

narrative documents, it was hardly his last, his pursuit of the past taking him to Egypt, Jamaica, Haiti, and to shipwrecks in Bermuda. And he does not hide his disappointment at the loss of the Carter's Grove site and the Rockefeller Archaeology Museum.

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) Previous Meetings; 4) Forthcoming Meetings; 5) Courses; and 6) Web Resources

New Books

Ancient Metals: Microstructure and Metallurgy, Volume 1, by David A. Scott, CSP: Conservation Science Press, Ware, England, and Los Angeles, CA, 2010, 351 p., full color throughout, ISBN: 9780982933800; 0982933800, \$58.00 US (cloth). Metallography is the scientific examination of metals using the optical microscope to study grains, phases, the distribution of different components and how they affect casting and working properties of the metals themselves. The principal focus of this book is on the alloys of copper with the elements silver, tin, zinc, nickel, antimony and arsenic. Drawing on a number of detailed case studies, the author places some of this metallurgical knowledge on a cultural basis from societies in both the Old World and the New. This is the first volume in a multi-volume series on metallographic studies which will include in later volumes, investigation of corrosion and authenticity, iron, steels and cast iron, gold and gilding and metallurgical studies from ancient Ecuador and Colombia. The second volume in this series is scheduled to be printed in 2012. To order a copy, please contact Dr. David A. Scott <dascott@ucla.edu>. Payments can be sent to the author: Dr. David A. Scott, 2054 Walgrove Avenue, Los Angeles, California, 90066, USA.

Mining and Metallurgy in Ancient Perú, GSA Special Paper 467, by Georg Petersen G., translated by William E. Brooks, Geological Society of America, Boulder, Colo., 2010, xxi+90 p., illus. (some color), ISBN: 9780813724676 (paper); 0813724678, \$28.00 (GSA Member)/\$40.00 (Non-GSA Member) in US, €30.50 in Europe, ~£26 in UK. This book represents a recent translation of *Minería y Metalurgia en el Antigua Perú*, Arqueológicas 12, published in 1970 by the Institute of Anthropological Investigations, Pueblo Libre, Lima, Perú. In 2009, Perú was the world's leading producer of silver, the world's second leading producer of copper, and the leading producer of gold in Latin America. However, Perú's role as a producer of metals extends for centuries into the past. Mining and Metallurgy in Ancient Perú documents the use of minerals, metals, and mineral resources in ancient Perú for pigments, industrial stone, and the aesthetic and artistic use of gold, silver, copper, and platinum. The tools and methods used for mining, as well as ancient mining sites in the extensive Andean region, are described here, as are metallurgical techniques and fabrication procedures. The volume also provides forward-

thinking analytical data on metals, artifacts, and alloys. A detailed pyrite mirror, featured on the cover of the book, symbolizes the spectacular workmanship and blending of utilitarian craft and mineral resources in ancient Perú. Following several introductory sections, the contents consist of: Minerals, Gems, and Pigments; Ornamental and Industrial Stone; Metals; Mining; The Chuquicamata Mummy, an Ancient Mining Accident; Inca Mining in the Altiplano; Metallurgy; Alloys; Metalworking and Fabrication; and, Mirrors. The book concludes with a selected bibliography organized by various categories. More information on this publication can be found at: <http://specialpapers.gsapubs.org/content/467>.

Iron Ancestors: Kris Sajen, Kris Majapahit and Related Objects, by Theo Alkema, Ben Grishaaver, Karel Sirag, C. Zwartenkot Art Books, Leiden, the Netherlands, 2010, 222 p., 288 col. phot., 27 b/w drawings, ISBN: 9789054500117; 9054500115, €60 (cloth). This important monograph focuses on the all-iron kris with an ancestor as its hilt, amulets rather than weapons. This first ever publication on the subject entirely devoted to these time-honoured heirlooms is based on the collection of the National Museum of Ethnology (Leiden, the Netherlands) and on a private collection of great quality and quantity. Theo Alkema's 'Iron Ancestors' is enhanced with 288 illustrations by top photographer Ben Grishaaver and with 27 exquisite drawings by the artist Karel Sirag. Information on this book can be found at: http://www.ethnographicartbooks.com/html_web_store/html_web_store_vvolken.cgi?page=./catalogs/c00446.htm&cart_id=6239945.56708.

Mining in European History and its Impact on Environment and Human Societies: Proceedings for the 1st Mining in European History-Conference of the SFB-HiMAT, 12.-15. November 2009, Innsbruck, edited by Peter Anreiter, *et al.*, Innsbruck University Press, Innsbruck, 2010, 467 p., many illustrations and maps, ISBN: 3902719699; 9783902719690, €29.95 (paper). The "Mining in European History-Conference", held in November 2009 and hosted by the SFB HiMAT of the University of Innsbruck, brought together scientists from various disciplines involved with prehistoric and historic mining on an European scale for the first time. More than 150 scientists from 15 countries discussed in an integrative way the archaeological, paleoecological, geological, geographical, historical, ethnological, linguistic and technical aspects of ancient mining activities. This conference transcript provides an overview of the recent state of the art in mining research all over Europe by uniting new findings from interdisciplinary research within one volume. The conference transcript consists of 60 articles (471 pages) on mining activities and traces of ancient mining, including aspects of societies, landscapes, settlements, palaeoecology, trade, subsistence, primary production, environment, language and culture. Furthermore, one session deals with documentation of mining-related excavations and data management.

After a short "Preface", the book is divided into nine sections based on the original conference sessions: Session I, Society and Landscape in Prehistory; Session II, Mining and Settlement

in Pre-Modern Times; Session III, The Palaeo-Ecology of Prehistoric Ore Mining; Session IV, From Ore to Trade; Session V, Subsistence and Nutrition in Mining Areas; Session VI, Prehistoric Mining – Primary Production and Reflection in Landscape; Session VII, Mining and Archaeology: The Early History to Early Modern Mining; Session VIII, Language and Culture. Conference proceedings information can be found at: <http://www.uibk.ac.at/himat/publications/publications-2010/meh-proceedings/meh-proceedings.html.en>.

Dawn of the Metal Age: Technology and Society during the Levantine Chalcolithic, by Jonathan M. Golden, Equinox, London, 2010, 256 p., 47 b&w figs., ISBN: 1904768997; 9781904768999, £70.00 (cloth), \$100.00. By midway through the fifth millennium BCE rapid social change was underway in the southern Levant. One critical dimension of this cultural revolution was a series of profound technological breakthroughs, bringing the dawn of the age of metals. Archaeologists working in the region have discovered a host of sites dating to the Chalcolithic Period (4700-3500 BCE) with material culture reflecting the production and use of copper. This survey will take the reader from the copper mines of the Aravah in Jordan and Israel where the ore was acquired, to the villages of the northern Negev such as Shiqmim, where copper was produced in household workshops, and the Beer Sheva sites, where several large workshops sprung up, and where a variety of finished copper goods saw limited circulation. We will also explore a series of cave burials, such as the hidden tomb at Nahal Qanah, where a range of sumptuous luxury goods and exotic “imports” including copper scepters and the earliest gold in the region were buried with the elite members of Chalcolithic society. Thus, in addition to reconstructing ancient technology, the archaeological evidence also affords us the opportunity to study the changing economic, social and political environment of the time. For example, there is early evidence for specialized craftsmanship, the exchange of luxury goods, and far-flung trade relations. The evidence also indicates that some members of society had greater access to certain goods than others, and that some individuals may have harnessed the symbolic power of the new-founded metals industry in order to promote their own political power. Following the Acknowledgments and Preface, chapters consisted of: The Dawn of the Metal Age; Leaving the Neolithic; The Northern Negev Copper Boom; Elite Tombs of the Chalcolithic; Cornets and Copper--A Metallurgical Perspective on Chalcolithic Chronology; A Model for Specialized Craft Production; Copper Production at Abu Matar; The Seduction of the Industry; Technology and Society; Production and Social Organization during the Chalcolithic; and, Conclusion. General and purchasing information about this publication can be found at the following link: <http://www.equinoxpub.com/equinox/books/showbook.asp?bkid=73&keyword=Dawn%20of%20the%20metal%20age>.

