in Microsoft Excel format. Over 1600 individual photographs are also available on-line. Because these are photographs of the actual specimens analyzed by LBNL, we chose to arrange photographs in sets according to the archaeological site from which they were recovered. Groups of photographs are stored within the country-based projects and labeled by site names. Our reasoning behind this arrangement was to allow researchers to access all data for a specific county and to quickly locate images corresponding to individual ceramic sherds (or to all sherds from a particular site) without having to sort through the larger set of images for an entire country.

Additionally, 18 PDF documents have been uploaded containing scanned images of all pages in the 21 three-ring binders of descriptions, correspondence, and additional information on analyzed specimens. During transcription, we have made every effort to record faithfully the contextual and descriptive data contained in these pages; yet, we fully acknowledge the potential for errors. Making these documents available ensures that a primary-source archive is available for double-checking our work, resolving apparent errors, and for historical research in its own right.

Why Preserve Data in the First Place?

Work on the LBNL archive began as a project aimed at digitizing data primarily for use in our own laboratory, and secondarily for distribution through our institutional Web site. Over the course of six years, these goals have changed significantly, and we continue to learn important lessons that direct how we conduct our own work. For example, the importance of and value in preserving archival specimens has been realized. Preserving archival portions insures against changes in geopolitics impeding scientific investigation (e.g., Boulanger et al. 2012), serves as a way of establishing and verifying inter-laboratory calibrations, and guarantees that data may still be generated despite future changes in museum policies regarding destructive analyses. Most significantly, though, we have come to respect the growing need for a global repository for archaeometric data, both for long-term preservation and for data availability standards and models. Elsewhere (e.g., Boulanger and Glascock 2009, in press) we have recommended good-practice standards and data-preservation models that derive from our experiences with the LBNL, Manchester, and our own archives:

- Digital data are best accompanied by archival-quality-paper records
- Contextual and descriptive data must be preserved in concert with compositional data
- Analytical protocol must be specified
- Implementation of metadata structures
- Platform- and software-independent file formats (e.g., comma-separated variable)
- Distribution rights as specified by Science Commons/Creative Commons (<http://creativecommons.org>)

Viewed from this perspective, preservation of data serves not only to provide a database useful for future studies, but also to inform on how we may best preserve data presently being collected. Archaeologists continue to struggle with how best to preserve and disseminate the data they generate. Archaeological scientists *must* join this conversation and begin discussing how we may ensure that our methods, techniques, data, and results are compatible with and accessible for future researchers.



Web Addresses

- The LBNL archives are available through the Digital Archaeological Record: <http://www.tdar.org/>
- You may follow the progress of the LBNL archive project at: <http://archaeometry.missouri.edu/datasets/lbnl/index.html>
- Data generated at MURR and the University of Manchester are available at: <http://archaeometry.missouri.edu/datasets/index.html>

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We gratefully acknowledge and thank Frank Asaro for transferring the LBNL archives to MURR. We acknowledge him, Isadore Perlman, Helen Michel, and Michal Artzy for their groundbreaking efforts in generating this globally significant archaeological resource. Numerous undergraduate students at MURR have aided in the transcription and verification of these data, and we thank them for their help. Aaron Z. Johnson was hired specifically under the Digital Antiquity grant. We acknowledge and thank the following individuals for assistance in locating or providing data for, or otherwise assisting with, the LBNL archive project: Michal Artzy (University of Haifa), Greg Schachner (UCLA), Colin Busby (Basin Research Associates), Bernard Knapp (University of Glasgow), Richard Jones (University of Glasgow), John Cherry (Brown University), Lois White (Getty Research Institute), Samuel Wolff (Israel Antiquities Authority), Joseph Yellin (The Institute of Archaeology, Hebrew University of Jerusalem), Matthew Spigelman (New York University), Jan Gunneweg (Hebrew University of Jerusalem), Richard Davis (Bryn Mawr College), Crawford Greenewalt (UC-Berkeley), Catherine Cameron (U-Colorado Boulder), Thomas Hester (UT-Austin), Paul Healy (Trent University), Kathryn Ataman (Bureau of Land Management, Black Rock Field Office), and David French (British Institute at Ankara). Since 2006 this work has been funded through Laboratory Support grants from the National Science Foundation (Nos. 0504015, 0802757, and 1110793) as well as a grant from Digital Antiquity.

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ARCHAEOLOGICAL CERAMICS

Charles C. Kolb, Associate Editor

The column in this issue includes eight topics: 1) Reviews of Books on Archaeological Ceramics; 2) Online Resource; 3) Previous Meetings; and 4) Forthcoming Meetings.

Reviews of Books on Archaeological Ceramics

A Consumer's Guide to Archaeological Science Analytical Techniques, Mary E. Malainey, Manuals in Archaeological Method, Theory and Technique. New York: Springer. xx + 603 pp., ISBN 978-1-4419-5703-0, \$169.00 (hardcover), ISBN 978-1-4614-3301-9 \$59.95 (softcover).

The author holds a B.A. (Hons.) from the University of Alberta, an M.A. from the University of Saskatchewan, and her doctorate from the University of Manitoba, and is currently Associate Professor of Anthropology at Brandon University (Brandon, Manitoba, Canada). Her

primary research involves Western Canadian Late Precontact pottery in terms of form, function and implications for settlement and subsistence patterns as well as archaeological lipid residues studies by gas chromatography and residue replication analyses. She has prepared a “comprehensive guide” for scientific techniques in archaeology: how to perform them, which materials to use them on, and what results they will give. Many archaeologists, as primarily social scientists, do not have a background in the natural sciences. This may pose a problem because they need to obtain chemical and physical analyses on samples to perform their research. This manual provides a source of information for students and others without a background in science, but also an overview that those with some understanding of archaeological science will find useful. The manual provides readers with the knowledge to use the methods of archaeological science to the best advantage. The author describes and explains the analytical techniques in a manner that the “average archaeologist” can understand, and outlines clearly the requirements, benefits, and limitations of each possible method of analysis, so that the researcher can make informed choices. The volume includes specific information about a variety of dating techniques, provenance studies, isotope analysis as well as the analysis of organic (lipid and protein) residues and ancient DNA. Case studies illustrating applications of these approaches to most types of archaeological materials are included and the instruments used to perform the analyses are described. Available destructive and non-destructive approaches are also presented to aid archaeologists in selecting the most effective technique for gaining the target information from available samples.

This work is different from other books on archaeometry with respect to audience and scope. The volume is specifically targeted at presenting basic scientific methods to archaeologists with no scientific background, and the publisher claims it would be useful as a how-to manual and a graduate level textbook. Malainey notes (pp. xvi-xvii) that readers wishing more advanced treatments should consult Pollard and Heron (1996), Ciliberto and Spoto (2000), Pollard et al. (2007), and volumes in *The Advances in Archaeological and Museum Science Series*, edited by Martin J. Aitken, Edward V. Sayre, and R. E. Taylor. The topics in her text include dating techniques and the analysis of organic and inorganic materials, which makes this text broader in scope than Henderson (2000) but narrower than Brothwell and Pollard (2001).

The volume is divided into four parts with 39 chapters of variable length and detail (the Table of Contents can be found here: <http://tinyurl.com/7l8nwx>). Some of the

topical chapters (lipid, blood, and protein residue analysis, for example) are likely to become dated rather soon. The majority of the case studies she employs deal with the analysis of New World archaeological materials. Readers of this column will be interested in the content of "Chapter 17: Pottery and Other Ceramics" (pp. 257-274). Malainey reviews ten topics (in order of her presentation): Paste Composition; Bulk Composition Analysis; Non-destructive Compositional Analysis; Manufacturing; X-Radiography of Ceramics; Determination of Firing Conditions; Paints, Slips, and Glazes; Elemental Analysis of Glaze Paints and Slip Pigments; Stable Lead Isotope Analysis of Glaze Paints; and Trapped Charge Dating. Other related topics on ceramics (paints, residues, sampling, dating methods, etc.) are scattered in other chapters.

This is a basic and useful handbook valuable as a refresher on those materials and methods not consistently used by a researcher in his/her area(s) of specialization and the volume would make a useful upper division or graduate textbook.

The Pots and Potters of Assyria: Technology and Organisation of Production, Ceramic Sequence and Vessel Function at Late Bronze Age Tell Sabi Abyad, Syria, Kim Duistermaat. PALMA: Near Eastern Archaeology, Papers on Archaeology of the Leiden Museum of Antiquities 4. Turnhout, Belgium: Brepols Publishers n.v., 2008. 607 pp., 80 color illustrations. ISBN: 978-2-503-52652-2, €125, 00/ \$181.00 (paperback).

This monograph provides a comprehensive description of all evidence relating to pottery production from the Late Bronze Age site of Tell Sabi Abyad, northern Syria. It is the first monograph that deals with the Middle Assyrian remains at the site and offers a detailed description of the ceramics excavated between 1991 and 1998 during a project of Leiden National Museum of Antiquities.

Introductory chapters discuss field methodology, the historical background and stratigraphical information. The large-scale excavation and the excellent preservation of pottery workshops, tools and kilns as well as the meticulous study of technology and standardization provide a unique insight into the organization of pottery production. Information is provided on performance characteristics, shape and capacity, traces of use, depictions of vessels in iconography and information from texts, in an attempt to reconstruct how vessels were used. Technological, morphological, stylistic and archaeological data are integrated into the understanding of pottery production and use. In addition, the

information on pottery and its chronological sequence, the shaping and firing techniques, raw materials, wasters and unfired pottery are also presented. Also discussed are the ceramic workshops and their layout, and production tools, as well as pottery kilns and their construction. Information on standardization, production output and demand, as well as evidence from contemporary text is used to reconstruct the organization of pottery production at the site. The analysis concludes with a chapter on vessel function and use including a list of Middle Assyrian vessel names. The database used for this study, the shape typology, a detailed study of the pottery kilns, the results of archaeometric research including thin-section analyses, potters' marks, and cuneiform texts from Sabi Abyad related to pottery are documented in seven appendices.

Duistermaat's study derives directly from her doctoral thesis at Leiden University in 2007 which is in English with a summary in Dutch. Her thesis director Promoter was Peter M. M. G. Akkermans, Faculty of Archeology. The on-line thesis can be accessed at two URLs <http://hdl.handle.net/1887/11416> and <https://openaccess.leidenuniv.nl/handle/1887/11416>.

In a contribution by Dr. Frans Wiggermann, two cuneiform texts from Sabi Abyad dealing with pottery have now been published, and an initial step taken to connect the ceramic repertoire with Middle Assyrian vocabulary. Dr. Kim Duistermaat is currently the director of the Netherlands-Flemish Institute in Cairo. She has participated in archaeological research projects in the Netherlands, Egypt and Syria, where she directed the Netherlands Institute for Academic Studies in Damascus between 1997 and 2005.

Kim Duistermaat's *The Pots and Potters of Assyria: Technology and Organisation of Production, Ceramic Sequence and Vessel Function at Late Bronze Age Tell Sabi Abyad, Syria* is not the traditional study that one expects from Near Eastern ceramic analyses. It goes well beyond the traditional assessments and catalog of finds to employ methodologies and analytical techniques that are currently in vogue and engages questions that are in the realm of ceramic ethnoarchaeology and sociocultural anthropology, among these technical behavior as social production, technological styles and choices, scale and intensity of production, production and consumption (less so on distribution). She has, I believe, succeeded in answering the research questions she poses (p. 29) and has produced an unusually comprehensive study that will be of use to archaeologists working in Southwest, South, and Central Asia and New World investigators as well. There is much here for student of ceramic production and

distribution, archaeologists and ethnoarchaeologists, as well as those concerned with craft specialization.

The Bronze Age Begins: The Ceramics Revolution of Early Minoan I and the New Forms of Wealth that Transformed Prehistoric Society, Philip P. Betancourt. xx + 136 pp., Philadelphia: INSTAP Academic Press, 2008. ISBN-10: 1931534527, ISBN-13: 9781931534529 (paperback), \$36.00.

Philip P. Betancourt is the Laura H. Carnell Professor of Art History at the Department of Art History, Temple University, Philadelphia, PA, USA, and has been on the faculty since 1970. He is a highly regarded expert on the archaeology of Minoan Crete and an established scholar well-known to archaeologists, art historians, and Classicists who work in the Mediterranean region. Betancourt received his doctorate from the University of Pennsylvania in 1970 and an honorary Ph.D. from the University of Athens in 2000. He has served as the Executive Director of the Institute for Aegean Prehistory (INSTAP) since 1990 and in 2003 was awarded the Gold Medal for Distinguished Archaeological Achievement by the Archaeological Institute of America. He was also honored by a festschrift edited by Malcolm H. Wiener, Jayne L. Warner, Janice Polonsky, Erin E. Hayes with the assistance of Catriona McDonald, *Pottery and Society: The Impact of Recent Studies in Minoan Pottery: Gold Medal Colloquium in Honor of Philip P. Betancourt: 104th Annual Meeting of the Archaeological Institute of America, New Orleans, Louisiana, 5 January 2003*, Boston: Archaeological Institute of America, 2006.

The Bronze Age Begins focuses on economic and social changes, particularly during the opening phase of the Minoan civilization on the island of Crete. New developments in ceramics that reached Crete at the end of the Neolithic period greatly contributed to the creation of economic, technological, social, and religious advancements we call the Early Bronze Age. He presents a two-part argument: a detailed explanation of Early Minoan I (EM I) ceramics and the differences that sets this pottery apart from its predecessors, and an explanation of how these new and highly superior containers changed the storage, transport, and accumulation of a new form of wealth consisting primarily of processed agricultural and animal products such as wine, olive oil, and various foods preserved in wine, vinegar, honey, and other liquids. This increased stability and security provided by an improved ability to store food from one year to the next would have a significant effect on the society.

Betancourt has provided a very compelling, readable synthesis of the transition from Final Neolithic to the Early Minoan I period and its economic, social, and religious changes related to the ability to process horticultural and animal products and the storage of foodstuffs (olive oil, wine, vinegar, honey, and other liquids) and resulting commerce.

Pottery in the Archaeological Record: Greece and Beyond, Mark L. Lawall and John Lund (eds.), Acts of the International Colloquium held at the Danish and Canadian Institutes in Athens, June 20-22, 2008. Gösta Enbom Monograph 1. Aarhus University Press, Aarhus, Denmark, 2011. 168 pp. ISBN 9788779345874, \$40.00 (hardback).

The papers in this volume derive from a symposium "Pottery in the Archaeological Record: A View from the Greek World" held in Athens, 20-22 June 2008. A focus of the meeting was to assess ceramic life history in the Greek world following Ted Peña's (2007) model presented in *Roman Pottery in the Archaeological Record* (J. Theodore Peña; Cambridge and New York: Cambridge University Press, 2007), reviewed in this column: *SAS Bulletin* 30(3):15-16 (Fall 2007). Peña hoped that by presenting a general and systematic description of the behavioral system that governed the formation of the Roman pottery record, his study would serve to make students of Roman pottery more fully aware of the overall nature and scope of the challenge that faces scholars if we are to attain an adequate understanding of the sources of patterning in pottery data. By presenting detailed observations regarding the relationship between specific behaviors on the part of those who produced, distributed, and used pottery and the nature of the pottery record in those areas where we possess fairly good information, this study would enable students of Roman pottery to approach the collection, analysis, and interpretation of pottery evidence in a somewhat more informed and sophisticated fashion than would otherwise be the case. By highlighting those areas where our understanding of these behaviors is either more limited or lacking altogether, he anticipated that his study would serve to indicate directions for future research aimed at improving our understanding of the nature of the Roman pottery record. Lastly, it was Peña's hope that both the method employed in this study and some of its specific results would be of interest to scholars working outside the field of Roman pottery studies.