Die Geschichte des Bergbaus in Tirol und seinen angrenzenden Gebieten : Proceedings zum 3. Milestone-Meeting des SFB-HiMAT vom 23.-26.10.2008 in Silbertal, edited by Klaus Oeggel and Mario Prast, Innsbruck University Press, Innsbruck, 2009, 359 p., b&w/color illus., ISBN: 3902719281; 9783902719287 (paper). This publication

presents proceedings of the 3rd Milestone Meeting “The History of Mining Activities in the Tyrol and Adjacent Areas”, held October 23-26, 2008, in Silberthal, and hosted by the of the Special Research Area (SFB) HiMAT of the University of Innsbruck, Austria. While the overwhelming majority of papers published from this meeting were focused on mining in the Tyrol region and environs, papers covered similar topics in other parts of Europe and the world. Most papers included some relevance to archaeometallurgy. Following a brief Foreword by one of the editors, papers were organized by presentations sessions from the meetings. Chapters are divided into the following groups: Session 1, Impulsreferate; Session 2, Bergbau in der Key-Area Schwaz I; Session 3, Archäometallurgie, Mineralogie & Geochemie; Session 4, Bergbau in den Key-Areas Montafon und Mitterberg; Session 5, Subsistence and Nutrition in Mining Areas; and Session 6, Bergbau in der Key-Area Schwaz 2. A PDF of the table of contents can be found at the following link: <http://www.uibk.ac.at/himat/events/meh/tagungsfuehrer-meh.pdf>.

New Book Chapters/Articles

From the *7th International Conference of the Balkan Physical Union: Organized by the Hellenic Physical Society with the Cooperation of the Physics Departments of Greek Universities, Alexandroupolis, Greece, 9-13 September 2009*, edited by Angelos Angelopoulos and Takis Fildisis, American Institute of Physics, Melville, NY, 2010, comes “**Archaeometallurgical Characterization of Some Ancient Copper and Bronze Artifacts from Albania**” (T. Dilo, N. Civici, F. Stamati, O. Cakaj ; pp. 985-990), while from *Von Maikop bis Trialeti. Gewinnung und Verbreitung von Metallen und Obsidian in Kaukasien im 4.-2. Jt. v. Chr. Beiträge des Internationalen Symposiums in Berlin vom 1.-3. Juni 2006*, edited by S. Hansen, A. Hauptmann, I. Motzenbäcker, and E. Pernicka, Habelt Verlag, Bonn, 2010, comes “**Geochemical characterisation of Armenian Early Bronze Age metal artefacts and their relation to copper ores**” (K. Meliksetian, E. Pernicka; pp. 41-58), and from *The Lost World of Old Europe: The Danube Valley, 5000-3500 BC*, edited by David W. Anthony and Jennifer Chi, The Institute for the Study of the Ancient World at New York University and Princeton University Press, Princeton, N.J. and Oxford, 2010, comes “**The Invention of Copper Metallurgy and the Copper Age of Old Europe**” (E. Pernicka, D. W. Anthony; pp. 162-177).

From *A Timeless Vale: Archaeology and Related Studies of the Jordan Valley, in Honour of Gerrit van der Kooij on the Occasion of His Sixty-Fifth Birthday*, by E. Kaptijn and L. P. Petit, Leiden University Press, 2009, comes a chapter entitled “**Of Slag and Scales, Micro-Stratigraphy and Micro-Magnetic Material at Metallurgical Excavations**” (Harald A. Veldhuijzen ; pp. 163-174), while from *Montafon 2. Besiedlung - Bergbau - Relikte: von der Steinzeit bis zum Ende des Mittelalters*, edited by Robert Rollinger, Schruns Stand Montafon, 2009, comes “**Der prähistorische Bergbau in Europa und archäometallurgische Untersuchungen im Montafon**” (E. Pernicka; pp. 9-22), and from *Modesty and Patience: Archaeological Studies and Memories in Honour of*

Nabil Qadi 'Abu Salim', edited by Hans-Georg K. Gebel, Zeidan Kafafi, and Omar Al-Ghul, Ex Oriente e.V., Berlin, and Yarmouk University, Irbid, Jordan, 2009, comes a chapter entitled **“Hip to be Square: How tuyères Shaped the Hammeh Iron Production”** (Harald A. Veldhuijzen ; pp. 114-125).

From *New Technologies for Archaeology: Multidisciplinary Investigations in Palpa and Nasca, Peru*, edited by Markus Reindel and Günther A. Wagner, Springer, Berlin, 2009, come two chapters entitled **“Gold in Southern Peru? Perspectives of Research into Mining Archaeology”** (Thomas Stöllner; pp. 393-407), and **“Fingerprints in Gold”** (Sandra Schlosser, Robert Kovacs, Ernst Pernicka, Detlef Günther, Michael Tellenbach; pp. 409-436), while from *Tsodilo Hills: Copper Bracelet of the Kalahari*, edited by Alec Campbell, Larry Robbins, and Michael Taylor, Michigan State University Press, East Lansing, MI, 2010, come two chapters pertaining to Iron Age metallurgy in Botswana, southern Africa. These are **“Chapter 5, Early Villages at Tsodilo: The Introduction of Livestock, Crops, and Metalworking”** (Edwin N. Wilmsen, James R. Dendow; pp. 72-81), and **“Chapter 6, The Prehistoric Mining of Specularite”** (Mike Murphy, Larry Robbins, Alec Campbell; pp. 82-93).

From *Archaeometry* (2011, Vol. 53, No. 1) comes **“Southeast Asia's First Isotopically Defined Prehistoric Copper Production System: When Did Extractive Metallurgy Begin in the Khao Wong Prachan Valley of Central Thailand?”** (T. O. Pryce, A. M. Pollard, M. Martínón-Torres, V. C. Pigott, E. Pernicka ; pp. 146-163), while from *Economic History Society* (2011, Vol. 64, No. 1) comes **“The choice of fuel in the eighteenth-century iron industry: the Coalbrookdale accounts reconsidered”** (Peter King; pp. 132-156). From *Earth and Planetary Science Letters* (2011, Vol. 301, Nos. 1-2) comes **“Geomagnetic field intensity: How high can it get? How fast can it change? Constraints from Iron Age copper slag”** (Ron Shaar, Erez Ben-Yosef, Hagai Ron, Lisa Tauxe, Amotz Agnon, Ronit Kessel ; pp. 297-306). Also from *Earth and Planetary Science Letters* (2010, Vol. 290, Nos. 1-2) comes **“Testing the accuracy of absolute intensity estimates of the ancient geomagnetic field using copper slag material”** (Ron Shaar, Hagai Ron, Lisa Tauxe, Ronit Kessel, Amotz Agnon, Erez Ben-Yosef, Joshua M. Feinberg ; pp. 201-213).

From *Historical Metallurgy* (2010, Vol. 44, No. 1), come several archaeometallurgical papers. These consist of **“The Oedt sword: a note on brass and fire-gilding in the European Bronze Age”** (Roland Schwab, Frank Willer, Dietmar Meinel, Michael Schmauder, Ernst Pernicka ; pp. 1-9), **“Metallographic investigation and experimental replication of an Etruscan bronze mirror”** (Paolo Piccardo, Roberta Amendola, Alessandro Ervas ; pp. 10-14), **“The possible water-powered bloomery at Goscote (Rushall), Walsall, West Midlands”** (David Dungworth ; pp. 15-20), **“Iron in the building of gothic churches: its role, origins and production using evidence from Rouen and Troyes”** (Maxime L'Héritier, Philippe Dillmann, Paul Benoit ; pp. 21-35), **“Identification of a slag-draining bloomery furnace in the Mandara Mountains (Cameroon)”** (Nicholas David ; pp. 36-47), and

“Metal to mould: alloy identification in experimental casting moulds” (Thérèse Kearns, Marcos Martínón-Torres, Thilo Rehren ; pp. 48-58), while in 2010, from *Der Anschnitt* (Vol. 62, No. 3), comes **“Bergmannsgräber im bronzezeitlichen Zinnrevier von Askaraly, Ostkasachstan?”** (Thomas Stöllner, Zeinolla Samashev, Sergej Berdenov, Jan Cierny, Jennifer Garner, Alexander Gorelik, Galina A. Kusch; pp. 86-98), and also (from Vol. 62, Nos. 1-2) **“Das Bergbau- und Verhüttungszentrum der Bronzezeit in Michailo-Ovsánka an der mittleren Wolga. Die ersten Forschungsergebnisse und Problemstellungen”** (Juri I. Kolev, Jennifer Garner; pp. 2-19). Also from *Der Anschnitt* (2009, Vol. 61, No. 3) comes **“Holznutzung und Bergbau im Schwarzwald während des Mittelalters und der Neuzeit”** (Martin Straßburger, Willy Tegel; pp. 182-192).

From the *Journal of Anthropological Archaeology* (2010, Vol. 29, No. 3) comes **“Explaining the evolution of ironmaking recipes – An example from northwest Wales”** (Michael F. Charlton, Peter Crew, Thilo Rehren, Stephen J. Shennan ; pp. 352-367), while from *Archaeological and Anthropological Sciences* (2010, Vol. 2, No. 4) comes **“Prehistoric copper production and technological reproduction in the Khao Wong Prachan Valley of Central Thailand”** (Thomas Oliver Pryce, Vincent C. Pigott, Marcos Martínón-Torres, Thilo Rehren ; pp. 237-264). In 2010 from *Trabajos de Prehistoria* (2010, Vol. 67, No. 2) comes **“Vingt ans de recherches à Saint-Véran, Hautes Alpes: état des connaissances de l'activité de production de cuivre à l'âge du Bronze ancien”** (David Bourgarit, Pierre Rostan, Laurent Carozza, Benoît Mille, Gilberto Artioli; pp. 265-281), and also (from Vol. 67, No. 1) **“The Copper Age Settlement of Valencina de la Concepción (Seville, Spain): Demography, Metallurgy and Spatial Organization”** (Manuel Eleazar Costa Caramé, Marta Díaz-Zorita Bonilla, Leonardo García Sanjuán, David W. Wheatley; pp. 85-117), and **“Las Lunas, Yuncler (Toledo): Un depósito de materiales metálicos del Bronce Final en la Submeseta Sur de la Península Ibérica”** (Dionisio Urbina Martínez, Óscar García Vuelta; pp. 175-196).

From the *Bulletin de la Société préhistorique française* (2010, Vol. 107, No. 4) comes **“Analyses de cuivres et de bronzes protohistoriques du sud-ouest de la France. Résultats de la comparaison de méthodes analytiques”** (C. Blanc, J. Lutz, J.-C. Merlet, E. Pernicka; pp. 767-774), while from *Antiquity* (2010, Vol. 84, No. 325) comes **“The beginning of Iron Age copper production in the southern Levant: new evidence from Khirbat al-Jariya, Faynan, Jordan”** (Erez Ben-Yosef, Thomas E. Levy, Thomas Higham, Mohammad Najjar, Lisa Tauxe ; pp. 724-746). In the *Journal of Maritime Archaeology* (2010, Vol. 5, No. 1) is **“Maritime Archaeology and Trans-Oceanic Trade: A Case Study of the Oranjemund Shipwreck Cargo, Namibia”** (Shadreck Chirikure, Ashton Sinamai, Esther Goagoses, Marina Mubusisi, W. Ndoro ; pp. 37-55), and from *Arabian Archaeology and Epigraphy* (2010, Vol. 21, No. 2) comes **“Lead isotope and chemical signature of copper from Oman and its occurrence in Mesopotamia and sites on the Arabian Gulf coast”** (F. Begemann, A. Hauptmann, S. Schmitt-Strecker, G. Weisgerber ; pp. 135-169).

From *Post-Medieval Archaeology* (2010, Vol. 44, No. 1), comes **“Five centuries of iron working: excavations at Wednesbury Forge”** (Paul Belford ; pp. 1-53), while from *The Journal of the Arms & Armour Society* (2010, Vol. 20, No. 1) comes **“A note on the metallurgy of two Migration period helmets”** (A. Williams ; pp. 27-35), and from *Accounting, Business & Financial History* (2010, Vol. 20, No. 2) comes **“Management, finance and cost control in the Midlands charcoal iron industry”** (P. W. King; pp. 385-412).

From the *European Journal of Mineralogy* (2010, Vol. 22, No. 5) comes **“Mineralogical study of precolonial (1650–1850 CE) tin smelting slags from Rooiberg, Limpopo Province, South Africa”** (Robert B. Heimann, Shadreck Chirikure, David Killick; pp. 751-761), while from the *Journal of Alpine Geology* (2010, Vol. 52) comes **“Geochemische Untersuchungen an ostalpinen Kupfervorkommen und ihre Nutzung in prähistorischer Zeit”** (J. Lutz, R. Pils, E. Pernicka, F. Vavtar; pp. 172-173). In *Earth-Science Reviews* (2010, Vol. 100, Nos. 1-4) is **“The “chessboard” classification scheme of mineral deposits: Mineralogy and geology from aluminum to zirconium”** (Harald G. Dill ; pp. 1-420), while from *Journal of Microscopy* (2010, Vol. 237, No. 3) comes **“An investigation of nitride precipitates in archaeological iron artefacts from Poland”** (Z. Kędzierski, J. Stępiński, A. Zielińska-Lipiec ; pp. 271-274). In *Analytical and Bioanalytical Chemistry* (2010, Vol. 397, No. 6) is **“Characterization of copper alloys of archaeometallurgical interest using neutron diffraction: a systematic calibration study”** (F. Grazi, L. Bartoli, S. Siano, M. Zoppi; pp. 2501-2511), while from *Accounts of Chemical Research* (2010, Vol. 43, No. 6) comes **“The Coordinated Use of Synchrotron Spectroelectrochemistry for Corrosion Studies on Heritage Metals”** (Annemie Adriaens, Mark Dowsett ; pp. 927-935).

A special issue of *Applied Physics A: Materials Science & Processing* (2010, Vol. 100, No. 3), **“Precise Processing, Diagnostics, Characterization and Identification of Materials for Restoration of Art”**, included several papers on metals and archaeometallurgical subjects, including “Non-invasive characterization of manufacturing techniques and corrosion of ancient Chinese bronzes and a later replica using synchrotron X-ray diffraction” (M. L. Young, F. Casadio, S. Schnepf, E. Pearlstein, J. D. Almer, D. R. Haefner; pp. 635-646), “The reconstruction of the first copper-smelting processes in Europe during the 4th and the 3rd millennium BC: where does the oxygen come from?” (E. Burger, D. Bourgarit, A. Wattiaux and M. Fialin; pp. 713-724), “The bronze shields found at the Ayanis fortress (Van region, Turkey): manufacturing techniques and corrosion phenomena” (G. M. Ingo, A. Çilingiroğlu, F. Faraldi, C. Riccucci; M. P. Casaletto, A. Erdem, A. Batmaz; pp. 793-800), “An integrated analytical characterization of corrosion products on ornamental objects from the necropolis of Colle Badetta-Tortoreto (Teramo, Italy)” (M. P. Casaletto, G. M. Ingo, M. Albin, A. Lapenna, I. Pierigè, C. Riccucci, F. Faraldi; pp. 801-808), and “Production of reference alloys for the conservation of archaeological silver-based artifacts” (M. P. Casaletto, G. M. Ingo, C. Riccucci, F. Faraldi; pp. 937-944).

From *Materials Characterization* (2010, Vol. 61, No. 1) comes **“PIXE analysis of medieval silver coins”** (H. Ben Abdelouahed, F. Gharbi, M. Roumié, S. Baccouche, K. Ben Romdhane, B. Nsouli, A. Trabelsi ; pp. 59-64). Also from *Materials Characterization* (2009, Vol. 60, No. 4) comes **“Metallography, history and the fine arts III”** (George F. Vander Voort, Chris Bagnall ; pp. 251), **“Electron backscattering diffraction analysis of an ancient wootz steel blade from central India”** (M. R. Barnett, A. Sullivan, R. Balasubramaniam ; pp. 252-260), **“Roman mystery iron blades from Serbia”** (Sebastian Balos, Arlan Benschoter, Alan Pense ; pp. 271-276), and **“On the Kautilya's characterization tests for the purity of silver and its experimental replication”** (R. K. Dube ; pp. 277-281). In the *Journal of Thermal Analysis and Calorimetry* (Published online: 24 June 2010; DOI 10.1007/s10973-010-0926-2), is **“Kinetics of iron-copper sulphides oxidation in relation to protohistoric copper smelting”** (Emilien Burger, David Bourgarit, Vincent Frotté, Fabien Pilon; 8 p.), while from *JOM* (2010, Vol. 62, No. 3) comes **“The Ancient Brass Cementation Processes Revisited by Extensive Experimental Simulation”** (David Bourgarit, Fanny Bauchau; pp. 51-57).