The current volume begins with a "Preface" by Per Kristian Madsen (p. 5) and an "Introduction" by Mark L. Lawall and John Lund (pp. 7-9, 11 footnotes) which provide a context for the 12 presentations. The focus of

the first chapter by Eleni Hasaki is the integration of archaeological evidence from ancient Greece with ethnoarchaeological and ethnographic evidence from the modern Mediterranean region, with emphasis on spatial data obtained from the potters' quarter at Moknine, Tunisia. The concept of "workshop" is addressed and the author considers three goals in her analysis: 1) studies of spatial analysis; 2) archaeological evidence of the use of space in ancient Greek pottery workshops; and 3) ethnographic evidence of contemporary Greek pottery workshops which is "scarce." Ethnoarchaeological data on the use of space comes from 41 Tunisian pottery workshops identified as a part of the Moknine Ethnoarchaeology Project, 15 of which have been analyzed in detail and that produced mostly unglazed and undecorated ceramics. Three sizes of pots and associated workshop spatial sizes are documented (dimensions are averages): small pots (120 m²); medium pots (350 m²), and large pots (750 m²). Topics covered include workshop accessibility, stages of production, storage areas, mechanization, discard areas, open versus closed spaces, single versus multiple functions, the implications of spatial analysis, the economics of spatial layouts, problems of limited storage areas, scales of production, the availability of transportation, occupancy, and the density of potters' quarters.

A chapter by Elizabeth Murphy and Jeroen Poblome argues that social and economic evidence is needed to develop integrated methodologies to begin to consider production settings and associated materials in multidimensional ways. Previous scholarship is reviewed (D. P. S. Peacock 1982 and Dean E. Arnold 1985) and data from the Sagalassos Archaeological Research project (1990-date) is employed. The potters' quarter at the site during the 1st century BCE through 7th century CE for the production of Sagalassos Red Slip Ware was ca. six ha. Infrastructural evidence is reviewed as are conceptual models of production. The authors conclude that we must revisit earlier models of Roman ceramology and revise them as necessary. One notable modification was a change in firing technology during the 4th century CE.

There are significant differences between Peña's works on ceramic life history of Roman pottery versus Lund's assessment of Greek amphorae described in the next chapter. The author, Mark L. Lawall, discusses ceramic production locations and the "filling" of the vessels, the timing of amphora production, and the differentiation of vessels produced for local consumption rather than export. He considers the life history of amphora from prime-use to discard and employs examples from Thasos, Knidos, Sinope, Chernoses, and Rhodes. The principal contents of amphorae present a problem when vessel are

reused or repackaged. Some vessels were used only for storage but shipping reuse seems to be common but an ultimate deposition was as reuse in drains or other construction and the reuse of jars after modification. Three types of reuse are differentiated and flow diagrams (Figures 1, 2, and 3) illustrate the Greek amphorae in terms of regional production and distribution, as export as long-distance shipping containers, and others associated with major "destructive events" such as earthquakes. I am surprised that the late Elizabeth Lyding Will's (1924-2009) seminal works are not cited in this or any other chapter – especially her 1992 essay "Production, distribution, and disposal of Roman amphoras," in G. J. Bey III and C. A. Pool (eds.), *Ceramic Production and Distribution: An Integrated Approach*, Westview Press, Boulder, CO, pp. 261-274; and her 2004 report "The Mediterranean shipping amphoras from the 1989-92 excavations," in Begley, V. *et al.* (eds.), *The Ancient Port of Arikamedu: New Excavations and Researches 1989-1992, Vol. 2*, École Française d'Extrême-Orient, Pondicherry, pp. 325-403.

Other chapters consider Roman amphorae. The storage and selling of amphorae are discussed and the "prime use" of these vessels iconographically is in wall paintings and terracotta figurines depicting dining and wining. Reuse and discard are briefly considered. There are four tentative conclusions regarding amphorae: 1) they were tokens of transport and trade, 2) their prime use was as wine containers, 3) they occur in outdoor settings such as picnics and feasts (hence, sherds in rural, nondomestic contexts may indicate these activities), and 4) many landscapes depict amphora and pygmies (notably Egyptian terracotta figurines). Also, data on the reuse of ceramic sherds recovered from sites in the area of the Džarylgak Survey Project on the Black Sea coast, northwest Crimea, suggest that the sherds were employed in food preparation or, more likely, as potter's smoothing tools.

Benjamin Costello IV discusses the creation of waste, the waste stream, and discard processes. The history of the excavations at the site are reviewed and architectural and artifactual evidence described in terms of Total Usable Area and Estimated Vessels Represented. Three rooms in the Commissary Block are detailed: Room 12 with a cistern, Room 14 with an oven which was used for early discards, and Room 19 (the Sottoscala) which was the discard area at the time of the earthquake. The use of ethnographic analogies and the need for "scrupulous collection" are also considered. Similarly, Archer Martin's contribution uses Peña's 2007 volume as a starting point and considers multiple topics related to pottery manufacture through discard. 1) There was an

active pottery manufacturing workshop during the 5th century as evidenced by kilns and a “pantry” with collapsed shelves holding storage jars, cooking pots, and tiles. 2) More than 1,000 sigillata and red-slip wares (nearly all Italian but including two Eastern Sigillata A and one African Red slip specimens) were studied and 22 graffiti were discerned on 21 vessels. Notably, the abbreviated name of Zeus (in the genitive), the Patron of Olympia, accounted for most of the inscriptions. One vessel had two inscriptions – one with that to the original owner and that of a subsequent owner. 3) A study of the reuse and provisional discard of amphorae showed that 80 amphorae had deliberately removed toes. 4) Vessels were used to contain hoards of bronze and iron objects or coins. 5) African Red Slip vessels were prized, given the numbers of repairs (sets of drilled holes and lead clamps) to examples of this ware. 6) Recycling of pottery in architectural construction is also noted. 7) Other discard processes are mentioned.

Still more chapters speak to “Repairing and Recycling in Corinth and the Archaeological Record,” “Reusing Pottery in the Eastern Desert of Egypt,” and “Mending in Antiquity: Repairs to Ceramics at the Athenian Agora.”

Finally, in “*Roman Pottery in the Archaeological Record: Some Follow-Up Comments*,” Ted Peña writes that he hoped that the model on ceramic life analysis presented in his 2007 book would inspire students of archaeological pottery both in the Roman world and beyond. He cites seven reviews of his book (including Kolb 2007, mentioned above) and points to Lawall and Rotroff’s chapters as engaging the challenge to look at ceramic life histories. Peña also discusses Murphy and Poblome’s contribution to the current volume and also reviews several works that appeared after he published his own volume in 2008. In particular, he cites Kevin Greene’s “Learning to Consume: Consumption and Consumerism in the Roman Empire,” *Journal of Roman Archaeology* 21:64-82 (2008). In addition, he commented on Tomber’s essay, pointing out an earlier supportive source on the site of Deir el-Ballas (west bank of the Nile in Upper Egypt) written by Baron de Denon (1803). The volume concludes with a very useful “Bibliography” (pp. 139-166) comprised of 619 entries and the “List of Authors” (pp. 167-168) with 13 entries. This is a volume worthy of Peña’s original goals and advances our understanding of pottery and the importance of ceramic life histories.

In my review of *Roman Pottery in the Archaeological Record*, I concluded that “Peña’s important contribution is among the best half dozen volumes that I have read in 45 years of reviewing monographs on archaeological

ceramics and is a ‘must read,’” to his monograph I would add the Lawall and Lund volume.

Pottery Production, Distribution and Consumption in Early Minoan West Crete: An Analytical Perspective by Eleni Nodarou, British Archaeological Reports International Series S-2210, Oxford: Archaeopress, 2011. xvi + 136 pp., 26 figures, 15 tables, 47 color plates. ISBN-13: 978-1-4073-0768-8, ISBN-10: 1-4073-0768-1, \$102.50 (paperback).

Eleni Nodarou received her Bachelor’s degree from the University of Athens, Department of History and Archaeology in 1992, her M.Sc. in Environmental Archaeology and Palaeoeconomy in 1998, and her doctorate in Pure Science (2003) from the University of Sheffield (UK). She has been the head of the W. A. McDonald laboratory of petrography of the INSTAP Study Center for East Crete since 2003. Her research interests include pottery analysis and ceramic technology and she participates in archaeological projects involving analysis of Cretan pottery from the Neolithic to the Byzantine period. Since 2007 she has taught at the Hellenic Open University and is responsible for petrographic analyses of artifacts recovered from settlements and cemeteries at Petras.

Nodarou’s current study is based on research for her doctoral thesis (1999-2003) documents the provenance and technology of pottery during the earlier Prepalatial period (EM I-EM IIB) in west Crete, employing an integrated approach involving stylistic examination and archaeometric analysis. Although the stylistic particularities of the west Cretan Early Minoan assemblages have been recognized since the 1960s, there has been no attempt to assess and interpret the differences, and integrate this part of Crete into the broader picture of the Prepalatial period. Due to the paucity of publications and analyses, west Crete remained estranged from recent developments that have changed the way the Prepalatial period is now considered. As part of the GEOPRO TMR Network, this project applies an integrated methodology to the ceramic material from selected sites and investigates issues of pottery provenance and technology. Three analytical techniques are used: 1) thin section petrography, 2) neutron activation analysis, 3) and scanning electron microscopy. Possible locations of production for the various fabrics are suggested and technological issues, such as clay recipes, firing practices and pottery manufacturing traditions, are discussed. Research revealed no imports from outside Crete, which contrasts with the evidence from central and eastern Crete. The position and role of

west Crete in the southern Aegean during the Early Bronze Age is reassessed.

This is an excellent monograph integrating thin section analysis, NAA, and SEM research and provides a model for future analyses elsewhere in the Mediterranean and the Near East. The research design deserves emulation.

Our Cups Are Full: Pottery and Society in the Aegean Bronze Age: Papers Presented to Jeremy B. Rutter on the Occasion of his 65th Birthday. Walter Gauss, Michael Lindblom, R. Angus K. Smith, and James C. Wright (eds.), 2011. British Archaeological Reports International Series S-2227. Oxford: Archaeopress. xxvii + 392 pp., ISBN-13: 978-1-905739-39-4, ISBN-10: 1-905739-39-7, BAR ISBN: 978-1-4073-0785-5 (paperback), US \$70.00/ £35.00. David Brown Book Company has it listed for US \$56.00. Also available in PDF format, for price and details contact bar@archaeopress.com

American archaeologist Jeremy Rutter received his BA in Classics from Haverford College and his Ph.D. from the University of Pennsylvania in 1974 and has taught at Dartmouth College for 35 years. James C. Wright provides an "Introduction" to this volume (pp. vii-xviii) followed by a "Jeremy Bentham Rutter: Bibliography," as of March 2011 (pp. xix-xxi), which includes citations to four monographs or book-length contributions, one edited volume, two electronic media publications, 50 articles, and 50 reviews. Missing from the bibliography is a coauthored paper: Philip P. Betancourt, G. H. Meyer, and J. B. Rutter, "The ceramic petrography of Early Helladic pottery from Lerna," in C. C. Kolb and L. M. Lackey (eds.), *A Pot for All Reasons: Ceramic Ecology Revisited*, Laboratory of Anthropology, Temple University, Philadelphia, PA, pp. 73-80 (1988).

Rutter's colleagues and former students have assembled 38 papers on the area and era he has studied most thoroughly. The contributed papers include minding the gaps in early Helladic Laconia, the Cypriot ceramic cargo of the Uluburun shipwreck, impressed pithoi from Late Bronze and Early Iron Age East Lokris and Phokis and their socio-economic significance, a unique Late Minoan III ring-shaped vase from the Myrsini Aspropilia Cemetery, and the role of terracotta throne models in disseminating Mycenaean religious ideology. The contributions are organized by the author's last name and there is no concluding or synthesizing chapter, nor is there an index to this monograph.

Ceramics of the Phoenician-Punic World: Collected Essays, Claudia Sagona (ed.), Ancient Near Eastern Studies Supplement 36. Leuven, Paris, and Walpole, MA: Peeters, 2011. ix + 450 pp., ISBN 978-90-429-2379-9, 95 €/\$138.00.

This collection of essays concerns pottery from the homeland sites of Beirut and Tyre, and Phoenician settlements in the west at Carthage, Utica, Lixus, and Malta. The papers were presented at a workshop, "Ceramics of the Phoenician-Punic World," 8-13 January 2005 at the VIth Congress of Phoenician Studies. Professor Sagona (Historical and Philosophical Studies, University of Melbourne, Australia) is to be thanked for her effort in bringing these essays to publication. She is a well-known scholar of Punic archaeology. Her first book, *The Archaeology of Punic Malta* (Louvain: Peeters, 2002), 1,100 pp. of text and illustrations, traced the colonization of the islands by Phoenician traders from coastal Lebanon and Syria ca. 1000 BCE and documented the islands' subsequent transformation into a major Mediterranean Punic center. She subsequently published *Punic Antiquities of Malta and Other Ancient Artefacts Held in Ecclesiastic and Private Collections*, 2 vols. (Louvain: Peeters, 2003-2006), edited *Beyond the Homeland: Markers in Phoenician Chronology* (Louvain: Peeters, 2008), and wrote *Looking for Mithra in Malta* (Louvain: Peeters, 2009).

The eight contributions in *Ceramics of the Phoenician-Punic World* provide a baseline for further analysis but also reflect a wide range of approaches to the study of ceramics, from the fundamental characteristics of the clay from which vessels were built, the range of ware types in a given location, and the hybridity forged through cultural contact between indigenous and foreign groups. Domestic needs as well as the supply and demand of the market place were driving forces in ancient pottery production in this region. The volume begins with "Acknowledgments" (p. ix) and an "Introduction" by the editor (pp. 1-5). Each chapter has its own bibliography.

The initial detailed contribution, "The Iron Age Pottery from Tell Beirut 1995-Bey 031: Periods 1 and 2" by Andrew S. Jamieson (pp. 7-296) takes up 65% of the volume. Jamieson is Curator Classics and Archaeology, School of Historical and Philosophical Studies, Classics and Archaeology, University of Melbourne, Australia, and is at work on a book, *Archaeological Pottery Studies on Ancient Egypt and the Near East: A Visual Account*, Melbourne: Macmillan. Excavations were in a disturbed context with eight stratigraphic units represented providing 2,146 diagnostic sherds representing two periods: Period 1 (Iron Age II, 1000-800 BC) with 972

sherds and Period 2 (Iron Age II, 700-500 BCE) provided 1,174 sherds. The majority of the specimens were from Coarse Ware wheelmade vessels but handmade and moldmade were also represented. Nine fabrics were identified based on color, texture, inclusions, fracture, surface treatment, context, and associations. The ceramics were oxidized during firing with the exception of one reduction fired piece (Cypriot Red-on-Black Ware).