In 2009 a special issue of the *Journal of Mining and Metallurgy, Section B: Metallurgy* (Vol. 45 B, No. 2, pp. 141-220) was dedicated to archaeometallurgical studies. The Preface (Dragana Živković) and eight research contributions were included in the issue. Contributed papers comprised “Beginning of the metal age in the central Balkans according to the results of the archaeometallurgy” (B. Jovanović), “Ancient metallurgical traditions and connections around the Caput Adriae” (A. Giunlia-Mair), “Prehistoric copper tools from the territory of Serbia” (D. Antonović), “A multi-disciplinary approach to the study of an assemblage of copper-based finds assigned to the prehistory and proto-history of Fucino, Abruzzo, Italy” (M.L. Mascelloni, G. Cerichelli, S. Ridolfi) “The traces of Roman metallurgy in Eastern Serbia” (S. Petković), “Early Byzantine metallurgical object at the site Gamzigrad – Romuliana in Eastern Serbia” (M. Živić), “Investigation of archaeometallurgical findings from Felix Romuliana locality” (D. Živković, N. Štrbac, J. Lamut, B. Andjelić, M. Cocić, M. Šteharnek, A. Mitovski), and “Copper production in Majdanpek in sixties and seventies of the 16th century” (S. Katić, I. Ilić and D. Živković). Abstracts and PDF files of the preface and articles can be downloaded from the journal website:

http://www.jmmab.com/index.php?option=com_content&task=blogcategory&id=44&Itemid=79.

From *Restaurierung und Archäologie* (2009) comes **“Archäometallurgische Untersuchungen zur Metalleinlegetechnik einiger Auvernierschwerter”** (Daniel Berger, Ernst Pernicka; pp. 1-18), **“Granuliertes Gold aus Troia in Berlin: Erste technologische Untersuchungen eines anatolischen oder mesopotamischen Handwerks”** (Hermann Born, Sandra Schlosser, Roland Schwab, Boaz Paz, Ernst Pernicka; pp. 19-30), **“Zu Entwicklungen in der Vergoldungstechnik im germanischen Raum während des 1. Jahrhunderts nach Christus”** (Iris Aufderhaar; pp. 31-46),

“**Kantharos, Klapptisch und kannelierte Schüssel: Zu Neurestauration und Herstellungstechnik dreier großformatiger Objekte aus dem Hildesheimer Silberfund**” (Barbara Niemeyer; pp. 47-66), and “**The Metal Threads from the Silk Garments of the Famen Temple**” (Anna Karatzani, Thilo Rehren, Lu Zhiyong; pp. 99-110). In *AMBIX: The Journal of the Society for the Study of Alchemy and Early Chemistry* (2009, Vol. 56, No. 1) comes “**A Note on Liquid Iron in Medieval Europe**” (A. Williams ; pp. 68-75). Also from *AMBIX* (2009, Vol. 55, No. 3) comes “**Alchemy and Mining: Metallogenesis and Prospecting in Early Mining Books**” (Warren Alexander Dym ; pp. 232-254), while from *Near Eastern Archaeology* (2009, Vol. 72, No. 3) comes “**Red Hot: The Smithy at Tel Beth-Shemesh**” (Harald A. Veldhuijzen ; pp. 129-131).

Forthcoming Meetings and Conferences

The *Iron & Steel Preservation Conference (ISPC)* will be held March 7-9, 2011, at Lansing Community College, Michigan. It is a unique combination of formal papers and hands on work. “Historic wrought iron and steel truss bridges that were fabricated between 1850 and 1950 are rapidly being replaced today with new concrete or steel bridges, primarily because of the lack of knowledge in the restoration of historic metals,” explains Vern Mesler, Technical Careers Adjunct Faculty in welding. “We need to develop expertise in preserving the original materials by combining modern technology such as electric arc welding with historic methods like hot riveting.” This conference will provide hands-on experience in those technologies. For more information contact Vernon Mesler (phone: 517-337-6533; e-mail: meslerv@email.lcc.edu), or to register, call: 517-483-9853. More information also can be found at the conference website link: <http://www.lcc.edu/tet/welding/ISPCConference/>.

The *Third International Conference on Experimental Archeology “Metallurgies Compared: Archaeology and Experimentation”*, will be held from April 8-10, 2011 at the Antiquitates Center for Experimental Archaeology, at Civitella Cesi (Viterbo), Italy, and will focus on metallurgy and experimentation. The conference, organized in three sessions of presentations alternating with experimental activities, will be attended by many Italian and European scholars. Participants may present works in the form of posters, according to the rules to be announced by the organizing committee. The deadline for communication is by February, 8, 2011. The registration fee is €100 and includes the opportunity to participate in the poster session. The conference will be open to a maximum of 70 attendees. Participants will be selected based on the CVs submitted with their admission application, which should specify all relevant information (activities conducted, course of study, scientific qualifications, publications, etc.). Admission applications should be submitted by March 20, 2011, at the conference website: www.antichemetallurgie.com. The conference proceedings will be made available to the scientific community in Italian and English on a website that will include experiment results and videos.

The three main sessions, spread across the three days of the conference, are: Experimentation and Scientific Popularization-Comparing experiences in disseminating knowledge of archaeological research through experimental activities, Experimentation and Archaeological Science--In search of an archaeometallurgical protocol, and Experimentation, education and scientific tourism: Potential and limitations of the experimental approach. Speaker presentations also will be given and include, among others, “The decades-long experience of the Antiquitates Center” (A. Bartoli), “Research on the Iberian Peninsula” (S. Rovira), “The role of experimental archaeology in understanding Iron Age archaeology” (P. Halkon), “Between experimental archaeology and ethnoarchaeology: Research on Ethiopian furnaces (T. Burka), “Experiments in gold refining” (D. Leopp), “Archaeometallurgical research in the Portuguese area” (C. Bottini, R. Villaça), “Shagudo and other ancient Japanese techniques” (Nagai Yutaka), “The experience of the Lombardy museum network” (R. Poggiani Keller, M. Baioni, C. Mangani), and “The experience of the Archéosite d’Aubechies (Belgium)” (C. Demarez). Additionally, visits will be made several times each day to the experimental smelting furnaces which will include opportunities for discussion and comment. Experimental smelting will focus on iron smelting but discussions and comments will include furnaces used to smelt metals and craft objects of copper, copper alloys, iron, and gold.

The *Historical Metallurgy Society* will hold its Spring and Annual General Meeting, *Royalty, Religion and Rust!*, on June 4th-5th, 2011, at Helmsley, North Yorkshire, England. Presentations at the meeting will focus on Royalty, High Status and Ecclesiastical or Religious sites and artifacts. More information, including the call for papers, can be found at the following website: <http://hist-met.org/agm2011.html>.

The *3rd International Conference “Archaeometallurgy in Europe” 2011*, will be held from June 29-July 1, 2011 at the Deutsches Bergbau-Museum, Bochum, Germany. The previous two International Conferences, Archaeometallurgy in Europe I + II, were organized by the Associazione Italiana di Metallurgia in Milan (2003) and Grado/Aquileia (2007), Italy, respectively. In the mean time research in our Scientific Community has produced significant results on early metal working and processing. The aim of this conference is to provide an overview of new insights and new approaches to the history of metallurgy in this part of the world. New regional studies, new instruments, and a changing pattern of research have clearly led to innovative scientific approaches to archaeometallurgy. This has long been a well established and most interesting field of research, and Europe has always been at the cutting edge. The Conference will cover topics relevant to the investigation of the technology and diffusion of different metals and alloys used in ancient times, and of related (pre-) historic finds such as slag, furnaces, remains of production, etc. It will present interdisciplinary scientific and archaeological investigations. The Conference “Archaeometallurgy in Europe” reflects the evolution of metallurgy in an area which due to its geographic and geological characteristics is exceptionally rich in ore deposits and looks back on an

extraordinary development in metallurgy. Besides regional studies it will focus on new insights into the eastern part of Europe.