There is a detailed assessment of shape analysis with ten wares identified (pp. 30-105) each defined on the basis of shapes, features, dimensions, contexts and quantities, and associations. These included 1) Common Ware Types (CW): 8 bowl and 7 jar forms plus lamps, stands, juglets, 7 bases and 5 handles. 2) Bi-Chrome Ware Types (BCW): the types include four bowls, 6 jars, and 2 bases. 3) Cooking Ware Pot Types (CPW): four types comprising 6 bowls, 12 jars, and 3 handle forms. 4) Coarse Ware Types (COW): 2 bowl, 1 jar, 1 base, and 2 handle forms. 5) Fine Ware Types (FW): 1 bowl, 3 bases, and 1 handle forms. 6) Red Slip Ware Types (RSW): types include 7 bowls, 1 jar, 2 bases, and 2 handles. 7) Imported Decorated Ware Types (IDW): all are Late Bronze Age Cypriot types: White Slip Ware II, Cypriot Monochrome, Cypriot Bichrome, Cypriot White Painted, and Cypriot Black-on-Red. 8) Amphora Ware Types (AHW): including 1 jar, 1 base, and 2 handle types. 9) Black Glaze Ware Types (BGW): one specimen, possibly intrusive. Jamieson undertook a detailed quantitative analysis (91 tables defining wares and types, pp. 123-172) and provided an important comparative analysis of ceramics from 10 sites located in coastal Levant and northern Syria. There is also a concordance of pottery (pp. 173-185) and catalogue (pp. 187-176), the latter with 26 line drawings and 93 images. The bibliography has 123 references.

Francisco Jesús Nuñez Calvo contributed "Tyre: al-Bas: Potters and Cemeteries" (pp. 277-296, 8 figures, 47 references). He provides details on the Phoenician cemetery at el-Bas which had simple pit interments of adults and pre-adults of both sexes accompanied by one or two urns and "funeral gifts." Three ceramic groups included: big containers (amphoroid craters and decorated and plain storage jars); jugs (pitchers and dippers); and open forms (cups and bowls). The pottery was mostly produced locally in standardized forms in Phoenician workshops. Defective vessels were often used as grave goods, probably because these were cheaper to purchase. "The Strait and Beyond: Local Communities in Phoenician Lixus (Larache, Morocco)" by Carmen Aranegui, Mireia López-Bertran, and Jaime Vives-Ferrándiz (pp. 297-336, 11 figures, 68 references). The

area is on the Atlantic side of Morocco and the excavations in domestic structures date to 8th-7th century BCE (two radiocarbon dates are cited). The ceramics (634 MNV) were both wheel- and handmade and identified as indigenous Pre-Phoenician and Phoenician. The types included Red Slip plates and bowls, amphorae, cooking pots, coarse ware, and hybrid pottery.

The only essay to employ scientific analyses is "Petrographic and Mineralogy Characterization of Local Punic Plain Ware from Carthage and Utica" by Boutheina Maraoui Telmini and Salah Bouhleb (pp. 327-347, 10 figures, 30 references). The authors report on their analyses of sherds, mostly amphorae, from northern Tunisia: 7 from Carthage, 5 from Utica, and 4 from Utica. The chronological periods were Middle Punic (I, II, III) 480-300 BCE and Late Punic, 300-146 BCE. Macroscopic and binocular microscopic studies were conducted on all sherds; thin-section petrography was used to assess pastes and inclusions (grain size and shape, frequencies, and homogeneity) and confirmed the macroscopic identifications of the sub-groups. There are 50 photomicrographs and the authors plan further analyses using XRF and XRD.

Karin Mansel wrote a detailed analysis on "Carthage's Vessel Cupboard: Pottery of the Middle of the Seventh century B.C." (pp. 349-372, 3 figures, 12 tables, 26 references). She reports her study of 1,364 mostly wheel-made sherds, including 506 Red Slip specimens (quantified into 14 types) from eating and drinking vessels. Vessels for meal preparation included 284 sherds categorized into 8 types and there were 245 sherds from transport amphorae and storage vessels (3 main types noted). Household goods included lamps while "special pottery" comprised basins and crucibles. The ceramics came from Iberia, the Levant, Sardinia, and central Italy.

The final three contributions to this volume focus on Malta. Giulia Recchia and Alberto Cazzella authored "Maltese Late Prehistoric sequence and Chronology: Ongoing Problems" (pp. 373-395, 7 figures, 51 references). The authors review the Italian archaeological Missions from 1963-1970 and focus on the site of Tas-Silg which spans a chronology from Late Neolithic (3000-2300 BCE) and Early Bronze Age (2300-ff.) into the Late Bronze Age/First Iron Age (ending 800 BCE). A group of 2300 diagnostic sherds were studied. Claudia Sagona contributed "Observations on the Late Bronze Age and Phoenician-Punic Pottery in Malta" (pp. 397-432, 9 figures, 1 table, 58 references). A table (pp. 405-406) provides the chronology of the Bronze Age Melitan period sequence (2500-1000 BCE) and Maltese Phoenician-Punic period 1000 BCE-CE 50). She reports

the Bronze Age ceramic repertoire before Phoenician contact and the Interface period when diverse ceramic forms were reduced to a few basic shapes, and she documents the importance of Crisp Ware. Alessandro Quercia prepared "Typological and Morphological Remarks Upon Some Vessels in the Repertoire of Pottery in Punic Malta" (pp. 433-450, 3 figures, 55 references). The author discusses five major vessel forms: plates (the most frequent vessel form), cups, bowls, small plates, and small cups. Trends and differences in typologies and technologies are considered as are contexts (burials and sacred loci), and shape and type distributions. He also points out that investigators need samples from domestic contexts to fully understand the ceramic assemblage.

These contributions add immeasurably to our understanding of the ceramic assemblages of this important period and connections with other Mediterranean cultures. Antonella D'Ascoli has prepared a detailed, illustrated 22-page summary and review of this volume (in Italian) in the *Journal of Intercultural and Interdisciplinary Archaeology* which she founded in 2003. The review may be found here: http://www.academia.edu/Papers/in/Phoenicia_Punic_Pottery_Antonella_DAscoli_Book_Review

The Lustrous Wares of Late Bronze Age Cyprus and the Eastern Mediterranean, Papers of a Conference, Vienna 5th-6th of November 2004, Irmgard Hein (editor). Contributions to the Chronology of the Eastern Mediterranean Volume 13. Denkschriften der Gesamtakademie Band 41. Wien: Verlag der Österreichischen Akademie der Wissenschaften/ Austrian Academy of Sciences Press, 2007. 209 pp. ISBN 978-3-7001-3786-3 print edition, ISBN 978-3-7001-6122-6 online edition, €51,80/\$93.60; on sale online for \$78.00.

The "Preface by the Editor" (p. 8.) points out that the island of Cyprus, because of its central position in the eastern Mediterranean Sea, was a source of copper (which gave the island its name) and was at the center of international trade in antiquity, especially during the Bronze Age (Middle Cypriot and Late Cypriot Bronze Age period 2nd millennium BCE). In addition, the island was a source of oils and resins which requires the production of ceramic containers for their sea-borne transport. The term "Lustrous Wares" includes three groups of Late Cypriot Bronze Age wheel-made pottery ware: Red (RLWM), White (WLWM), and Black Lustrous Ware (BLWM). Red Lustrous Ware is a well-documented cultural marker. This volume presents the results of new and ongoing investigations about Lustrous Ware as well as methodological analyses of pottery in

general, with a special focus on chronological questions of the Eastern Mediterranean during the Late Bronze Age.

This volume contains 18 papers presented at a meeting held at the Austrian Academy of Sciences in November 2004, organized by the Cyprus Department of SCIEEM 2000 and the Institute for Egyptology of the University of Vienna. The papers focused on three main topics: 1) the geographical distribution of the three types of pottery ware in the eastern Mediterranean, in order to clarify trade connections; RLWM, for example, can be traced to Anatolia. 2) the chronological appearance of the ware as a tool to synchronize the neighboring cultures of the eastern Levant. And 3) the origin of the ware (current research has been stimulated by technical developments in analytical methods). Two studies on similar wares are also included. The book begins with a list of "General Abbreviations" (p. 7) with 65 entries, 38 "Bibliographic Abbreviations" (p. 8), and the "Preface by the Editor" (p. 8.). The latter includes a brief discussion of previous conferences on ceramics (White Slip Cypriot pottery by V. Karageorghis in 1998 and Bichrome and Base Ring Wares in 2000 by P. Åström). The chapters in the current volume are organized alphabetically by the authors' last names and each contribution has its own references. The volume ends with a "Topographical Index" (pp. 207-209). There is no concluding summary, synthesis, or critique.

Michael Artzy "On the Origin(s) of the Red and White Lustrous Wheel-made Ware" (pp. 11-18, 7 figures, 2 graphs, 6 footnotes, 14 references). The author reviews NAA and provenance studies on Cypriot materials for the period 1960 to 1980, experimentation by potters, and chemical similarities between Cypriot and Levantine ceramics. Graphs clearly relate subgroup compositions. Paul Åström "Black Lustrous Wheel-made Ware on Cyprus" (pp. 19-24, 10 figures, 27 footnotes, 10 references). Åström reviews the early literature of the ware from 1926 to the 1970s and the lack of research after 1972. Vessel forms are described and illustrated. Celia J. Bergoffen "Reflections on Two "Lustrous" Base Ring I Kraters from Alalakh" (pp. 25-36, 4 figures [2 in color], 23 footnotes, 69 references). The kraters are described and relationship to metal prototypes questioned; ceramic parallels are noted and she reviews the use of spiral decorations. These "exotic" vessels represented a mixture of influences with antecedents dating to the mid-16th century BCE (LCAIA to LCAIB). The impact of Minoan production on potters working outside the Aegean is documented and the author proposes that the kraters' origin is Ugarit. Annie Caubet "The Lustrous Wares of LB Cyprus and the Eastern Mediterranean" (pp. 37-42, 1 figure, 1 plate, 32 footnotes, 32 references). Brown Burnished Ware from Meskene

(ancient Emar on the Euphrates River) is described and commercial ties between Ugarit and Emar noted. Notably, Red Lustrous Wheel-made Ware was absent at Emar. Lindy Crewe “Contextualising the Lustrous Wares at Enkomi: Settlement and Mortuary Deposition during Late Cypriot I–IIB” (pp. 43-50, 5 figures, 4 tables, 20 references). Three Lustrous Wheel-made Wares are considered: Red, White, and Black. The chronologies, vessel types and quantities are also reviewed. The Black ceramics occurred in 18 mortuary contexts (tombs excavated by Cypriots, Swedes, and French archaeologists. Juglets are differentiated from jugs, tankards, and bowls.

Kathryn O. Eriksson “Using Cypriot Red Lustrous Wheel-made Ware to Establish Cultural and Chronological Synchronisms during the Late Bronze Age” (pp. 51-60, 1 table, 2 footnotes, 30 references). The origin and role of Red Lustrous Wheel-made Ware are reviewed and the author documents its’ initial appearance in the LC IA:2 period. Evidence from Egypt is provided to date the ceramic to a period before the Tutmosis III kingship and the production of this ware increased markedly during that period. Links to the Hittites and the Amarna period are also discussed. This study demonstrates the important cultural and chronological synchronisms during the Late Bronze Age. Kathryn O. Eriksson “A Rare Species: Some Observations on the Chronological Significance of Cypriot White Lustrous Wheel-made Ware” (pp. 61-69, 1 figure, 5 footnotes, 46 references). This uncommon White Lustrous pottery dated to LC IA: two are described and specimens from Egypt are detailed and evidence from Cyprus is also reviewed. She concludes that White Lustrous Ware production was “most likely” an experimental stage associated with the early production of Red Lustrous.

Peter M. Fischer “A Note on the Lustrous Wheel-Made Wares from Tell el-cAjjul” (pp. 71-78, 4 figures, 1 table, 16 footnotes, 23 references). The author uses materials from Petrie’s 1930-1943 and 1938 excavations in this analysis. Black Lustrous Wheel-made juglets, Grey Lustrous ceramics, but only one Red Lustrous sherd are reported and chronologies reviewed and critiqued. Irmgard Hein “The Significance of the Lustrous Ware Finds from cEzbet Helmi/Tell el-Dabca (Egypt)” (pp. 79-106, 11 figures, 1 table, 96 footnotes, 90 references, 1 Appendix). Hein provides a comprehensive review of previous major studies on Egyptian specimens of Lustrous wheel-made ceramics: Red (RLWM), which begins with the LC IA:2 period, 5 examples; White (WLWM) 6 samples; and Black (BLWM) 12 examples. Next she considers the distribution of the types with illustrated color graphs. An appendix provides

descriptions of the specimens, the find spots, and stratigraphic data.

Jürgen O. Hörburger “Black Lustrous Wheel-Made Ware in Egypt: The Distribution of a Cypriot Import” (pp. 107-113, 4 figures, 5 footnotes, 36 references). The author reviews Oren’s (1969) article on this ware and documents 27 new contexts and distributions in Egypt and Nubia. There are now 88 documented BLW-m vessels from 72 Egyptian contexts.

Carl Knappett and Vassilis Kilikoglou “Provenancing Red Lustrous Wheelmade Ware: Scales of Analysis and Floating Fabrics” (pp. 115-140, 22 figures [5 color photomicrographs of thin sections], 1 table, 40 references). The chapter has two foci: 1) The provenance of Red Lustrous Wheel-made Ware through petrographic and chemical (INAA) analyses of samples from 7 sites; 4 in Crete, plus one each from Boğazköy, Turkey, and Memphis-Saqqara, Egypt. 2) Methodological issues involved with the analysis. The authors begin with a review of the literature and discuss “bottom-up” and “top-down” approaches, characterize the ware, and discuss the nature of the samples from each site. The study provides evidence that the ware derives from a single source located somewhere in the Eastern Mediterranean, with northern Cyprus currently the most likely locale. The study elaborates Knappett, C., Kilikoglou, V., Steele, V., and Stern, B. (2005) “The circulation and consumption of Red Lustrous Wheelmade Ware: Petrographic, chemical, and residue analysis,” *Anatolian Studies* 55:25-59.

Ekin Kozal “Regionality in Anatolia between 15th and 13th centuries BC: Red Lustrous Wheel-made Ware versus Mycenaean Pottery” (pp. 141-148, 1 figure, 37 footnotes, 85 references). This ware is found in sites in central Anatolia and the Göksu Valley associated with Hittite and Imperial period levels. A useful map illustrates RLW-m distributions in Mycenaean and Late Cypriot contexts. Kozal discusses the distributions and suggests how the ware reached Anatolia. Robert S. Merrilless “When did Red Lustrous Wheel-made Ware First Appear in the Levant?” (pp. 149-154, 38 references). This discussion of chronological contexts references his 1968 thesis and argues against K. O. Eriksson’s 1992 assessment of the appearance of the ware in the Levant. Dirk Paul Mielke “Red Lustrous Wheelmade Ware from Hittite Contexts” (pp. 155-168, 2 figures, 92 footnotes, 63 references). The author discusses the evidence from 13 Hittite sites and provides a valuable comparative chronology of Hittite contexts and relationships to the reigns of Hittite kings and archaeological periods ca. 1650-1200 BCE. He urges that more research be

undertaken on chronologies and that scientific analyses be undertaken.

Cornelia Shubert and Ekin Kozal “Preliminary Results of Scientific and Petrographic Analyses on Red Lustrous Wheel-made Ware and other LBA Ceramics from Central Anatolia and Cyprus” (pp. 169-177, 13 figures [2 in color], 36 footnotes, 46 references). The authors provide an NAA analysis of Red Lustrous and local Hittite ceramics and modern clay samples from 5 sites: Boğazköy (42 samples), Swas-Kusakh (16), Porsuk (7), Koructepe (5), and Hala Sultan (10). In addition, 5 sherds were examined using thin-section optical microscopy and REM (p. 171), meaning SEM. Color photomicrographs of the thin sections are provided. The analyzed material is chemically homogeneous and supports the hypothesis of a single source for the Red Lustrous Ware.

Alison South and Louise Steel “Red Lustrous Wheelmade Ware from Kalavassos” (pp. 179-190, 8 figures, 32 footnotes, 20 references). The authors analyzed 46 specimens and describe quantities and distributions from high status tombs. Prefired incised “signs” are also discussed. The evidence is compared to Cypriot specimens and the authors raise the question of what commodity was contained in the Red Lustrous Wheel-made Ware pots. Val J. Steele, Ben Stern, and Carl Knappett “Organic Residue Analysis of Red Lustrous Wheelmade Ware from Five Sites in the Eastern Mediterranean” (pp. 191-196, 6 figures, 22 references). The analysis employed 39 sherds from 9 sites located across the eastern Mediterranean. There is a discussion of sample [preparation and each of the sites. The results indicate that 22 of the 29 specimens contained residues and 5 other had traces of lipids, fatty acids (from plant and animal sources), beeswax, and bitumen. They note that the sample size is inadequate to make meaningful assessments. Eli Yannai and Amir Gorzalczany “Cypriot Grey Lustrous Wheel Made Ware in Israel in Light of New Petrographical Analysis – Typology, Provenance and Chronology” (pp. 197-206, 1 figure, 1 table, 42 references). Petrographic analyses were undertaken on 6 types of Black Lustrous juglets and resulted in defining Cypriot versus local groups; the latter included Black and Grey. The distribution of the types in Israel is reported with a chronology of MB II:B and afterward and there is a discussion of trade and the decline of production. The production of Grey Lustrous was characterized as “marginal and minimal.”

This is a very significant monograph that provides a new baseline for future studies on this complex ceramic recognized as a cultural marker in the eastern Mediterranean and Levant. A number of the papers are

historical and present results an traditional ways but several made use of scientific ceramic analyses

Online Resource

Historical Pottery: “The Beauties of America: the Staffordshire Pottery of John Ridgway” at the American Antiquarian Society (AAS) currently illustrates 22 pieces of Ridgway pottery, part of the Society’s Emma DeForest Morse Collection of American Historical Pottery. Corresponding prints of 20 of the 22 have been identified and reproduced and are linked to AAS catalog records; there are multiple views of the plates (front, verso, plate marking and alternate views of the tureen, dish and sauce boat). The database is expected to grow in 2012. In addition, the “Transferware Collectors’ Club Database” now includes more than 8,000 patterns: <http://www.americanantiquarian.org/Exhibitions/Ridgway/index.htm> and <http://www.transcollectorsclub.org/>

Previous Meetings

The Ceramic Petrology Group 2012 Annual Meeting was held on 31 March 2012 hosted by the Department of Archaeology of the University of Sheffield, Northgate House, West Street S1 4ET, Sheffield. The CPG is a forum for the discussion and development of petrographic and analytical techniques for the study of archaeological ceramics. Membership is open to all academics, scientists, and students interested in innovative approaches to ceramic petrology and improving traditional methodologies. The 2012 meeting was a one-day colloquium that brought together researchers on archaeological ceramics, to discuss the use of petrology in their approaches to the study of ceramic material culture. Jose C. Carvajal and Will Gilstrap were the organizers: j.carvajallopez@sheffield.ac.uk and w.gilstrap@sheffield.ac.uk.

Rather than seek papers involving only polished, completed work, the organizers encouraged also the presentation of current or on-going projects and debates on relevant methodological and theoretical issues. In addition, in the afternoon, there was a practical session where researchers discussed thin section samples on polarizing microscopes. Papers were 20 minutes in length plus five minutes for discussion. Five papers were presented: Will Gilstrap, Peter Day, Noémi Müller, Yannis Lolos, Christina Marabea and Apostolos Papadimitriou: “LH IIIB Pottery from the Mycenaean Harbour Town of Kanakia, Salamina”; Jose C. Carvajal and Peter Day: “Early Islamic Cooking Wares from the Vega of Granada, South Eastern Spain”; Marta Tenconi, Lara Maritan and A. Angelini:” Craft Production of

Pottery from a Bronze Age Site in North-Eastern Italy: New Results from Petrographic Analysis”; Alice Hunt: “Cathodoluminescence (CL) of Quartz as a Method for Archaeological Ceramic Provenance”; and Peter Day, Heather Graybehl, Samantha Ximeri, Mark Hammond and Christian Cloke: “Late Roman Coarseware in the North-Eastern Peloponnese, Greece.”

The annual meeting of the *Society for American Archaeology* was held 18-22 April 2012 in Memphis, Tennessee USA. Jim Skibo was the 2012 recipient of the “Excellence in Archaeological Analysis Award” by the SAA. He is Professor of Anthropology at Illinois State University and currently the Graduate Coordinator, received his doctorate in 1990 from the University of Arizona, where he studied with Michael Schiffer and William Longacre. His dissertation work was based on a study of pottery use-alteration among the Kalinga, which resulted in the book *Pottery Function: A Use-Alteration Perspective* and he coedited *Kalinga Ethnoarchaeology and Pottery and People*. Ceramic analysis is a major part of his past and current research. The award citation reads: “James Skibo has earned the SAA’s Award for Excellence in Archaeological Analysis for his life-long contributions to the field of archaeological ceramic studies. Through a combined approach relying on ethnoarchaeological and experimental research, Dr. Skibo’s many publications have provided concrete examples of how the methodological analysis of ceramics can be bridged with theory and how it can be used to address questions of broad anthropological interest. He has authored dozens of articles and an impressive ten books, including the 1992 book *Pottery Function*, which remains the definitive work on pottery use-alteration. The substantial impact of his work is reflected in the large numbers of citations that it has received by scholars working throughout the world. The SAA is proud to present this award to Dr. Skibo.”

The SAA meeting program listed 144 papers or posters on ceramic-related topics: General papers on ceramic topics (n = 6); North America (a total of 59 presentations): Southwest (26), Midlands (18), Southeast (9), and Northeast, Plains, and West (2 each). Mesoamerica (35 presentations): Southern (22) and Northern (13); Caribbean (2) and Central America (1); South America (14, all Western/Andean); and Europe (a total of 12 contributions): Southeast (10) and Southwest and Mediterranean (1 each). Asia (a total of 11): Southeast (5); Southwest (4), and Central (2, all on Armenia). The other ceramic papers were: West Africa (1), Pacific Islands (2), and Unclassified (1). Five symposia had relevance to ceramic materials; these included a session on Nodena pottery, a symposium

honoring Dean E. Arnold, a Spanish-language session on Oaxacan ceramics, a symposium honoring Justin and Barbara Kerr, and an informative group of papers on ceramic petrography. The authors and titles of the symposia are detailed, but space precludes the same description of the individual papers and posters.

Symposium: *Precolumbian Ceramic Art in the St. Francis Basin: Approaches to the Nodena Art Style* (9 papers) Organizer and Chair: Claudine Payne. Presentations: Claudine Payne “Defining the Nodena Art Style”; Jeffrey Mitchem “Decoration and Vessel Form in Parkin Phase Ceramics”; George Lankford “Weeding Out the Noded”; Charles McNutt and Terry Childs “A Distinctive Ceramic Motif in Mississippi County, Arkansas”; H. Terry Childs and Charles McNutt “The Floating Figure Motif of the Nodena Phase”; John House “Regional Variation in Mississippian Effigy Vessels in Eastern Arkansas”; Catherine Hammons and David Dye “Female Effigy Bottles in the Central Mississippi Valley”; Jim Cherry “Ceramic Headpot Effigy Forms: What Can They Tell Us?”; and Leslie Hester “Portals of the Soul: Ancient Peoples of Northeast Arkansas.”

Symposium: *Honoring Dean E. Arnold on His Supposed “Retirement”* (15 papers) Organizer and Chair: Charles C. Kolb. Presentations: Charles C. Kolb “Knowing the ‘Dean of Ceramics’: Dean E. Arnold”; Philip Arnold “The Reluctant Ethnoarchaeology of Dean E. Arnold”; Brenda Bowser “Continuities and Discontinuities in Pottery-Making Traditions in the Upper Amazon: Contributions toward Anthropologically-Informed Archaeology”; Warren DeBoer “Pots for Tots: The Ceramic Art of Shipibo and Mimbres Children” (not presented due to illness); Lacey Carpenter, Gary M. Feinman and Linda M. Nicholas “Domestic Cloth Production: The Economic Significance of Households in the Classic Period Oaxaca Valley, Mexico”; Ronald Bishop “Does compositional standardization of ceramic paste really mean specialization? – A Revisit”; Peter Day “Ceramic Ethnography and the Development of Analytical Approaches to Archaeological Ceramics”; Hector Neff and Satoru Murata “Ceramic Production on Mesoamerica’s Tropical Coasts”; Christopher Pool “Clay, Kiln, Pot, and Potter: Factors in the Evolution of Ceramic Production and Distribution in Southern Veracruz”; George Bey, Evan Parker, Jiyan Gu, Timothy Ward and Tomás Gallareta “An ICP-MS Analysis of Early Maya Pottery from the Northern Maya Lowlands”; Leslie Cecil and Prudence M. Rice “*De Colores*: Pigments and Potters in Postclassic Petén”; Bill Sillar “Supply on Command: The Development of Inka Pottery Production in the Cuzco Area”; Eric Blinman “Ceramic Theory and Cultural Process: Realized and Unrealized Potential in the

Southwest”; and Sandra Lopez Varela “Ethnoarchaeological Solutions for Societies in the Future.” The symposium discussant was Dean Arnold.

Symposium: *La Cerámica Arqueológica en los Diferentes Proyectos de Investigación en el Estado de Oaxaca* (7 papers, 4 on ceramics) Organizers: Pedro Ramon Celis and Nelly Robles, Chair: Jorge Rios. Presentations included: Jorge Rios “La presencia cerámica en Lambityeco-Yegüih: Consideraciones Integrales”; Nelly Robles “La Cerámica Arqueológica De Oaxaca: Recobrando La Diversidad”; Raul Matadamas Díaz and Sandra Liliana Ramírez Barrera “Huatulco, Oaxaca: La cerámica de los mareños”; and Dante Garcia “Urnas funerarias del complejo del maíz en un contexto del postclásico temprano del valle de Oaxaca.”

Symposium: *Mesoamerican Ceramics: Session in Honor of Justin and Barbara Kerr* (9 papers) Organizers: Maline Werness and Michael Carrasco, Chair: Maline Werness-Rude. Presentations: Mary Pohl, Christopher von Nagy, Shannon Weatherby and Maria Tway “Olmec Ceramic Figurines from the La Venta Polity”; Michael Carrasco “Intertextuality in Classic Maya Ceramic Art and Writing”; Penny Steinbach “A Revised Definition of Late Classic Maya Codex-style Pottery”; Inga Calvin “Rolling Out in the Field: An Analysis of Provenienced Classic Period Maya Pottery”; Kerry Hull “Function and Form of Jaay Vessels from the Classic Period to the Modern Maya”; Carlos Pallán Gayol “Addressing Terminal Classic Interaction Dynamics within the Puuc-Maya Region through Epigraphic and Ceramic Correlations”; Betsy Kohut, George J. Bey III and Nancy M. Yates “Buildings of Clay: Late and Terminal Classic Cehpech Pottery as Architecture”; Lynn Foster and Cherra Wyllie “Rio Blanco Ceramics of South-Central Veracruz”; and Maline Werness-Rude, Ronald L. Bishop, Dorie Reents-Budet, Osvaldo Gómez and M. James Blackman “Sacaba Pottery and the Terminal Classic Fine Paste Tradition in the Maya Lowlands.” Michael Carrasco and Michael Coe served as discussants.

A host of other papers and posters were presented at the conference, all dealing with ceramics and making contributions to the field.

GlobalPottery 1st International Congress on Historical Archaeology and Archaeometry for Societies in Contact. The Cultura Material i Arqueometria UB (ARQUB, GRACPE) research unit at the Universitat de Barcelona, along with the members of the Tecnolonia research project, sponsored this conference held 7-9 May 2012. “The aim of GlobalPottery is to provide scholars with a

specialized international forum that deals with Historical Archaeology ceramic studies, primarily including the so-called topics of Post-Medieval Archaeology and Later Historical Archaeology or Industrial Archaeology. It is also the aim of GlobalPottery to promote the studies on societies in contact, bearing in mind that the colonization of America and the first World circumnavigation must be considered the beginning of the present Global World. The Congress will contribute to the promotion of the development of multidisciplinary archaeological and archaeometrical research in order to generate historical knowledge from the extant ceramic record of the Cultural Heritage.”

The sessions and titles are as follow: “Session A. Archaeometry and Technological Change” with invited speakers: J. Buxeda i Garrigós, M. Madrid i Fernández, J. G. Iñañez (ARQUB, Catalonia, Spain): “Title: Archaeometry of the Technological change in societies in contact.” “Session B. Global Cultural Impact” with invited speaker: D. Gaimster (The Hunterian Museum-University of Glasgow, UK): “Title: Cultural impact of ceramic distributions around the globe.” “Session C. Local Cultural Impact” with invited speaker: K. Deagan (Florida Museum of Natural History, University of Florida, USA): “Title: Cultural change at a local scale: the pottery evidence.” “Session D. Technical Ceramics” with invited speaker M. Martinon-Torres (University College London, UK): “Title: Metallurgical ceramics: pottery for the global metals.” “Session E. Europe and the Mediterranean” with invited speaker C. Capelli (Università degli Studi di Genova, Italy): “Title: Pottery in the Mediterranean in a Global World.” “Session F. Africa and the African Diaspora” with invited speaker I. Pikirayi (University of Pretoria, South Africa): “Title: Ceramics - A resilient technology: group identities and transformations in Africa.” “Session G. Asia and the Pacific” with invited speakers P. Grave (University of New England, Australia): “Title: Pottery in the Pacific and the Early Modern Economy.” “Session H. North America” with invited speaker P. Fournier (Escuela Nacional de Antropología e Historia, México): “Title: Colonial pottery in North America: the Mexican case.” “Session I. Central and South America” with invited speaker M. I. Therrien (Fundación Erigea; Pontificia Universidad Javeriana, Colombia): “Title: Indigenous pottery in a Colonial World: evidences in Colombia.” The conference website provides further information on the scientific and social programs: <http://www.ub.edu/gracpe/arqub/index.html>

Forthcoming Meeting

Fifth International Conference on Synchrotron Radiation in Art and Archaeology (SR2A 2012) will be held 5-8 June 2012 at The Metropolitan Museum of Art (MMA) in New York City. The MMA, the Conservation Center at the Institute of Fine Arts of New York University, the Winterthur Museum, Cornell University and Brookhaven National Laboratory are the conference organizers. Among the presentations is one on ceramic materials: “Fibrous Twists and Turns: Early ceramic technology revealed through Computed Tomography” presented by James Thostenson (The American Museum of Natural History, New York, USA). There is additional information on the SR2A Homepage <SR2A Homepage> and from Events Coordinator Kathleen Nasta (Event Coordinator) sr2a@bnl.gov

ARCHAEOMETALLURGY

Thomas R. Fenn, Associate Editor

The column in this issue includes the following categories of information on archaeometallurgy: 1) New Books; 2) New Articles/Book Chapters; 3) Forthcoming Meetings; 4) Previous Meetings; 5) Courses; and, 6) Obituaries.