Papers accepted for oral and poster presentations will be organized by seven thematic groups: 1. Metallurgical Innovation Stages in Early Metallurgy in Europe; From the Neolithic to the Medieval Period; 2. Regional Studies; 3. Early Mining in Europe and the Distribution of Raw Sources; 4. Experimental Archaeometallurgy; 5. Reconstructing Ancient Technologies; 6. New Horizons: Archaeometallurgy in Eastern Europe and Beyond; and 7. New Approaches, New Technologies in Archaeometallurgy. For each topic, a key note lecture providing the state of the art will be held. Papers on archaeometallurgy of Non-European countries will be grouped in a special session. Additional activities also have been scheduled for Tuesday, June 28th (Meet-and-greet in the "Restaurant Tauffenbach", Bochum), and Wednesday, June 29th (Dinner party in the "Restaurant Förderturm" of the Deutsches Bergbau-Museum Bochum). The costs for the dinner party are included in the conference fee.

Participants are invited to submit abstracts for oral or poster presentation. Abstracts of no more than 2 pages (DIN A4; TNR 12; black & white pictures [submitted separately!] 300 dpi with 12 cm width) have to be submitted electronically. The abstracts will be published in a special volume of the journal "Metalla". Oral presentations are limited to 15 + 5 minutes including questions and discussion. Poster may not exceed the size limit of DIN A0. Deadline for submission of abstracts: January 30th, 2011. Authors will be informed of the acceptance of their contribution and the type of presentation (oral or poster) by February 28th. Participants are requested to register electronically via E-Mail or Fax or by post using the registration form. The registration will become valid only after receipt of the payment. Registration fees and costs for excursions are listed in the registration form which can be found at: <http://aie3.bergbaumuseum.de/tiki-index.php?page=Registration>. The third announcement with further information concerning the conference program, as well as localities, poster presentations, papers and conference publication will be issued in March 2011. Further information about the conference can be found at: <http://aie3.bergbaumuseum.de/tiki-index.php>.

Previous Meetings and Conferences

The *Archaeological Iron Conservation Colloquium* was held June 24–26, 2010, at the State Academy of Art and Design, Stuttgart, Germany. The aim of the conference was on the conservation and preservation of iron from archaeological and historical contexts. Preservation of the masses of iron finds is still a problem. Although somewhat neglected in the last decades, now there are many current research projects going on in Germany and worldwide. The colloquium reviewed the state of the art of archaeological iron conservation and related research; speakers from all parts of the world presented their work. Main topics were the corrosion and the stabilization of iron finds from the soil and the sea. Presentations were made on the 24th and 25th of June, with fieldtrips and facility

visitations on the 26th. Oral presentations were divided amongst four main sessions, and a fifth session was dedicated to poster presentations.

On June 24th, papers from Session I, Iron Conservation Science, consisted of "Plasma-reduction, its potential and limits in the conservation of metals" (Katharina Schmidt-Ott), "The chloride left behind: (dis)solving an analytical problem" (Britta Schmutzler), "The formation and transformation of akaganeite" (David Thickett), "Unusual corrosion products of iron" (Quanyu Wang), and "Metastable iron sulphides as corrosion products of iron archaeological objects" (Celine Remazeilles). Session II, Iron Conservation Projects Around the World, contained the following papers: "Corrosion and conservation problems of iron artefacts from Oradea Fortress" (Olimpia Muresan), "The Cucagna Conservation Project - Conservation of archaeological finds and conservation research in Friaul" (Tobias Friedrich), "Iron from London waterlogged sites: Assessing the outcomes of treatment and passive storage" (Rose Johnson), "The KUR-project - Large quantity finds in archaeological collections" (Cristina Mazzola), and "Metallurgical properties of steel used in a Japanese matchlock gun" (Manako Tanaka), followed by the Keynote lecture, "Iron and the microscope" (David A. Scott).

On June 25th, papers from Session III, Alkaline Chloride Extraction, included "Efficiency of chloride extraction with organic ammonium bases: The KUR-Project - Conservation and professional storage of iron artefacts" (Heinrich Wunderlich), "The use of subcritical alkaline solutions for the stabilization of archaeological iron artefacts" (Paul Mardikian), "Some new advances in alkaline sulphite treatment of archaeological iron" (Svetlana Burshneva), "The effectiveness of chloride removal from archaeological iron using alkaline deoxygenated desalination treatments" (Melanie Rimmer), and "Simplifying sodium sulfite solutions - the DBU project" (Britta Schmutzler). Papers from Session IV, Marine Finds, comprised "Effect of dechlorination in NaOH of iron archaeological artefacts immersed in sea water" (Florian Kergourlay), "Evolution of pH in the solutions of dechlorination" (Stephane Lemoine), "Conservation of iron artefacts from the USS Monitor (1862)" (Eric Nordgren), and "Retreatment of archaeological irons temporarily submerged in brackish floodwaters" (Kenya Brown Fusciello). Poster presentations included "Identification of organic remains on iron finds using variable pressure Scanning Electron Microscopy (SEM)" (Andrea Fischer), "The laboratory processing of block-lifted finds from graves" (Andrea Fischer), "The iron collection of ancient messene: a methodological conservation approach" (Maria Giannoulaki), "Freezing corrosion - a viable storage option?" (Charlotte Kuhn), "Metal 2010: ICOM-CC WG "Metals" interim meeting in Charleston, South Carolina from Oct. 11-15, 2010" (Paul Mardikian), "Archaeological Iron After Excavation (AIAE) - working group within the ICOM-CC Metals Working Group" (Eric Nordgren), and "Corrosion protection without red lead: A contradiction in terms?" (Martina Raedel). Extended abstracts and additional information on the colloquium can be found at: <http://www.iron-colloquium.abk-stuttgart.de/iron-colloquium-information.html>.

A handful of papers and posters relating to ancient metals and archaeometallurgy were presented at the *16th Annual Meeting of the European Association of Archaeologists* held in The Hague, Netherlands, from September 1–5, 2010. Contributions included a session on gold threads in textiles with the following papers: “Gold thread from Near Eastern rulers to Roman Emperors: evidence and problems” (Margarita Gleba), “The Investigation of Merovingian Gold Textiles of the Early Medieval Period” (Ina Meißner), “Merovingian gold textiles in South and West Germany” (Carina Stie), “Golden glittering garments of Late Roman and Vandal time from North Africa” (Christoph Eger), “Nasij” (Zvezdana Dode), “Gold Threads from Cloak and Vitta in the Alamannia: Examples from Dürbheim ‘Häuslesrain’ (Kreis Tuttlingen) and Lahr-Burgheim, St. Peter (Ortenaukreis)” (Niklot Krohn), “Tutankhamun’s golden garments” (Gillian Vogelsang-Eastwood), “Gold textile or yellow colour? Some images of Ancient and Early Medieval Art” (Sergey Yatsenko), and “Opportunities and Limits in the Technological Examination of Gold Threads from the Early Medieval period” (Britt Nowak-Böck). Other relevant papers included “Metalwork exchange networks in Chalcolithic Italy: facts or fictions?” (Andrea Dolfini), “Aardenburg, Roman town or castellum? Metal finds as indicators” (Guus Besuijen), “The significance of the metallurgy at the beginning of the 3rd millennium in the Carpathian basin” (János Dani), “Metallurgy and society in the Carpathian Basin at the transition from the fourth to the third millennium BC: new identities and consumption patterns” (Vajk Sezevéri), “Embodied mercantilism: The production and use of silver in a 17th century colonial context. The Scandinavian example” (Jonas Nordin), “Copper artefacts and stone axes: means of social transitions in Neolithic societies” (Johannes Müller), “The role of spondylus and copper ornaments in social change from the middle Neolithic to the early copper age” (Zsuzsanna Siklósi, Eötvös Loránd), “Iron production in Uganda: memories of a near-forgotten industry” (Louise Iles), “A mine of information: presenting the social histories of heritage mining sites” (Peter Oakley), and “Benders, Benches and Bunkers: Recent Contestation and Commemoration at an Industrial (Heritage) Landscape” (Hilary Orange). Poster presentations of relevance include “Investigation of metal threads archaeological textiles using scanning electron microscopy and X-ray microanalysis” (Tetyana Mykolayivna Krupa), “Archaeometallurgical study of the chalcolithic materials of Camino del Molino (Caravaca de la Cruz, Murcia, Spain)” (Gutiérrez Sáez Carmen, Montero Ignacio, Chamon Jorge, Catalán Elena, Pardo Ana, Cabrera Ana, Martin Ignacio, Lomba Maurandi Joaquín), and “Gold strips from Late Roman sarcophagi burials in Trier” (Nicole Reifath, Britt Nowak-Böck). Access to PDF files of the program and paper abstracts can be found at the following link: <http://www.eaa2010.nl/>.