New Books

Ancient Society and Metallurgy: A comparative study of Bronze Age societies in Central Eurasia and North China, by Liangren Zhang, 2012, *BAR International Series* 2328, Archaeopress, Oxford, xii, 198 pages : illustrations, maps ; 30 cm, Language: English, ISBN: 978-1-4073-0911-8 (pbk.), 1-4073-0911-0 (pbk.), Price: £35.00.

Based on Zghang’s doctoral dissertation, the book 6 chapters look at Bronze Age metallurgy in Central Asia and North China within a social evolutionary framework. The chapters consist of “1. Community and Social Evolution,” “2. The Early Bronze Age of Central Eurasia,” “3. The Middle Bronze Age of Central Eurasia,” “4. The Late Bronze Age of Central Eurasia,” “5. The Late Shang Kingdom in North China,” and “Conclusions.” Focusing on Bronze Age societies in Central Eurasia and North China, this book presents a new scenario of early social evolution. Essentially it integrates the Marxist production-relation concept and the community concept into the Band-Tribe-Chiefdom-State scheme, and formulates the following three hypotheses: 1) The community is an autonomous agent in political, economic, and cultural spheres; 2) The nature of the early

social evolution is that the inter-community differentiation at the tribal stage transforms into the inter-community stratification at the chiefdom and state stages; 3) Metal production as a form of economy is a major force that instigates the inter-community differentiation. In testing the three hypotheses, Bronze Age archaeological data from Central Eurasia and North China are subjected to detailed examination. The Central Eurasian societies and the Late Shang kingdom are all engaged in metal production yet they represent two disparate stages of social development, the tribal and state stages respectively. This contrast gives us an excellent opportunity to reflect upon the trajectory of early social evolution and the role of metal production in this process. Virtually the two bodies of materials supply a desirable testing ground for the three hypotheses raised above. Information about purchasing the book can be found at the following link: <http://www.hadrianbooks.co.uk/search.asp?searchString=BAR%20S2328>.

Early Mining and Metallurgy on the Western Central Iranian Plateau: The first five years of work, edited by Abdolrasool Vatandoust, Hermann Parzinger, and Barbara Helwing, 2011, *Archäologie in Iran und Turan* Band 9, Philipp von Zabern, Mainz, viii+728 pages, 734 color illustrations, 86 tables, maps, 30 cm, Language: English, with Arabic summary, ISBN: 978-3-8053-4342-8 (hbk.), Price: €94.90.

This large tome presents the culmination of five year research on the site and region of Arismān, west-central Iran. The book is divided into three main sections and, contrary to the book title, some of the 26 chapters present information beyond mining and metallurgy. The book begins with a foreword by the series editor (Svend Hansen; p. v), and an introductory chapter “1. “Early Mining and Metallurgy on the Western Central Iranian Plateau”: An introduction to the research project” (Abdolrasool Vatandoust, Hermann Parzinger and Barbara Helwing; pp. 1-7).

Chapters in the first part of the book, “Part 1: Archaeological excavations at Arisman,” comprise “2. The archaeological site of Arismān” (Barbara Helwing; pp. 11-18), “3. Magnetic prospection” (Helmut Becker, Jörg Fassbinder, Margarete Schlosser; pp. 19-27), “4. Excavations at Arismān, Area B” (Nikolaus Boroffka, Naser N. Chegini, Hermann Parzinger; pp. 28-39), “5. Excavations at Arismān, Area C” (Naser N. Chegini, Hamid Fahimi, Barbara Helwing; pp. 40-68), “6. Excavations in the slagheaps in Arismān” (Daniel Steiniger; pp. 69-99), “7.1 Sialk III pottery from Area B: Description, classification, typology” (Rodica Boroffka,

Hermann Parzinger; pp. 100-128), “7.2 Sialk III pottery from Area B: Sialk III pottery chronology” (Hermann Parzinger; pp. 128-143), “7.3 Catalogue of the Sialk III pottery” (pp. 143-195), “8. Proto-Elamite pottery from areas A, C, D, and E” (Barbara Helwing; pp. 196-253), “9. The small finds from Arismān” (Barbara Helwing; pp. 254-327), and “10. The Arismān lithic industries” (Barbara Helwing, Judith Thomalsky; pp. 328-369).

The text continues with “11.1 Radiocarbon datings in Arismān: Radiocarbon datings” (Jochen Görzdorf; pp. 370-373), “11.2 Radiocarbon datings in Arismān: Archaeological comments on the radiocarbon datings” (Barbara Helwing; pp. 374-375), “12. Faunal remains of Arismān” (Norbert Benecke; pp. 376-382), “13. Charcoal from the ovens. Botanical remains of Arismān” (Reinder Neef; pp. 383-399), “14. Review of post-excavation protection work in Arismān” (Hamid Fadaei; pp. 400-408), “15. Report on the conservation of some of the metal objects from the site of Arismān” (Madjid Ghazian, Mahmoud Ghasemi; pp. 409-410), “16. Report on the restoration and protection of the archaeological artifacts from Arismān (Fourth season, fall 2004)” (Mahmoud Rashidi, Somayyeh Taghi Zowghi, Fatemeh Mirabi; pp. 411-420), “17. Archaeological survey in the hinterland of Arismān and Kāšān” (Naser N. Chegini, Barbara Helwing; pp. 421-430), “17.1 Catalogue of archaeological sites in alphabetical order” (pp. 431-445), “17.2 Catalogue of archaeological surface collections” (pp. 446-452), “Appendix to Chapter 17: Tappe Mesi. The surface collection of lithic artifacts” (Judith Thomalsky; pp. 452-453), “Chapter 17 Catalog illustrations” (pp. 454-483), “18. Palaeolithic survey in the Arismān region, western Central Iranian Plateau” (Saman Heydari Guran, Elham Ghasidian; pp. 484-498), “19. Distribution of Iron Age pottery in the southern part of the Central Plateau of Iran. Report on the archaeological site of Milājerd, Natanz” (Hamid Fahimi; pp. 499-522), and “20. Conclusions: The Arismān copper production in a wider context” (Barbara Helwing; pp. 523-531).

Chapters in the second section of the book, “Part 2: Mining archaeology in Iran - investigations at Vešnāve and a survey on the western Central Iranian Plateau” consisted of “21. Mining archaeology In Iran - Investigations at Vešnāve” (Thomas Stöllner, Mahmood Mireskandari, Kourosh Roustaie, in collaboration with Morteza Momenzadeh, Torsten Riese, Gero Steffens, Gerd Weisgerber, with contributions by Monika Doll, Rainer Pasternak, Walter Dörfler; pp. 535-608), “22. Fiber identification of the Vešnāve samples” (Farah Sadat Madani; pp. 609-612), “23. Report on the conservation of selected metal objects from the ancient mines of Vešnāve” (Madjid Ghazian, Mahmoud Ghasemi; pp. 613-

615), “24. Report on the restoration and protection of archaeological artifacts from Vešnāve (Fourth season, fall 2004)” (Mahmoud Rashidi, Somayyeh Taghi Zowghi, Fatemeh Mirabi; pp. 616-620), and “25. Archaeological survey of ancient mines on the western Central Iranian Plateau” (Thomas Stöllner; pp. 621-629).

The final section of the book, “Part 3: Archaeometallurgical research on the western Central Iranian Plateau”, includes only a single chapter entitled “26. Archaeometallurgical research on the western Central Iranian Plateau” (Ernst Pernicka, Morteza Momenzadeh, Abdolrasool Vatandoust, Kerstin Adam, Maik Böhme, Zahra Hezarkhani, Nima Nezafati, Marcus Schreiner, Bärbel Winterholler; pp. 633-687), and the book concluded with a comprehensive bibliography, an English summary and a Persian summary (translated by Hamid Fahimi). Information on purchasing the book can be found at the publisher’s website at the following link: http://www.zabern.de/buch/Early_Mining_and_Metallurgy_on_the_Western_Central_Iranian_Plateau/22088.

Monk Bridge Ironworks, by Glyn Davies, Mark Stenton, Ron Fitzgerald, and Rob Kinchin-Smith, 2011, published for ArcHeritage by York Archaeological Trust, York, xi+182p., 30 line illus., 119 clr and b/w pls., maps, 31 cm, Language: English, ISBN: 978-1-874454-56-4 (hbk.), 1-874454-56-6, Price: £20.00. <http://www.yorkarchaeology.co.uk/resources/pubs.htm>.

This volume presents the results of archaeological investigations at the site of the former Monk Bridge Ironworks, in Leeds. It examines aspects of the emergence of the iron and railway engineering industries throughout a period of rapid national change. The Monk Bridge Ironworks was founded in 1851 by Stephen Whitham. In 1854 the site was purchased by James Kitson, a locomotive manufacturer, and the Monk Bridge works became part of an integrated and internationally recognised company at the cutting edge of technology. Under the management of Kitson’s sons the company established a very strong reputation for the quality and reliability of its products. The growth, success and changing fortunes of two extraordinary family businesses are charted through original research, standing building recording and extensive archaeological excavations. Important information has been gathered on a number of iron-working processes including puddling, reheating and rolling technologies.

New Book Chapters/Articles

From *Science and Metal Technology of Harappans*, edited by Deo Prakash Sharma, 2012, Kaveri Books, New Delhi, come “Archaeo-metallurgy in India” (A.K. Biswas; pp. 19-24), “Metal technologies of Harappan” (Jonathan M. Kenoyer, Heather M.L. Miller; pp. 25-65), “Tin in Harappan Bronze” (Dilip K. Chakrabarti; pp. 71-86), “Copper Bronze alloy of Harappan” (Nayan Jot Lahiri; pp. 87-126), “Archaeo-metallurgical tradition of the Harappan” (D.P. Agrawal, Rajan Seshadri; pp. 127-131), “Copper archaeo-metallurgy in literature” (D.K. Chakrabarti; pp. 132-150), “Harappan trade in metals and minerals” (Shashi Asthana; pp. 151-167), “Harappan continuity of high tin copper in South Asia” (Sharada Srinivasan; pp. 179-193), “Copper lead alloy in Shahi Tump South Indo-Iranian Border Land (4000-3000 B.C.)” (M. Sharma; pp. 243-246), “Meluhha: the land of copper trader” (M.K. Dhavalikar; pp. 277-282), and “Copper metallurgy of Harappans civilizations at Dholavira” (David Bourgarit, Nizamuddin Taher, Benoit Mille, Jean-Pierre Mohen; pp. 283-293).

From *Copper Alloys – Early Applications and Current Performance – Enhancing Processes*, edited by Luca Collini, 2012, InTech, Rijeka, Croatia, comes “Bronze in Archaeology: A Review of the Archaeometallurgy of Bronze in Ancient Iran” (Omid Oudbashi, S. Mohammadamin Emami, and Parviz Davami; pp. 153-178). This article and the book are open-access and can be found at: <http://www.intechopen.com/books/copper-alloys-early-applications-and-current-performance-enhancing-processes/>.

From the *Journal of Archaeological Science* (2012, Vol. 39, No. 4) comes “Distilling zinc for the Ming Dynasty: the technology of large scale zinc production in Fengdu, southwest China” (Wenli Zhou, Marcos Martín-Torres, Jianli Chen, Haiwang Liu, Yanxiang Li; pp. 908-921), “Local mining or lead importation in the Roman province of Africa Proconsularis? Lead isotope analysis of curse tablets from Roman Carthage, Tunisia” (Sheldon Skaggs, Naomi Norman, Ervan Garrison, Drew Coleman, Salah Bouhleb; pp. 970-983), “New evidence for the use of cinnabar as a colouring pigment in the Vinča culture” (Maja Gajić-Kvaščev, Milica Marić Stojanović, Žiga Šmit, Vasiliki Kantarelou, Andreas Germanos Karydas, Dušan Šljivar, Dragan Milovanović, Velibor Andrić; pp. 1025-1033), “The medieval iron market in Ariège (France). Multidisciplinary analytical approach and multivariate analyses” (S. Leroy, S. X. Cohen, C. Verna, B. Gratuze, F. Téreygeol, P. Fluzin, L. Bertrand, P. Dillmann; pp. 1080-1093), and “The provenancing of ochres from the Neolithic Temple Period in Malta”

(Nicola Attard Montalto, Andrew Shortland, Keith Rogers; pp. 1094-1102).

From *Journal of Archaeological Science* (2012, Vol. 39, No. 3) “First comprehensive peat depositional records for tin, lead and copper associated with the antiquity of Europe's largest cassiterite deposits” (Andrew A. Meharg, Kevin J. Edwards, J. Edward Schofield, Andrea Raab, Joerg Feldmann, Annette Moran, Charlotte L. Bryant, Barry Thornton, Julian J. C. Dawson; pp. 717-727), “Evidence for indigenous strip-drawing in production of wire at Mapungubwe Hill (1220–1290 AD): towards an interdisciplinary approach” (Farahnaz Koleini, M. H. Alex Schoeman, Innocent Pikirayi, Shadreck Chirikure; pp. 757-762), and from (2012, Vol. 39, No. 2) “Iron and bronze production in Iron Age IIA Philistia: new evidence from Tell es-Safi/Gath, Israel” (Adi Eliyahu-Behar, Naama Yahalom-Mack, Sana Shilstein, Alexander Zukerman, Cynthia Shafer-Elliott, Aren M. Maeir, Elisabetta Boaretto, Israel Finkelstein, Steve Weiner; pp. 255-267), and “Prospects and problems in the use of hyperspectral imagery for archaeological remote sensing: a case study from the Faynan copper mining district, Jordan” (Stephen H. Savage, Thomas E. Levy, Ian W. Jones; pp. 407-420).

From *Journal of Archaeological Science* (2011, Vol. 38, No. 12) comes “Direct chronometry (¹⁴C AMS) of the earliest copper metallurgy in the Guadalquivir Basin (Spain) during the Third millennium BC: first regional database” (F. Nocete, R. Sáez, M. R. Bayona, A. Peramo, N. Inacio, D. Abril; pp. 3278-3295), “Archaeo-environmental study of the *Almas* river: mining pollution and the *Cerrado* biome in the end of the nineteenth century in Mid-Western, Brazil” (Diogo M. Costa; pp. 3497-3504), and from (2011, Vol. 38, No. 5) “The function of Chalcolithic metalwork in Italy: an assessment based on use-wear analysis” (Andrea Dolfini; pp. 1037-1049), “Lead isotope analyses of gold-silver ores from Roşia Montană (Romania): a first step of a metal provenance study of Roman mining activity in *Alburnus Maior* (Roman Dacia)” (S. Baron, C. G. Tămas, B. Cauuet, M. Munoz; pp. 1090-1100), and (2011, Vol. 38, No. 4) “Ancient bronze technology and nomadic communities of the Middle Gobi Desert, Mongolia” (Jang-Sik Park, William Honeychurch, Amartuvshin Chunag; pp. 805-817), and from (2011, Vol. 38, No. 3) “Inscriptions, filing, grinding and polishing marks on the bronze weapons from the Qin Terracotta Army in China” (Xiuzhen Janice Li, Marcos Martín-Torres, Nigel D. Meeks, Yin Xia, Kun Zhao; pp. 492-501), and “Condemned to *metallum*? The origin and role of 4th–6th century A.D. Phaeno mining camp residents using multiple chemical techniques” (Megan A. Perry, Drew S.

Coleman, David L. Dettman, John P. Grattan, Abdel Halim al-Shiyab; pp. 558-569).

From *Journal of Archaeological Science* (2011, Vol. 38, No. 2) “The iron anchors from the *Tantura F* shipwreck: typological and metallurgical analyses” (M. Eliyahu, O. Barkai, Y. Goren, N. Eliaz, Y. Kahanov, D. Ashkenazi; pp. 233-245), “Early medieval origins of iron mining and settlement in central Sweden: multiproxy analysis of sediment and peat records from the Norberg mining district” (Richard Bindler, Ulf Segerström, Ing-Marie Pettersson-Jensen, Anna Berg, Sophia Hansson, Harald Holmström, Karin Olsson, Ingemar Renberg; pp. 291-300), “Quantification of slag heap volumes and masses through the use of induced polarization: application to the Castel-Minier site” (Nicolas Florsch, M. Llubes, F. Téreygeol, A. Ghorbani, P. Roblet; pp. 438-451), and from (2011, Vol. 38, No. 1) “Severe lead contamination among children of samurai families in Edo period Japan” (Tamiji Nakashima, Koji Matsuno, Masami Matsushita, Takayuki Matsushita; pp. 23-28).

From *Archaeometry* (2012, Vol. 54, No. 3) comes “Archaeometallurgical Characterization of Hellenistic Metal Objects: The Contribution of the Bronze Objects from Rishon Le-Zion (Israel)” (D. Ashkenazi, N. Iddan, O. Tal; pp. 528-548), and from (2012, Vol. 54, No. 1) “Identification of Forgeries by Measuring Tin Isotopes in Corroded Bronze Objects” (D. Nickel, M. Haustein, T. Lampke, E. Pernicka; pp. 167-174), and “Ancient Egyptian Black-Patinated Copper Alloys” (W. Mohamed, S. Darweesh; pp. 175-192).

From *Antiquity* (2012, Vol. 86, No. 331) comes “Book Review: Abdolrasool Vatandoust, Hermann Parzinger & Barbara Helwing (ed.). *Early mining and metallurgy on the western Central Iranian Plateau: the first five years of work* (Archäologie in Iran und Turan 9). viii+728 pages, 734 colour illustrations, 86 tables. 2011. Mainz: Philipp von Zabern for Eurasien-Abteilung des Deutschen Archäologischen Instituts Aussenstelle Teheran; 978-3-8053-4342-8 hardback € 94.90.” (Cameron Petrie; pp. 266-267), and from (2011, Vol. 85, No. 330) comes “Miners and mining in the Late Bronze Age: a multidisciplinary study from Austria” (Jörg Schibler, Elisabeth Breitenlechner, Sabine Deschler-Erb, Gert Goldenberg, Klaus Hanke, Gerald Hiebel, Heidemarie Hüster Plogmann, Kurt Nicolussi, Elisabeth Marti-Grädel, Sandra Pichler, Alexandra Schmidl, Stefan Schwarz, Barbara Stopp and Klaus Oeggel), “The deposition of bronzes at Swiss lakeshore settlements: new investigations” (Viktoria Fischer; pp. 1298-1311), “A symbol — but of what? Iron Age daggers, Alessi corkscrews and anthropoid embellishment reconsidered”

(Jack Carlson; pp. 1312-1324), and “New light on the early Islamic West African gold trade: coin moulds from Tadmekka, Mali” (Sam Nixon, Thilo Rehren, Maria Filomena Guerra; pp. 1353-1368).

From *X-Ray Spectrometry* (2012, Vol. 41, No. 3) comes “Nondestructive method for the calculation of bulk material composition by X-ray fluorescence, using surface analysis on corroded bronze objects” (Gheorghe Niculescu, Migdonia Georgescu, Ioan Sârghie; pp. 150-155), and “Energy dispersive X-ray fluorescence analysis of archeological metal artifacts from the Final Bronze Age” (C. E. Bottaini, A. L. M. Silva, D. S. Covita, L. M. Moutinho, J. F. C. A. Veloso; pp. 144-149).

From *X-Ray Spectrometry* (2011, Vol. 40, No. 4) comes “Inclusions and metal composition of ancient copper-based artefacts: a diachronic view by micro-EDXRF and SEM-EDS” (Elin Figueiredo, Pedro Valério, M. Fátima Araújo, Rui J. C. Silva, António M. Monge Soares; pp. 325-332), and from (2011, Vol. 40, No. 3) comes “The metal alloy of the boy of Xanten” (A. Denker, Z. Kertesz, U. Peltz; pp. 215-218), and from (2011, Vol. 40, No. 2) comes “EDXRF analysis of metal artefacts from the grave goods of the Royal Tomb 14 of Sipán, Peru” (A. Galli, L. Bonizzoni, E. Sibilgia, M. Martini; pp. 74-78), and from (2011, Vol. 40, No. 1) comes “Portable equipment for a non-destructive analysis of pre-Columbian metal artefacts from the Royal Tombs of Sipán by energy-dispersive x-ray fluorescence spectrometry” (R. Cesareo, A. Bustamante, J. Fabian, C. Calza, M. Dos Anjos, R. T. Lopes, W. Alva, L. Chero, M. Espinoza, R. Gutierrez, R. Rodriguez, M. Seclen; pp. 37-46).

From *Historical Metallurgy* (2011, Vol. 45, Part 1) comes “Smithing at the priory of Lavinadière, Corrèze, France, 13th and 16th centuries” (Nadine Dieudonné-Glad, Patrice Conte; pp. 1-7), “From laboratory to field experiments: shared experience in brass cementation” (David Bourgarit, Nicolas Thomas; pp. 8-16), “Examination of an 18th-century English anchor from Puerto Deseado (Santa Cruz province, Argentina)” (N. C. Ciarlo, H. De Rosa, D. Elkin, H. Svoboda, Cristina Vázquez, D. Vainstüb, L. Diaz Perdiguero; pp. 17-25), “Some preliminary observations on hammerscale and its implications for understanding welding” (Tim Young; pp. 26-41), “Issues in the introduction of tonnage steel in the United States, 1867-1883” (Robert Gordon; pp. 42-51), and “The colour of copper alloys” (Jui-Lien Fang, Gerry McDonnell; pp. 52-61), while from *Geoarchaeology* (2011, Vol. 26, No. 2) comes “Sino-Kharosthi and Sino-Brahmi coins from the silk road of western China identified with stylistic and mineralogical evidence”

(Jiann-Neng Fang, Bing-Sheng Yu, Cheng-Hong Chen, David Teh-Yu Wang, Li-Ping Tan; pp. 245-268).

Forthcoming Meetings and Conferences

The *Historical Metallurgy Society (HMS)* will hold its 'Anniversary' Spring Meeting and Annual General Meeting (AGM): Furnaces, Foundries and Forges: Ironmaking Heritage Revisited, Friday to Sunday, 25-27 May, 2012, in Birmingham, England. The ferrous industries were central to the origins of HMS in 1962-3, and fifty years later they return to the historical heart of the English iron industry to review progress in research, conservation and interpretation since then. This residential meeting will echo the focus of early HMS gatherings. There will be site visits, which will include a visits to archaeological excavations and standing remains of blast furnaces, forges and other sites in Staffordshire, Worcestershire and Shropshire, a visit to the Churchill Forge, a rarely-open operational 18th and 19th century water-powered forge, and a visit to the excavation of early 19th-century hot blast furnace and refinery at Stirchley.

There also will be behind-the-scenes tours, which will include seeing the Black Country Living Museum with a guided tour of the Keith Gale archive, and seeing the Ironbridge Gorge Museum with a guided tour of the HMS archives and the Slag Collections. Of course there also will be lecture presentations including: Medieval and later ironworking practice; origins and conservation of blast furnaces; new research into forges and puddling technology; hot blast and the cupola, and more.

Accommodation and lectures will be at the [Woodbrooke Hall Quaker Study Centre](#), Bristol Road, Birmingham. Lectures will take place on Friday and Saturday evenings at Woodbrooke. Coach transport to sites will be provided on Saturday and Sunday. The fully residential option (priced at £195.00 for HMS members) includes evening meals and overnight accommodation on Friday and Saturday, breakfast on Saturday and Sunday, and packed lunches. FULLY RESIDENTIAL PLACES ARE STRICTLY LIMITED, SO PLEASE BOOK EARLY! Download the Booking Form in [MSWord](#) or [Adobe Acrobat](#) format. Other options also are available. These include a basic non-residential option at £35.00 for members, and an option with meals and other benefits at £75.00 for members. All options include coach transport and admission to sites. There will also be a limited number of FREE (non-residential) student places. It will of course be free for all members to attend the AGM, which will take place at 6pm on Saturday, 26 May, 2012, at Woodbrooke. The full range of options and prices is

shown on the booking form. All bookings must be received by 29 February, 2012. More information is available on the HMS website: <http://hist-met.org/agm2012.html>, or at the conference blogsite: <http://hmsanniversary.blogspot.com/>.

Previous Meetings and Conferences

The morning workshop *Techniques, échanges, pollutions: l'éclairage de l'étude des métaux* [Techniques, trade, pollution: Illuminating the study of metals] was held January 28, 2012 at the Auditorium de la Cité des Sciences et de l'Industrie, Paris, France. Following an introduction by Philippe Fluzin, presentations included "Études sur la production, la circulation et la datation des métaux ferreux archéologiques" (Philippe Dillmann, Stéphanie Leroy), "Commerce et techniques métallurgiques : les laitons mosans dans le marché européen au Moyen Âge (XIII^e-XVI^e siècles)" (Nicolas Thomas, David Bourgarit, Marie Verbeek, Jean Plumier), "Métallurgie des métaux non-ferreux et paléopollutions : apports de la géochimie isotopique" (Sandrine Baron), "Les secrets de la statue de Septime Sévère du musée du Cinquantenaire à Bruxelles" (Cécile Evers, Emmanuelle Pons), and "Quelques apports récents du rayonnement synchrotron à l'étude des métaux anciens" (Loïc Bertrand, Marie-Angélique Languille). Abstracts and videos of the presentations can be found at this link: <http://www.inrap.fr/archeologie-preventive/Ressources-multimedias/Conferences-et-colloques/p-13912-1g0-L-archeologie-au-laboratoire-htm>.

The 7th *Congress of the Associazione Italiana di Archeometria (A.I.Ar.)* was held from February 22-24, 2012 in Modena, Italy. There were several oral and poster presentations on archaeometallurgy in sessions at the conference including "Non-invasive Characterization of Eneolithic Arsenic Rich Metal Artefacts Through Time of Flight Neutron Diffraction (ToF-ND) and Neutron Resonance Capture Analysis (NRCA)" (E. Barzagli, F. Grazzi, A. Scherillo, P. Pallecchi, A. Vigliardi, A. Pietropaolo, G. Festa, M. Zoppi), "Quantitative Characterization of Japanese Ancient Swords Through Energy Resolved Neutron Imaging" (F. Salvemini, F. Grazzi, S. Peetermans, F. Civita, R. Franci, S. Hartmann, E. Lehmann, M. Zoppi), "Characterization of the Nuragic Ornaments from Monte Prama (Cabras, Oristano)" (I. Angelini, G. Artioli), "The Medieval Mint of Montieri (Tuscany): First Results from an Archaeometallurgical Survey in the Colline Metallifere District" (L. Chiarantini, M. Benvenuti, G. Bianchi, J. Bruttini, V. Calossi, A. Dini, F. Grassi, S. Guideri, G. Silvestri), "Final Bronze Age Copper Slags from Luserna (Trentino,

Italy)" (A. Addis, I. Angelini, G. Artioli), "Metodi Innovativi per la Conservazione dei Bronzi Dorati" (A. Balbo, E. Bernardi, C. Chiavari, S. Goidanich, D. Gulotta, C. Martini, A. Mencaglia, C. Monticelli, S. Siano, A. Vicenzo), "Deposizioni Metalliche del Bronzo Finale/Ferro Iniziale del Portogallo Settentrionale. Il Ripostiglio di Viatodos (Braga)" (C. Bottaini), "Metallurgical Investigation of a Celtic Bronze Helmet of the II-I Century BC" (S. Campodonico, M. Pernot, P. Piccardo, V. Bongiorno, M. Maddalena Carnasciali), and "Imaging X, Fluorescenza X e Diffrazione per lo Studio di Reperti Archeologici Metallici di Scavo" (O. Tarquini, M. Colapietro). Abstracts for the papers can be found at the following link: <http://www.aiar2012.unimore.it/wp-content/uploads/2012/01/Aiar12completo.pdf>.

The **9th International Mining History Congress (IMHC)**, was held from April 17-20, 2012, in Johannesburg, South Africa. The International Mining History Congress brings together practitioners of mining history in all of its forms to exchange recent research findings. Papers were invited from academics, amateur historians, former and present employees of the mining industry, government officials, and conservationists, archivists and curators. This is the first time the congress has been held in Africa. The continent has a long history of mining, one that, especially in the case of diamonds and gold, had considerable impact on the world's economy, engineering and labor relations. From its pre-colonial past to its post-colonial present, African mining has departed from practices elsewhere, whilst also sharing much that is common. This combination of the unique and the universal will contribute to the character and success of the congress.