A recent conference focusing on an increasingly important area of environmental research, *Polluting the Environment in Antiquity: an Inter-Disciplinary Meeting*, was held September 7-8, 2010, at the Boyd-Orr Building, University of Glasgow. Papers at the two-day conference covered a range of topics with a few on mining and metallurgical studies. These included

“Chronology of atmospheric deposition into ombrotrophic bogs resolves debate of when British tin was exploited” (Andy Meharg, E. Schofield, A. Raab, K. Edwards), and “‘Pollution’ or social landscape? Copper slag and ploughsoil in central Cyprus” (Michael Given).

Another metal conservation conference was the *International Conference on Metal Conservation, METAL 2010, Interim Meeting of the International Council of Museums Committee for Conservation (ICOM-CC) Metal Working Group*, held October 11–15, 2010, at Clemson Conservation Center, Charleston, South Carolina. The conference presented an opportunity for professionals from across the world to convene and discuss current issues in metal conservation. These included an outstanding program that of both conservation practice and conservation science, with speakers from more than 20 different countries. Participants in this year’s conference represented universities, national research laboratories, conservators in private practice and many renowned cultural institutions.

Presentations from October 11th included papers in Session 1, Treatment of Archaeological Iron, such as “Residues from Alkaline Sulphite Treatment and Their Potential Effect on the Corrosion of Archaeological Iron” (M. Rimmer, D. Watkinson), “Chloride Calamities: Assessment of Residual Chloride Analysis to Compare Iron Desalination Methods” (B. Schmutzler, G. Eggert), “Keep Cool? Deep-Freeze Storage of Archaeological Iron” (C. Kuhn, G. Eggert), and “The Use of Subcritical Fluids for the Stabilization of Concrete Iron Artifacts” (N. Gonzalez-Pereyra, T. Brocard, S. Cretté, P. De Viviés, M. Drews, P. Mardikian), while papers in Session 2, Conservation of Marine Archaeological Objects, included “Corrosion and Conservation Management of the HMAS AE2 (1915) Submarine in the Sea of Marmara, Turkey” (I.D. Macleod), “Approaches to the Preservation of Sunken Historic Aircraft” (G. Schwarz, P. Fix), “Disassembly of USS *Monitor*’s Complex Mechanical Components” (D. Krop, E. Nordgren), and “A Case Study of *In Situ* Monitoring on an 18th Century Anchor from the *Queen Anne’s Revenge* (1718)” (W. Welsh).

Presentations from October 12th included papers in Session 1, Materials Characterization and Identification, such as “Hot-Tinning of Low Tin Bronzes” (P. Manti, D. Watkinson), and “Technical Analysis of Muntz Metal Sheathing from the American Clipper Ship *Snow Squall* (1851-1864)” (M. Carlson, N.R. Lipfert, E. Ronnberg, D.A. Scott), while papers in Session 2, Case Studies, included “The Examination and Conservation of a 17th Century Indian Horse Armour” (E. Schmuecker, R. Lees, T. Richardson), and “Dry-Ice Blasting for the Conservation Cleaning of Metals” (R. Van Der Molen, I. Joosten, T.C.P. Beentjes, L. Megens), while on the same day, papers in Session 3, Coatings and Corrosion Inhibition, included “Development of New Environmentally Safe Protection Systems for the Conservation of Iron Artefacts” (S. Hollner, F. Mirambet, E. Rocca, S. Reguer), “Better Than Paraloid? Testing Poligen® Waxes as Coatings for Metal Objects” (J. Wolfram, S. Brüggerhoff, G. Eggert), “The Corrosive Influence of Acetic Acid Emissions on Bronze and the Efficacy of Two Protective Coatings” (A. Paterakis, D.

Lafuente, E. Cano), “The Application of Non-Toxic Corrosion Inhibitors for the Temporary Protection of Iron and Copper Alloy in Uncontrolled Environments” (G. Rapp, C. Degrigny, F. Mirambet, S. Ramseyer, A. Tarchini), and “On the Use of Alcoholic Carboxylic Acid Solutions for the Deposition of Protective Coatings on Copper” (A. Elia, M.G. Dowsett, A. Adriaens).

Presentations from October 13th included papers in Session 1, Corrosion and Deterioration Studies, such as “Predicting the Corrosion Behaviour of Outdoor Bronzes: Assessment of Artificially Exposed and Real Outdoor Samples” (C. Chiavari, E. Bernardi, C. Martini, L. Morselli, F. Ospitali, L. Robbiola, A. Texier), “The Delhi Iron Pillar: A Study of the Corrosion Formed in Areas of Surface Deformation” (A. Pandya, D.D.N. Singh), and “The Effects of Fingerprints on Silver” (V. Cheel, P. Northover, C. Salter, D. Stevens, G. Grime, B. Jones), while Session 2, X-Ray Fluorescence Analysis, included “An Evaluation of Inter-Laboratory Reproducibility for Quantitative XRF of Historic Copper Alloys” (A. Heginbotham, A. Bezur, M. Bouchard, J.M. Davis, K. Eremin, J.H. Frantz, L. Glinsman, L. Hayek, D. Hook, V. Kantarelou, A. Karydas, L. Lee, J. Mass, B. McCarthy, M. Mcgath, A. Shugar, J. Sirois, D. Smith, R.J. Speakman), “The Application of Alloy Analysis to Questions of Attribution: Giovanni Francesco Susini and the Workshop of Giambologna” (D. Smith), “Bringing Context to the Smithsonian Collections of Pre-Columbian Gold from Panama Through Technical Examination and Analysis” (A. Harrison, H.F. Beaubien), and “The Effect of Surface Changes in Heat Treated Bronze Samples Analyzed By X-Ray Fluorescence Spectrometry” (R. Van Langh, A. Pappot, S. Creange, L. Megens, I. Joosten), while on the same day, papers in Session 3, Technical Studies, comprised “Blisters in Fire Gildings on Silver: an Investigation into Blister Formation and the Effect of Conservation Treatments” (E. Van Bork, S. Creange, I. Joosten), “Organic Coatings Found on Tibetan Buddhist Gilt Copper Alloy Statuary At the American Museum of Natural History” (K.U. Knauer, E. Nunan, J. Levinson, A. Rizzo, W.C. Petersen, J. Mass, K.A. Paul), and “Imitation-Bronze Paints on American Zinc Sculpture” (C.A. Grissom, A. Mack, M. Wachowiak, G. Bieniosek).