Papers presented at the conference, which had a strong recent historic emphasis, included "The history of mining in the Barberton greenstone belt" (Carl R. Anhaeusser), "The Okiep copper district, Namaqualand: European's earliest mining efforts in South Africa" (Bruce Cairncross), "A focus on Mining Heritage and Cultural Tourism in Ireland" (Martin Critchley), "Laboratory Analysis Reveals Direct Evidence of Precolonial Gold Recovery in the Archaeology of Zimbabwe's Eastern Highlands" (Ann Kritzinger), "California in the Sauerland - Gold rush phenomenon and industrial take-off of ore mining in a rural region of Germany in the 19th century" (Jan Ludwig), "Transforming Relations of and in Production: Technology, Power, Productivity and Social Interaction in the Course of South African Gold Mining History Over the Twentieth Century" (Dunbar Moodie), "Miner-Farmer Struggles and the Rise of Conservation Practices in Colonial Zimbabwe, 1940-1961" (Mucha Musemwa), "Managing the Mines: Production Rationale

of the Entrepreneurs in Jharia Coalfields 1890s -1960s" (Dhiraj Kumar Nite), "Industrial Heritage Preservation in the Ruhr Region of Germany" (Kathrin Oerters), "Gold Mining Heritage In India: Legacy Of Kolar Gold Fields, Karnataka, India" (A. Santharam), "The 'light infantry of capital': The migration of miners from south west Britain to Latin America in the early nineteenth century and the rise of the modern global mining economy" (Sharron Schwartz), "The Validation of Historic Gold Mine Locations, Giyani Greenstone Belt, South Africa" (N.C. Steenkamp, V. Clark-Mostert, P.W.J. Delport), "Inferred Historic Gold Mining Approaches, Giyani Greenstone Belt, South Africa" (N.C. Steenkamp, V. Clark-Mostert, P.W.J. Delport), "The Impact of Illegal Miners at Historic Gold Mine Locations, Giyani Greenstone Belt, South Africa" (N.C. Steenkamp, V. Clark-Mostert, P.W.J. Delport), "'Wages are but the Expression of Time': The Foundational Role of Labour Time in Gold Mines: 1886-2006" (Paul Stewart), "Shares, Shafts and Scoundrels: the Early Financial History of the Witwatersrand Gold Mining Industry" (Ian Phimister), "Alluvial Placer Gold Mining In India Through Ages: A Historical Perspective" (R.K. Dube), and "Community Formation in Australian Mining Towns, 1880 to 1980" (Erik Eklund). Abstracts for these and more of the conference presentations can be found at the following link: <http://www.imhc.co.za/abstracts-and-papers.php>.

The **77th Annual Meeting of the Society for American Archaeology (SAA)** was held April 19-22, 2012, in Memphis, Tennessee. A number of papers and posters relating to historic and ancient mining, metallurgy, and metal and metallic mineral use were presented. These included "Craft Production, Identity and Place-Making in the Jequetepeque Valley of Peru" (Aleksa Alaica), "Northern Iroquoian Use of Copper-base Metal in the Early and Middle Contact Periods" (Lisa Anselmi), "Colour and choice in raw material procurement in the Maritime Peninsula of the Northeast" (Susan Blair, Tricia Jarratt), "From the Edge to the Middle, The Onondaga Iroquois in 1550 and 1675" (James Bradley), "Hidden from View: The Story of an Early Sixteenth Century Iron Tool in Eastern North America" (Andrea Carnevale, Ronald Williamson, Martin Cooper, Jennifer Birch), "The Introduction of Piece-mold Casting in Bronze Age Southeast Asia: a case study of a regionalized technological transfer" (TzeHuey Chiou-Peng).

More presentations included "West Mexican Metal and Obsidian at Maya Sites at Lake Mensabak, Chiapas, Mexico, in the Late Postclassic to Contact Periods" (Rebecca Deeb), "Redstone, Shell, and Copper/Brass in Late Prehistoric and Protohistoric Fort Ancient Contexts" (Penelope Drooker), "Metals in Motion? Native Copper

and European Copper-base Metals in the 17th Century Protohistoric North American Interior” (Kathleen Ehrhardt), “The Inca Road and the economic exploitation of the Atacama Desert” (Francisco Garrido), “Mississippian Ceremonialism in the Neosho River Valley of Northeastern Oklahoma” (Scott Hammerstedt, Sheila Savage), “A “Viking Age” Iron Smelt: Assessment of the Experimental Process through the Analysis of an Iron Bloom” (Susan Herringer, Alexander Smith, Ian Brownstein), “The Role of Metals on the Indus Civilization” (Brett Hoffman), “The Augustine Mound Copper Assemblage” (Tricia Jarratt, Susan Blair), “Evidence for Early Metallurgy in Mesoamerica: The Cerro del Teúl Context” (Peter Jimenez, Enrique Perez Cortez, Laura Solar Valverde), “Preliminary studies on the military rule in Southwestern China after the takeover by the Han Empire” (Lo Kei), “The mining boom of the 18th century and the transformation of the Yunnan-Burmese borderlands” (Nanny Kim), “Multi-crafting activities in bronze workshops of the Shang and Zhou dynasties” (WengCheong Lam), “Technological Innovation, Formation Processes, and Behavioral Archaeology: Applications for ancient metallurgy in Southern Jordan” (Thomas Levy), “Metallurgy and the Prestige System of the Tarascan State” (Blanca Maldonado), “Charcoal Blast Furnaces: the Early Iron Industry in Piedmont North Carolina” (J. May).

The research continued with “A Close-up Look at Two Early Woodland Copper Objects from West Virginia and Pennsylvania” (Mark McConaughy, Gretchen Anderson, Deborah Harding), “Compositional and Technological Analyses of Copper Artifacts from Four Heart River Communities: Chronological and Cultural Implications” (Mark Mitchell), “More Precious Than Money: Common Cents at L’Hermitage Plantation” (Shayla Monroe), “Far and Wide: Late Mississippian/Protohistoric Extraregional Interactions at the Mouth of the Wabash” (Cheryl Ann Munson, David), “Microstructure and trace element composition of Late Bronze Age gold work from Late Bronze Age burials in the Middle Volga (Samara, Russia, ca. 1800-1700 BC): Investigation of diffusion bonding and sources” (David Peterson, Pavel Kuznetsov, John Dudgeon, Bradley Paige, Monica Tromp), “Excavations in Aztalan’s Riverbank Midden: A Record of Material Culture” (Jennifer Picard), “The Bronze Age Landscape of Southwest Transylvania: Regional Patterning and Dynamics” (Colin Quinn, Horia Ciugudean), “Neutron Imaging of Archaeological Bronzes at Oak Ridge National Laboratory” (Krysta Ryzewski, Hassina Bilheux, Lakeisha Walker, Susan Herringer), “Metal working, ritualization and the rhythms of village life in Banda, Ghana” (Ann Stahl), “The source of turquoise from Offering 125 at the Templo Mayor” (Alyson

Thibodeau, Leonardo López Luján, Joaquin Ruiz, John Chesley, Giacomo Chiari), “Color and value in early colonial New Mexican mining and metallurgy” (Noah Thomas), “Technology Transfer and Social Inequality: Recognizing the Role of the Subaltern in Culture Change” (Mary Van Buren, Catherine Cameron), “Mining, Ritual, and Social Memory: Can place-names reveal ancient attitudes toward landscape?” (Hendrik Van Gijsegem, Verity H. Whalen), “Ritual Practice and Mining in Nasca” (Kevin Vaughn, Hendrik Van Gijsegem, Moises Linares Grados), and “On the formation and distribution of ochreous minerals in northern Malawi” (Andrew Zipkin, Alison Brooks). Abstracts for these papers can be found at: http://www.saa.org/Portals/0/SAA/Meetings/Abstracts/Abstracts_final.pdf.

Courses

The Archaeological Research Unit of the University of Cyprus is pleased to announce a five-day training course on the *Archaeometallurgy of Cyprus*. This training activity is organized in the framework of the New Archaeological Research Network for Integrating Approaches (NARNIA) to ancient material studies, a Marie Curie Initial Training Network, funded by the European Union. One-hour lectures will be delivered by Prof. James Muhly, Prof. Bernard Knapp, Prof. Edgar Peltenburg, Prof. Thilo Rehren, Dr. Vasiliki Kassianidou, Dr. George Pappasavvas, Dr. Roger Doonan, Dr. Anno Hein, Dr. Myrto Georgakopoulou, Dr. Erez Ben Yosef and Ms. Maria Socratous, followed by excursions to copper mines and ancient metallurgical and archaeological sites around the island. The main objective of this training course is to provide a thorough introduction to the history and archaeology of ancient Cypriot metallurgy and metalwork from the prehistoric to Roman times, as well as the techniques used for the study of archaeometallurgical remains. The course is open to interested researchers outside the NARNIA community and participation open to the public and **free** of charge. However, there is a maximum of 30 participants to you are kindly requested to express your interest in participating in this course as soon as possible as places are limited and will be allocated on a first-come, first-served basis. The host organization for the course is the Archaeological Research Unit, University of Cyprus, and coordinated by Vasiliki Kassianidou and George Pappasavvas. The dates run from 7-11 May, 2012, and the location is at the Archaeological Research Unit, University of Cyprus, 12 Gladstonos Street, 1095 Nicosia, Cyprus. The contact person for the course is: Maria Dikomitou Eliadou, email: m.dikom@ucy.ac.cy. A detailed program for the training course will be

announced on the NARNIA website in the near future (<http://narniaitn.eu/training-courses/>).

Obituaries

Professor Beno Rothenberg (1914-2012)



It is with great sadness that the Institute for Archaeo-Metallurgical Studies (IAMS) announces the passing of the Institute's founder and greatest contributor, Professor Beno Rothenberg, on the 13th of March at the age of 98.

Professor Beno Rothenberg, acclaimed photographer of the emerging state of Israel, self-taught scholar and founding father of archaeometallurgy, was one of only a handful of scientists who between them revolutionized the way in which we study and understand the production of metal prior to the Industrial Revolution. He pioneered the fusion of traditional archaeological and science-based approaches which later came to be known as archaeometry, with a strong emphasis on painstaking data gathering and photographic documentation in the field, chemical and mineralogical analysis of the archaeological remains unearthed, and visionary, if sometimes contentious interpretation of his observations. While his interests went well beyond the beginnings of mining and metallurgy, these are where he left his strongest legacy, not least through coining the very term 'archaeometallurgy', now used world-wide for the study of ancient metals and their production using scientific methods, and through establishing, directly and indirectly, two of the leading academic schools in this field.

Born into a well-educated and wealthy family in Frankfurt shortly after the beginning of the Great War, he

grew up during the turbulent inter-war years before the family left Germany for Israel in 1933, when he was 19. At this time, he had a keen interest in mathematics, which he hoped to pursue as an academic career; however, a few years later he was drafted into the Jerusalem unit of the Hagana. During World War II he served in the meteorological service of the British Royal Air Force in Egypt. The Israeli Independence War saw him attached to an armored brigade under Yitzhak Sadeh, one of the founders of the Israel Defense Forces, taking photographs of major operations as well as providing routine documentation. He must have been very good at this, setting him on a path which would soon make him one of the foremost photojournalists and editors of photographic albums of the young country. During this time, he still spent much time at university, not so much for a utilitarian degree, but as an outsider, absorbing whatever knowledge and inspiration he came across.

His interest in archaeology probably grew out of his intense sense of observation when photographing landscapes; here, he noticed rock drawings and other prehistoric remains often overlooked by others. A decisive phase for his future career was to be the time he spent in the 1950s with Nelson Glueck, the American rabbi and archaeologist, as his photographer. Glueck had a keen interest in biblical archaeology, while Rothenberg had never found the deep religious faith of his family; and matters of religion were not the only ones they disagreed on. In any event, Glueck's search for 'King Solomon's mines' in the southern Negev launched Rothenberg's second major career, in that he used his critical mind to question Glueck's a priori association of a landscape and its archaeological remains to a historical narrative, by giving priority to testable facts and unbiased deduction. While dispelling the myth about King Solomon's copper mines, he discovered something much bigger – the vast ancient industrial landscape around Timna, with remains of thousands of mines and smelting sites. Timna remained at the centre of his attention for the rest of his life.

On August 15th in 1959, the "Frankfurter Allgemeine", a leading German newspaper, published an article by Beno Rothenberg under the title "König Salomons Kupfergruben" (King Solomon's Copper Mines). Ten years later, Rothenberg's surveys and trial excavations in the Timna area had revealed sensational results and finds. Much regretted by Israeli archaeologists, deprived by his work of apparent facts of Biblical evidence, his research and dates indicated that the Southern Negev was no longer the site of King Solomon's mines and smelters, but witness of successful Egyptian expeditions and activities, dating to the 11th/12th century BC (i.e., the Egyptian New Kingdom), on territories which are now part of Eretz

Israel. His new discoveries were exhibited in the British Museum in 1971 under the cautious heading: "Timna; Valley of the Biblical Copper Mines".

In addition to the work at Timna, Rothenberg still found the time and energy to initiate and lead the huge 'Arabah Expedition', an archaeological and archaeometallurgical exploration program in the central and southern Sinai, which run from 1967 to 1979, while Israel was in control of that area. As a result, a completely new picture of the archaeology of the Sinai was revealed, although much of the detail remains to be published.

So far, much of his research had been done by Rothenberg almost single-handedly. The obvious significance of his work finally led to his affiliation with academic institutions in Britain and Germany, most notably the Institute of Archaeology in London (now part of UCL) and the Mining Museum in Bochum (now the German Mining Museum). Rothenberg's impressive achievements and persuasive nature enabled him to enlist substantial support from both industry and academia; in 1973 he founded the Institute for Archaeo-Metallurgical Studies, together with the eminent archaeologist Sir Mortimer Wheeler, emeritus professor of the Institute of Archaeology, the chairman of Rio Tinto Zinc, Sir Val Duncan, Professor Ronald Tylecote, one of the founders of the Historical Metallurgy Society and a fellow honorary member of the Institute of Archaeology, the metal merchant turned philanthropist Sir Sigmund Sternberg, and others. From the beginning, IAMS was closely affiliated with the Institute of Archaeology, where Rothenberg established the first taught and research program for archaeometallurgy at any university, worldwide. At the same time, he realized that the sheer scale and the extreme challenges of his excavations in Timna required the involvement of a serious partner with access to substantial funding and expertise in mining technology. A few years earlier, Hans-Gert Bachmann, a German mineralogist who shared his interest in early metallurgy and archaeology, had approached Rothenberg to work with him on the study of slag, the waste left from ancient metal smelting. Bachmann put him in contact with the Mining Museum in Bochum under Hans Günter Conrad, who immediately seized the opportunity to send a team of mining experts and archaeologists to join Rothenberg's Timna-Arabah Expedition. For several years, this proved a most fruitful collaboration, generously funded by the German Volkswagen Foundation, and laid the foundation for the museum's recognition as a research centre of international significance. Based on the experience gained here, the German Mining Museum subsequently developed its own long-term excavations in Feinan / Jordan and in Oman, both textbook projects of

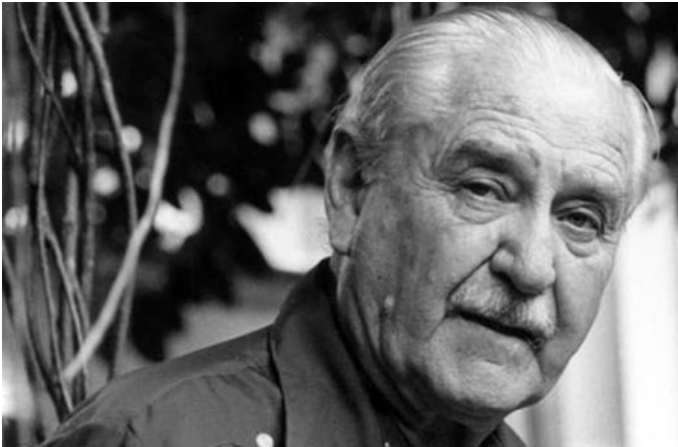
archaeometallurgical research directly influenced by Rothenberg's earlier and ongoing work in Timna.