Presentations from October 14th included papers in Session 1, Caring for Outdoor Cultural Heritage, such as “Regilding the Golden Goddess: the Challenge of Conserving a Monumental Bronze Statue 20 Stories off the Ground in Madison, Wisconsin” (A. Rajer), “Surface Preparation and Coating Application Practices for the Conservation of Large-Scale Metal Artifacts” (J. Posluszny Bello, P. Miller, M. Rabinowitz, J. Sembrat), “Traditional Architectural Ironwork: Scientific Approaches to Determining Best Conservation Practice and the *Bute Canopy* Case Study” (L. Wilson, A. Davey, D.S. Mitchell, A. Davidson), “A Study of Coating Materials for Outdoor Iron Objects” (D. Shen, L. Ma, B. He, Q. Ma, L. Pan), and “Saving Your Spangles: the Conservation and Care of Galvanised Steel Sculptures” (E. Fryer, D. Pullen, D. Greenfield), while papers in Session 2, Engineering and 3D Technology in Conservation, included “Treatment of the Damaged Bronze of Rodin’s *the Thinker* from the Singer Museum in Laren, the Netherlands: an Innovative Approach” (T.P.C. Beentjes, T. Davidowitz, R. Van

Der Molen), “Digital Documentation of Historic Ferrous Metal Structures: 3D Laser Scanning as a Conservation Tool” (L. Wilson, D.S. Mitchell, A. Davey, D. Prichard), “An Integrated Structural Health Monitoring System for the Preservation of the Historic Fireboat *Alexander Grantham*” (J.C.Y. Tse, S.W.S. Liu, E.S. Yeung, S. Chan), “Finite Element Analysis of the *H.L. Hunley* Submarine: A Turning Point in the Project’s History” (V.Y. Blouin, P. Mardikian, C. Watters), and “Finite Element Analysis of Corrosion-Induced Progressive Collapse of the Wreck of the USS *Arizona*” (T. Foecke, L. Ma, M.A. Russell, D.L. Conlin, L.E. Murphy).

Presentations from October 15th included papers in Session 2, Innovative Techniques, included “Qualitative Analysis of Historic Copper Alloy Objects by Measuring Corrosion Potential versus Time” (C. Degrigny, G. Guibert, S. Ramseyer, G. Rapp, A. Tarchini), “Computed Tomography: A Powerful Tool for Non-Destructive Mass-Documentation of Archaeological Metals” (N. Ebinger-Rist, C. Peek, J. Stelzner, F. Gauß), and “A Scientific Study and Preliminary Experiments for Electrolytic Reduction of Corroded Lead Inlays on Japanese Lacquer Objects” (M. Van Bellegem, Q. Wang, P. Fletcher).

Papers from the poster session comprised “Non-Toxic Corrosion Inhibitors for the Conservation of Bronzes and Gilded Bronzes Exposed to the Atmosphere” (A. Balbo, S. Goidanich, C. Chiavari, C. Martini, L. Toniolo, D. Matera, C. Monticelli), “Non-Invasive Investigation of Poligen® ES91009, A Water-Dispersible Organic Coating on Metals with Reflectance-Absorption Infra Red Spectrometry” (S.C. Boyatzis, A.M. Douvas, A. Siatou, V. Argyropoulos), “Dry Ice Dusting Cleaning Trials of Muntz Metal Sheathing from the Clipper Ship *Snow Squall*” (M. Carlson, R.B. Heath), “Colorado Auro: Experiments and Analytical Investigation of a Medieval Colouring Recipe on Gilded Plates” (A.C. Crabbé, H.J.M. Wouters, G. Dewanckel, I. Vandendael), “The Treatment and Display of A 16th – 17th Century Wrought Iron Swivel Gun Recovered from A Marine Environment” (J.B. Crawford, C. Degrigny, J. Licari, E. Magro-Conti), “Iron from London’s Waterlogged Sites – Thirty Years On” (H. Ganiaris, R. Johnson, E. Barham, E. Goodman), “New Materials for Treating Ferrous Metal Objects: A Case Study of a 19th Century Painted, Tinned-Iron Spice Box from the Winterthur Museum” (L.B. Gordon, R. Wolbers, B. Pouliot), “Conservation and Restoration of a WWII CB-20 Submarine” (Z. Kirchhoffer), “Conservation of Lt. Dixon’s Pocket Watch Recovered from the *H.L. Hunley* Submarine (1864)” (J. Rivera, P. Mardikian, D. Nied), “Evaluation of Sodium Nitrite as a Corrosion Inhibitor for USS *Monitor* Artifacts” (E. Sangouard, E. Nordgren, R. Spohn), “Historic Iron Stabilisation Treatments: A Public Survey” (E. Schmuecker, R. Payton), and “Testing for Localized Electrochemical Cleaning of Two 17th Century Gilt Silver Decorative Artifacts” (J. Wolfe, M. Bouchard, C. Degrigny).

Courses

Ancient and Historic Metals: Technology, Microstructure, and Corrosion. The course will be held at University of California, Los Angeles (UCLA), from Monday, July 4th to

Friday July 8th, 2011. It acts as an introduction and a focus of more intensive study dealing with the examination, analysis, metallographic examination and deterioration of ancient and historic metals. The course is designed to benefit conservators, scientists and archaeologists who wish to learn how to prepare metallic samples for metallographic study, learn something of the technological aspects of the working and structure of metals, and how corrosion and patination can be discussed and examined.

Artifacts for examination: Over the past 27 years an unrivalled collection of mounted metallographic samples has been assembled, which are studied as part of the course practical work, involving both polarized light microscopy and metallographic microscopy of both freshly polished and etched samples. These samples range from Chinese cast iron from to Indian wootz steel, bronze coinage alloys from the Roman Empire to high-tin bronze from ancient Thailand, silver alloys from the Parthian period to ancient Ecuador, gilded copper and *tumbaga* from Peru and Colombia, to mention only a few of the geographical areas and materials covered by available samples. Course participants will be instructed in the use of polishing and etching in the examination of samples and are encouraged to keep digital images of the samples they have prepared during the week. Students may also bring their own samples for examination if mounted and ground, or if not mounted, then one or two samples may be brought which can be mounted and prepared during the course.

Course Schedule: The course will be held over the five days from Monday July 4th to Friday July 8th 2011. The course will be held at UCLA in the basement of the Fowler Museum Building, Room A312, on the UCLA campus. Many nearby hotels and parking available and details will be sent on request. The course will run from 9:15am-5pm each day. The course is open to a maximum of 10 participants only. Course Costs: The cost of the instruction for the five days will be \$850.00 or sterling equivalent of this amount [530 Pounds Sterling]. For details of payment and to register for this course, please contact the course organizer and director: Professor David A. Scott <dascott@ucla.edu>, Room A410, The Cotsen Institute of Archaeology, UCLA, 405 Hilgard Avenue, Los Angeles CA 90095-1510, USA.

Web Resources

SMELT 2010 took place in the National Heritage Park, Ferrycarrig, Co. Wexford. It was an attempt, for the first time since the 1950s, to smelt Irish bog ore in a furnace based on Irish archaeological evidence. The project focused on the smelt itself (detailed in the documentary above) but the project also included the experimental production of oak and peat charcoal in conjunction with Niall Kenny (see <http://charcoal.seandalaiocht.com/>) as well as prospection for bog ore and some flint knapping by Emmett O'Keefe. A twenty-two minute high-definition video of the SMELT 2010 documentary can be viewed at: <http://smelt.seandalaiocht.com/>.

BOOK REVIEWS

David Hill, Associate Editor

There is considerable variability in this issue in the volumes presented for review. The issues reviews include a collection of papers regarding voice and position in the presentation of archaeological knowledge, an analysis of stone-tool manufacture and use by the Maya, and a volume that presents the archaeology of the Fremont archaeological culture of Utah. For readers unfamiliar with the Fremont and their expressive rock-art should look at the following link: http://www.jqjacobs.net/rock_art/fremont.html

Two of the volumes were identified by independent reviews as inadequately referenced. Archaeology is a comparative science. Authors should remember this fact when preparing manuscripts for publication wheatear they are presenting the theoretical underpinnings of their research or in citing studies from adjacent areas. Limited citation diminishes the value of the research. Four further discussion of the role of citation in archaeological research I highly recommend the articles (and references) contained in *Archaeologies: Journal of the World Archaeological Congress*. August 2010 Volume 6, Number 2.

Cosmopolitan Archaeologies. Lynn Meskell (editor). Duke University Press, Durham: 2009. 304 pp, index. Price: US\$23.95 (paper), ISBN: 0822344440.

Reviewed by Deni J. Seymour, Research Associate, The Southwest Center, University of Arizona, Tucson, AZ, USA.

Cosmopolitanism, a current theme in many allied fields, has special ethical and investigatory significance for archaeologists who study cultural and behavioral diversity. The 10 authors in this volume present a range of views; many rely on the theoretical paradigm of Anthony Appiah and focus on a “rooted cosmopolitanism.” In attempting to outline the boundaries of this topic for what they view as a morally based archaeology in contemporary society, they encompass a range of topics, geographic areas, and perspectives. Papers are composed by scholars prominent in the field as well as younger contributors.

Aggravated by archaeology’s peripheral role and influence in the world, these authors advocate direct researcher involvement to change power relations. They attempt to define a new theoretical sector, although they neglect to consider or cite the relevant advocacy, empowerment, action, and conflict theory current in a number of modern fields motivated by similar concerns, such as sociology, healthcare, and other fields. Of relevance is that politics said to promote equality and social justice may ultimately lead to a homogenization of the world’s populations, suppression of cultural difference, and unforeseen deleterious consequences. Without a sophisticated understanding of political and culture change theory, indigenous groups—who are often at the mercy of their anthropological advisors—may not be adequately informed, just as ravaged Colonial-period populations were not given clear and disinterested advice on the most beneficial courses of action. No doubt, archaeologists should be part of this emerging

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ANTHROPOLOGY IS MORE THAN A DISCUSSION ABOUT SCIENCE

By **Sandra L. Lopez Varela**



SAS President Sandra Lopez Varela, second from left, at a recent meeting in Mexico focused on interdisciplinary research and integration of academic and industrial sciences.

Along my professional career, I have been given the responsibility to represent the values and interests of academic organizations committed to the advancement of science, technology, and education. Profoundly rewarded by the experience of leading their goals, I have come to the realization that societies require more than ever of archaeology to build their own futures. Archaeology, given its long relationship with science, technology and the humanities, is the perfect interlocutor to unite academic worlds of knowledge to approach modern social inquiries and problems solving of climatic change, health, migration, security, or development planning. Archaeology as anthropology is increasingly and strongly demonstrating the advantage of placing human beings as the cause of any scientific research and institutional policies, and the favorable impact of considering their voices and rights in designing their own future. This dialogue is favorable to us all involved in archaeology as it not only constitutes a route to advance and to share our knowledge with other disciplines, including anthropology, of how societies in the past have confronted similar issues and how they are responding presently, but also, it creates innovative career opportunities for archaeologists-in-training who can help make a difference.

Still, to my dismay, the relationship of anthropology with science has once more come under scrutiny as a result of the presentation of the long-range plan (LRP), prepared exclusively by the Executive Board of the American Anthropological Association, at the end of 2010. Most of the discussion has surrounded around the removal of the word science and the

new mission of the AAA of “promoting a public understanding” of humankind. As my term as President of the Society for Archaeological Sciences is coming to an end, the discussion is meaningful to me, not only because of the still unnoticed concerns I raised during my short lived participation in the AAA LRP committee in 2008, as it was dissolved by the Executive Board in the spring of 2009, but also, for the relevance it has to SAS, an international society, fostering an ethical use of science and technology for the benefit of humankind.

Being an international society, such as SAS, requires an understanding that there are diverse and shifting ways of approaching archaeology around the world. This understanding stands for challenges in serving the needs of its members, for example, finding financial support to bring those less fortunate to travel to meetings, both faculty and students. Equally important in building SAS as an international society is the awareness that archaeological sciences develop in the academia, the applied private and public sectors, even in a free-lancing context. Despite that several countries, such as the US and Mexico, shared the same disciplinary forefather, the growth of anthropology in my country encompasses a greater number of disciplines of what anthropology is currently to the AAA. In many instances, archaeological research has extended its limits of studying humans in the past and the present to the future, by getting involved in heritage preservation or by planning and developing future cities.

This inclusive perspective that SAS promotes was a main factor for my vote against the first draft of the LRP (the only one in opposition), as was the realization that this forecasting tool of strategic management is inadequately understood, as it is the actual mixing of concepts involved in it, and its lack of mechanisms and clear financing to evaluate the rate of success. Much in the same way physicists have established the difference between energy and electricity, business experts have defined a strategic management tool that is very different from an operational plan. Thus, the current discussion goes beyond the word science. It is about a society understanding the

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Dept. of Sociology & Anthropology
Indiana University South Bend
1700 Mishawaka Ave
South Bend, IN 46634-7111 USA

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SAS BULLETIN STAFF

Editor: **James M. VanderVeen**, Department of Sociology and Anthropology, Indiana University South Bend, 1700 Mishawaka Ave, South Bend, IN 46634-7111, USA; tel 574-520-4618; email jmvander@iusb.edu

Associate Editor, Archaeological Ceramics: **Charles C. Kolb**, Division of Preservation and Access, National Endowment for the Humanities, Room 411, 1100 Pennsylvania Avenue, NW, Washington, DC 20506, USA; tel 202-606-8250; email ckolb@neh.gov

Associate Editor, Archaeological Chemistry: **Ruth Ann Armitage**, Department of Chemistry, Eastern Michigan University, Ypsilanti, MI 48197, USA; tel 734-487-0290; email rarmitage@emich.edu

Associate Editor, Archaeometallurgy: **Thomas R. Fenn**, School of Anthropology, University of Arizona, 1009 E. South Campus Drive, Tucson, AZ 85721-0030, USA; tel 520-621-2846; email tfenn@email.arizona.edu

Associate Editor, Bioarchaeology: **Gordon F.M. Rakita**, Department of Sociology, Anthropology, & Criminal Justice, University of North Florida, 4567 St. Johns Bluff Rd., South Jacksonville, FL 32224-2659, USA; tel 904-620-1658; email grakita@unf.edu

Associate Editor, Book Reviews: **David V. Hill**, 2770 S. Elmira St., #38, Denver, CO 80321, USA; tel (303) 337-2947; email dhill1@att.net

Associate Editor, Dating: **Gregory W.L. Hodgins**, Physics and Atmospheric Sciences, NSF Arizona AMS Facility, 1118 E. 4th Street, University of Arizona, Box 0081, Tucson, AZ 85721, USA; tel 520-626-3619; email ghodgins@physics.arizona.edu

Associate Editor, Geoarchaeology: **Jane A. Entwistle**, Geography, School of Applied Sciences, Northumbria University, Sandyford Road, Newcastle upon Tyne NE1 8ST, UK; tel 44(0)191-227-3017; email jane.entwistle@northumbria.ac.uk

Associate Editor, Meeting Calendar: **Rachel S. Popelka-Filcoff**, School of Chemical and Physical Sciences, Physical Sciences Building, Flinders University, Adelaide, South Australia 5001, Australia; tel (61) 8 8201 5526; email rachel.popelkafilcoff@flinders.edu.au

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SASweb & SASnet: **Destiny L. Crider**, Archaeological Research Institute, Arizona State University, Tempe, AZ 85287-2402, USA; tel 602-965-9231; email destiny.crider@asu.edu

SASblog: **Robert S. Sternberg**, Department of Earth and Environment, Franklin & Marshall College, Lancaster, PA 17604-3003, USA; tel 717-291-4134; email rob.sternberg@fandm.edu

Vice President for Intersociety Relations: **Adrian L. Burke**, Département d'Anthropologie, Université de Montréal, C.P.6128, succursale Centreville, Montréal QC H3C 3J7, Canada; tel 514-343-6909; email adrian.burke@umontreal.ca

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Publications Coordinator: **Robert H. Tykot**, Department of Anthropology, University of South Florida, 4202 E. Fowler Ave., Tampa, FL 33620-8100, USA; tel 813-974-7279; email rtkot@cas.usf.edu

SAS Editor for Archaeometry: **James H. Burton**, Department of Anthropology, University of Wisconsin, Madison, WI 53706-1393, USA; tel 608-262-4505; email jhburton@facstaff.wisc.edu

SAS Representative on the International Symposium on Archaeometry Committee: **Sarah U. Wisseman**, Program on Ancient Technologies and Archaeological Materials, University of Illinois at Urbana-Champaign, 78 Bevier Hall, 905 S. Goodwin, MC 187, Urbana, IL 61801, USA; tel 217-333-6629; email wisarc@uiuc.edu

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