However, Rothenberg's interests were by no means restricted to Israel. In 1968, he joined the American diplomat and amateur archaeologist Theodore Wertime and a few other eminent scholars on a long reconnaissance journey through Turkey, Iran and Afghanistan in search of the origins of pyrotechnology, where he contributed his skills with the camera as well as his experience from the work in Timna and the Arabah. Later, he pursued a major project in Spain, where he worked on the important Phoenician and Roman silver production sites at Rio Tinto near Huelva, again funded by the Volkswagen Foundation.

Importantly, and in contrast to other scholars of his generation who shared his cross-disciplinary interest, he managed to inspire a number of students who went on to become professionals in the field he helped to establish, thus securing his legacy. This is even more remarkable since he never held a formal position at an academic institution and had no formal clout to help him secure funding or positions for his students, who now teach in the UK, Cyprus, Spain, the US and Germany. His professorship at the Institute of Archaeology was an honorary one – but this allowed him to continue his work in the Arabah Valley, and to follow his love of teaching and working with young people until he was in his early 90s, unaffected by retirement rules and the research performance pressures now prevalent in academia. He gave his last lecture in Prague in 2008, aged nearly 94, to an admiring audience. He continued to work on his academic publications even longer, and even though some of the detail of his work remains contentious, he was no doubt one of the very few outstanding scholars who managed to establish their own field of research, and not only to excel in it, but to successfully pass on the baton to a firmly established second and third generation of academics.

On 13 March 2012, Beno Rothenberg, born 23 October 1914 in Frankfurt, Germany, died in Ramat Gan at the Biblical age of 97. His beloved son pre-deceased him in 1993, and he is survived by a daughter from his first marriage, his estranged second wife and their daughter, and his partner of 37 years. He has left this legacy for us: to continue where he had begun.

Slightly edited version (T.Fenn) by Thilo Rehren, with contributions by Hans-Gert Bachmann and Tim Shaw. Published in The Times on Tuesday April 3, 2012, p. 45. Taken from: http://www.ucl.ac.uk/iams/iams-news-publication/rothenberg_obituar

Dr. Alberto Rex González (1918-2012)

Dr. Alberto Rex González, born on November 16, 1918 in Pergamino, Buenos Aires province, Argentina, passed away on March 28, 2012. He was a physician, anthropologist, philosopher, archaeologist and human rights defender. He also was the Director of the Museo Etnográfico of the University of Buenos Aires and of the Museo de Ciencias Naturales de La Plata. His passion for the past began in Pergamino observing paleontological pieces during his early years. Reading the works of Florentino Ameghino and Darwin changed his mind to evolutionism. Already a doctor, he decided to study archaeology and obtained his doctorate from Columbia University where he begun to think that Argentine archaeology had to change from ethnohistory to scientific history, and noted that “without chronology there is not history”. In the 1950’s, he created a Carbon 14 laboratory, with the Nobel prize winner Bernardo Houssey from CONICET, at the Museum of Natural Sciences of La Plata. He was professor at several universities, participated as researcher in expeditions all over the world, authored more than one hundred books, was a UNESCO consultant, winner of prizes, and father, grandfather and great grandfather.

As a researcher at the Museo of La Plata during the 1970’s he was fired by the military dictatorship and accused of “science subversive support” to which he responded that “science is always asking, it is against fundamentalism”. He demonstrated notable interest in archaeometallurgy and initiated cooperative work with metallurgist, physicist and chemist in this field. He was the first to study archaeometallurgy in Northwest Argentina, giving high relevance to the scientific analysis of objects. During the 1950’s he affirmed that the bronzes from this region were similar to those from other Andean places. He had a singular passion for bronze plates and in 1992 wrote a book “*Las placas metálicas de los Andes*

del Sur”. During his last years he was still interested in Northwest Argentinean metal objects and emphasized that the metallurgical activities had an important place in the dynamics of Prehispanic societies. His brain was an itinerant library. Once he was asked: “Is it true that if you were born again you would be an archaeologist?” “Without a doubt”, he answered.

This is as edited version (T.Fenn) of one posted to the Arch-Metals Group listserve on behalf of Edgardo D. Cabanillas [cabanill@CNEA.GOV.AR], on Wednesday April 11, 2012.

REMOTE SENSING AND PROSPECTION

<i>Apostolos Sarris, Associate Editor</i>

PoSIHRATraining School: Potential of Satellite Images & Hyper-/Multispectral Recording in Archaeology, Poznan, Poland, July 30th - August 4th, 2012. The Training School is targeting MA and PhD archaeology students working on archaeological landscape studies. The main aim of PoSIHRA will be to understanding of practical methods for data capture, processing algorithms and formal analysis of the results, as well as how remote sensing can be used to develop appropriate archaeological inferences. The course considers space-borne sensors: satellite images and hyper-/multispectral data. The course is taught using a combination of lectures and practical sessions. For more information: <http://archo.amu.edu.pl/posihra>

ARCH_RNT: Archaeology Research and New Technologies, Kalamata, Greece, October 3-6, 2012. The Symposium focuses on the use of New Technologies (Archaeometry, Computing Technology, Conservation and Restoration) in the Archaeological Research, notably with the presentation of interdisciplinary approaches, special case studies and research of archaeological materials and assemblages. The special topic of the conference will be devoted on GIS applications for field archaeology and cultural heritage management. Submission deadline is on September 1, 2012. For more information: <http://kalamata.uop.gr/~Archaeolab>

International Aerial Archaeology Conference. AARG 2012, Budapest, Hungary, September 13-15, 2012. The conference is organized by the Aerial Archaeology Research and Eötvös Loránd University, Budapest, Hungary. Proposals for papers, posters and sessions are invited until May 31, 2012. Students and young researchers’ bursaries are available to support bona fide students and young researchers who are interested in

aerial archaeology and wish to attend the conference. For more information: <http://aarg2012.elte.hu/>

17th International Conference on Cultural Heritage and New Technologies, Vienna, Austria, November 5-7, 2012. The Urban Archaeology of Vienna (Stadtarchäologie Wien) would like to invite to give a lecture or/and to present a poster or video clip at the 17th International Conference on Cultural Heritage and New Technologies. The main topic of the conference is on Urban Archaeology and Excavation (Reach and Unveil the Hidden Spirit of the Town). Deadline for the submission of papers & posters is June 1, 2012. For more information: <http://www.stadtarchaeologie.at/>

Euromed 2012: 4th International Euro-Mediterranean Conference, Limassol, Cyprus, October 29-November 3, 2012. Euromed 2012, the 4th International Euro-Mediterranean Conference will take place in Cyprus, October 29 to November 3, 2012. The event is being held in cooperation with the European Commission and will investigate cultural heritage (CH) research and practice. The 4th EuroMed2012 brings together researchers, policy makers, professionals, fellows and practitioners to explore some of the more pressing issues concerning cultural heritage today. In particular, the main goal of the conference is to focus on interdisciplinary and multi-disciplinary research on tangible and intangible CH, the use of cutting edge technologies for the protection, restoration, preservation, massive digitalization, documentation and presentation of the CH content. At the same time, the event is intended to cover topics of research ready for exploitation, demonstrating the acceptability of new sustainable approaches and new technologies by the user community, managers and conservators of cultural patrimony.

Those researchers who wish to participate in this event are invited to submit (until 28 May 2012) papers on original work addressing the following subjects or related themes in the following two categories: I. Protection, Restoration, & Preservation of Tangible & Intangible CH, II. Digital Heritage Documentation & Presentation. For more information: <http://www.euromed2012.eu>

10th International Conference on Archaeological Prospection, Vienna, Austria, May 29th-June 2nd, 2013. The 10th International Conference on Archaeological Prospection will be organized by the International Society for Archaeological Prospection (ISAP) and the Aerial Archaeology Research Group (AARG) at the Austrian Academy of Sciences in Vienna. The conference aims to provide a forum for the presentation and discussion of latest developments and cutting-edge research in the field

of archaeological prospection. It shall cover the entire spectrum of methodology and technology applied to the detection, localization and investigation of buried cultural heritage (aerial photography, airborne laser scanning, hyperspectral imaging, near-surface geophysics, data processing, visualization and archaeological interpretation). The focus shall be on integrative approaches exploiting the diversity of all data and information necessary for the visualization and interpretation of archaeological and historical monuments, structures and entire archaeological landscapes.

This scientific and social venue will provide a meeting place for young researchers and experienced professionals in the field of archaeological prospection. We welcome high-level contributions from all over the globe - and beyond. The first call for papers will be issued in June 2012. For more information: <http://ap2013.univie.ac.at>

UPCOMING CONFERENCES

Rachel S. Popelka-Filcoff, Associate Editor

2012

28 May- 1 June. International Symposium on Archaeometry. Leuven, Belgium. General information: <http://ees.kuleuven.be/isa2012/>



29-20 May. Sustainability and Heritage: How Can the Past Contribute to a Sustainable Future? International Conference: Orkney College, University of the Highlands and Islands, Kirkwall, Scotland. General information: <http://www.envarch.net/events/index.html>

5-8 June. Association of Critical Heritage Studies: Inaugural Conference. Gothenburg, Sweden. General information: <http://www.worldarchaeologicalcongress.org/events>

6-8 June. SR2A: Synchrotron Radiation in Art and Archaeology, New York, NY, USA. General information: <https://www.bnl.gov/sr2a/>

6-9 June. 2nd International Landscape Archaeology Conference, Berlin, Germany. General information: <http://www.geo.fu-berlin.de/geog/fachrichtungen/physgeog/lac2012/>

6-10 June. The 5th World Conference of the Society of East Asian Archaeology, Fukoka, Japan. General information: <http://scs.kyushu-u.ac.jp/seaa5/news/index.html>

9-13 July. 21st International Radiocarbon Conference, Paris, France. Special session on Statistical Tools. General information: <http://www.radiocarbon2012.com/>

19-22 June. HERITAGE 2012 3rd International Conference on Heritage and Sustainable Development. Porto, Portugal. General information: <http://www.heritage2012.greenlines-institute.org/>

18-23 June. Advancing Method, Enhancing Understanding: Technique and Narrative in Archaeomalacology. Cairns, Queensland, Australia. General information: <http://www.archaeomalacology.com/cairns2012.html>

24-29 June. Goldschmidt 2012. Montreal, Canada. General information: <http://www.goldschmidt2012.org/>

7-11 July. The 49th Clay Minerals Society Annual Meeting. Golden, CO, USA. General information: <http://www.clays.org/annual%20meeting/announcement.html>

8-13 July. 8th International Conference Easter Island and the Pacific: Living in Changing Island Environments. Santa Rosa, CA, USA. General information: <http://islandheritage.org/wordpress/>

2-10 August. 34th International Geological Congress. Brisbane, Australia. General information: <http://www.34igc.org/>

6-10 August. 61th Annual Denver X-Ray Conference. Denver, CO, USA. General information: <http://www.dxcicdd.com/>

19-23 August. 244th National Meeting and Exposition, American Chemical Society. Philadelphia PA, USA. General information: http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_MULTICOLUMN_T5_33&node_id=737&use_sec=false&sec_url_var=region1&uuid=354de76c-9d58-41b3-8e5d-5426c928a0fa

20-24 August. 12th International Paleolimnology Symposium, Glasgow, UK. General information: <http://www.paleolim.org/index.php/symposia/>

20-24 August. International Symposium on Chert and Other Knappable Materials.

27-31 August. Geomorphic Processes and Geoarchaeology: From Landscape Archaeology to Archaeotourism. Moscow, Russia. General information: <http://geomorphology.ru/images/upload/newsfond156/180.pdf>

29 August- 1 September. European Association of Archaeologists. Helsinki, Finland. General information: <http://www.eaa2012.fi/index>

5-7 of September. 2nd Luminescence in Archaeology International Symposium. Lisbon, Portugal. General information: <http://www.lais2012.itn.pt/>

30 September -4 October. (SCIX) Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) Meeting. Kansas City, MO, USA. General information: <http://scixconference.org/scix2012.html>. Special session: "Chemical Analysis in History and the Arts"

1-4 October. Joint Australasian Society for Historical Archaeology/ Australasian Institute for Maritime Archaeology Conference 2012, Fremantle, Australia. General information: <http://www.asha.org.au/conference/>

28-29 October. 3rd Balkan Symposium on Archaeometry "The Unknown Face of the Artwork", Bucharest, Romania. General information: <http://www.icom-cc.org/51/news/?id=180>

29 October- 2 November. 18th International Conference of Ethiopian Studies, Dire Dawa, Ethiopia. General information: <http://ices18.org/site/>

4-7 November. The Geological Society of America National Meeting. Charlotte, NC, USA "Geosciences: Investing in the Future". General information: <http://www.geosociety.org/meetings/>

4-11 November. XVth International TICCIH Congress, Taipei, Taiwan. General information: <http://www.arch.cycu.edu.tw/TICCIH%20Congress%202012/congress-2.html>

10-12 November. Association for Environmental Archaeology, Autumn Conference -- Environmental Archaeologies of Neolithisation, University of Reading (UK). General information: <http://www.envarch.net/events/index.html>

11-14 November. American Anthropological Association 111th Annual Meeting. San Francisco, CA. General information: <http://www.aaanet.org/meetings/>

12-14 November. Dimensions of the Indian Ocean World Past: Sources and Opportunities for Interdisciplinary Work in Indian Ocean World History, Fremantle, WA, Australia. General information: http://www.warc.murdoch.edu.au/research/iow_conf.html.

14-17 November. American Schools of Oriental Research Annual Meeting. Chicago, IL USA. General information: <http://www.asor.org/am/index.html>

27-30 November. 13th Colloquium of the West African Association of Archaeology, Côte d'Ivoire General information: <http://www.aoaa-waaa.org/>

6-10 December. AGU Fall Meeting, San Francisco, CA USA. General information: <http://www.agu.org/meetings/>.

2013

9-13 January. Society for Historical Archaeology Conference and 46th Annual Conference on Historical and Underwater Archaeology, Leicester, England. General information: http://www.sha.org/meetings/annual_meetings.cfm



LEICESTER 2013

17-21 March. Pittcon Conference and Expo, Philadelphia, PA USA. General information: <http://www.pittcon.org/>

7-11 April. 245th National Meeting and Exposition, American Chemical Society. New Orleans, LA USA. General information: http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_MULTICOLUMN_T5_33&node_id=644&use_sec=false&sec_url_var=region1&_uuid=0c2e0f14-ad17-4117-b5d3-81e6024d4fbd

3-9 April. Society for American Archaeology. 78th Annual Meeting, Honolulu, HI USA. General information: <http://www.saa.org/Default.aspx?TabId=1419>

3-9 April. Paleoanthropology Society Meetings, held in conjunction with the Society for American Archaeology. Honolulu, HI, USA. General information: <http://www.paleoanthro.org/meeting.htm>

9-13 April. Association of American Geographers (AAG) Annual Meeting, Los Angeles, USA. General information: <http://www.aag.org/cs/annualmeeting>

9-13 April. American Association of Physical Anthropologists Annual Meeting. Knoxville, TN, USA. General information: <http://physanth.org/annual-meeting>

15-18 May. 36th Annual Meeting: Society of Ethnobiology. "Climate Change and Ethnobiology". Denton, TX USA. General information: <http://ethnobiology.org/conference/upcoming>

20-24 August. International Symposium on Chert and Other Knappable Materials, Romania. General information: <http://arheoinvestsymposium.uaic.ro/stone>

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