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Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Ιούλιος 2012 -

*In all things of nature there is something of the marvelous
(Aristotle)*

Newsletter of the Hellenic Society of Archaeometry

- July 2012 -

Nr. 136

ΠΙΝΑΚΑΣ ΠΕΡΙΕΧΟΜΕΝΩΝ – TABLE OF CONTENTS

ΣΥΝΕΔΡΙΑ – CONFERENCES/WORKSHOPS

PHYSIS. 14ème rencontre égéenne internationale	page 5
5th International Meeting of Charcoal Analysis Charcoal as Cultural and Biological Heritage	page 6
Abstract deadline 1st July - 12th International Paleolimnology Symposium, Glasgow 21-24 Aug 2012	page 7
Historical Metallurgy Society Annual Conference, Not so much Gold, Silver, Bronze - more Copper, Zinc and Brass, SS Great Britain, Bristol, England, 6th -7th October 2012	page 8
E-Learning στην Αρχαιομετρία (Νέες Τεχνολογίες, Συντήρηση & Διαχείριση Αρχαιοτήτων)	page 9
XIXe COLLOQUE DU GMPCA, 22 - 26 AVRIL 2013, UNIVERSITÉ DE CAEN BASSE-NORMANDIE – FRANCE, 1re CIRCULAIRE	page 10
INTERNATIONAL CONFERENCE, THE PAST FOR SALE? New Perspectives on the Economic Entanglements of Cultural Heritage, May 15-17, 2013, University of Massachusetts Amherst Center for Heritage and Society	page 12

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ – JOB VACANCIES/FELLOWSHIPS

Postdoctoral Fellowship, University of Toronto - Archaeoinformatics and Ancient Near Eastern Civilizations	page 13
FELLOWSHIPS: At the British School at Athens	page 14
THE MEDITERRANEAN ARCHAEOLOGICAL TRUST - GRANTS TO ASSIST PUBLICATION	page 15
Industrial Heritage Support Officer	page 16

ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS

LAIS2012	page 18
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INTERNET SITES

web-site Aegean and Balkan Prehistory	page 19
The Plakias Stone Age Project	page 20
Τα Μυστικά της Σπηλιάς της Δράκαινας	page 21

ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

Volume 5 of "Bioarchaeology of the Near East"	page 22
---	----------------

The oldest maritime sanctuary? Dating the sanctuary at Keros and the Cycladic Early Bronze Age, Colin Renfrew, Michael Boyd & Christopher Bronk Ramsey, <i>Antiquity</i> 86.331 (March 2012): 144-160	page 23
Anatolia Antiqua XX (2012), Aksel Tibet & Olivier Henry (éd.), De Boccard, Paris	page 24
Eastern Mediterranean Metallurgy in the Second Millennium BC edited by Vasiliki Kassianidou and George Papasavvas	page 25
eTOPOI: Journal for Ancient Studies	page 27
The Middle Pleistocene archaeological record of Greece and the role of the Aegean in hominin dispersals: new data and interpretations	page 29
The geoarchaeology of Mycenaean chamber tombs	page 30
The Roman and Byzantine Graves and Human Remains (Isthmia IX), by Joseph L. Rife	page 31
<u>ΕΙΛΗΣΕΙΣ - NEWS RELEASE</u>	
New secrets from 'Bay of the Pirates' warship that sunk 2,300 years ago	page 33
Colorized Arch of Titus	page 34
Deepest ever Roman-era shipwrecks found near Greece	page 36
Uncovering the Great Theater of Apamea, By Cynthia Finlayson	page 37
Archaeologists look for wrecks off Qatar coast Considering that the Gulf has been part of a maritime trade network extending back into the 7th millennium, the region has the potential for shipwrecks from both the historic and prehistoric, By Bonnie James	page 43
Human Evolution Discoveries in Iraq	page 45
PUZZLE OF PALMYRA IN SYRIAN DESERT SOLVED	page 46
Neanderthals May Have Been First Cave Painters, By Sergio Prosta	page 48
Underwater archaeologists get education far away from the sea	page 50
Oldest Natural Pearl Found in Arabia, Analysis by Rossella Lorenzi	page 52
Chemical analysis of pottery reveals first dairying in Saharan Africa in the fifth millennium BC	page 54
Archaeologist hopes to resume investigation in Syria, By Alvin Powell	page 58

Technology Identifies Lost Color at Roman Forum, By ELISABETTA POVOLEDO	page 60
Rome Icon Actually Younger Than the City, by Rossella Lorenzi	page 62
Pakistan: Buddha attacked by Taliban gets facelift, by SEBASTIAN ABBOT ..	page 64
Syria’s secretive heritage unearthed, scientists can’t wait to resume research	page 67
Prehuman Species Preferred Forest Foods, Fossil Teeth Suggest By JOHN NOBLE WILFORD	page 68
Ancient Dairy Farmers Of the Green Sahara, By SINDYA N. BHANOO	page 70
Des doutes pèsent sur la conservation de Lascaux	page 71

ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

PHYSIS. 14ÈME RENCONTRE ÉGÉENNE
INTERNATIONALE

The webpages of the 14th Rencontre égéenne internationale are now online at :
<http://www.mae.u-paris10.fr/arscan/PHYSIS-14eme-rencontre-egeenne.html>

For the organizing committee

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**5TH INTERNATIONAL MEETING OF
CHARCOAL ANALYSIS CHARCOAL AS
CULTURAL AND BIOLOGICAL HERITAGE**

Please visit the site: <http://ojs.uv.es/index.php/saguntumextra/issue/view/108> [Go there for all the necessary links]

ABSTRACT DEADLINE 1ST JULY - 12TH
INTERNATIONAL PALEOLIMNOLOGY
SYMPOSIUM, GLASGOW 21-24 AUG 2012

This is a reminder that the deadline for submission of abstracts for IPS2012 is the **1st July 2012** - this coming weekend. So please submit your abstracts in good time as we will not accept them afterwards.

With nearly 300 delegates already registered and a number of exhibitors it plans to be a lively meeting, so those of you who are not already registered then please do so at:

www.paleolim.org/ips2012

We look forward to welcoming you to Glasgow.

Andy

Dr Andrew Henderson

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HISTORICAL METALLURGY SOCIETY
ANNUAL CONFERENCE, NOT SO MUCH
GOLD, SILVER, BRONZE - MORE COPPER,
ZINC AND BRASS, SS GREAT BRITAIN,
BRISTOL, ENGLAND, 6TH -7TH OCTOBER
2012

The Historical Metallurgy Society is celebrating its 50th anniversary this year with a series of conferences. In this Olympic year the Historical Metallurgy Society would like to invite you to join us for a one day conference on the real stories behind non-ferrous metals - not just gold, silver, and bronze, but copper, zinc, brass and others.

This conference offers an opportunity to explore themes relating to the history and archaeology of all non-ferrous metals. With the SS Great Britain as a backdrop there will be a broad theme of communication; communication of ideas, metals as communication tools and the role of non-ferrous metallurgy in the slave trade.

The conference on the 6th of October will be hosted in the stunning Victorian surrounds of the SS Great Britain, the world's first great ocean liner. Registration for the conference will include access to the ship, refreshments, a light lunch and afternoon tea. The Bristol area is rich with non-ferrous archaeological sites, and on Sunday 7th October there will be an opportunity to explore Roman lead workings and post-medieval copper works with expert guides.

HMS members £45

Non-members £55

Student HMS members £35

The booking form is available on the Historical Metallurgy website <http://hist-met.org/conf2012.html> . For more information or contact Eleanor Blakelock at eleanor.blakelock@ironsmelting.net

E-LEARNING ΣΤΗΝ ΑΡΧΑΙΟΜΕΤΡΙΑ (ΝΕΕΣ ΤΕΧΝΟΛΟΓΙΕΣ, ΣΥΝΤΗΡΗΣΗ & ΔΙΑΧΕΙΡΙΣΗ ΑΡΧΑΙΟΤΗΤΩΝ)

Επιστημονικά Υπεύθυνος: Λυριτζής Ιωάννης

Καθηγητής, Εργαστήριο Αρχαιομετρίας, Τμήμα Μεσογειακών Σπουδών, Πανεπιστήμιο
Αιγαίου

Διοργάνωση:

Τμήματα Πανεπιστημίου Αιγαίου:

- Σχολή Ανθρωπιστικών Επιστημών, Τμήμα Μεσογειακών Σπουδών
- Σχολή Κοινωνικών Επιστημών, Τμήμα Πολιτισμικής Τεχνολογίας & Επικοινωνίας
- Σχολή Περιβάλλοντος, Τμήμα Περιβάλλοντος

Συνεργαζόμενοι διδάσκοντες από τους φορείς:

- Τμήμα Συντήρησης Αρχαιοτήτων & Έργων Τέχνης ΑΤΕΙ ΑΘΗΝΑΣ
- Ελληνικό Κέντρο Θαλασσίων Ερευνών
- Εργαστήριο Γεωφυσικής, ΑΠΘ
- ΠΠΕΤ, Ξάνθη

Παρακαλώ επισκεφθείτε το δικτυακό τόπο: <http://e-epimorfosi.aegean.gr/archeometry-program-home>

XIXe COLLOQUE DU GMPCA, 22 - 26 AVRIL **2013, UNIVERSITÉ DE CAEN BASSE-** **NORMANDIE – FRANCE, 1re CIRCULAIRE**

Organisateurs :

CENTRE MICHEL DE BOÜARD, Centre de recherches archéologiques et historiques anciennes et médiévales (CRAHAM) UMR 6273

GÉOgraphie PHysique et ENvironnement (GÉOPHEN) LETG-CAEN UMR 6554 CNRS

SERVICE ARCHÉOLOGIE DU CONSEIL GÉNÉRAL DU CALVADOS

Objectifs du colloque : le colloque d'archéométrie du GMPCA a lieu tous les deux ans depuis 1977. Il permet de réunir les archéomètres de toutes les disciplines. Il s'organise en de plusieurs sessions thématiques (toutes périodes confondues), dont certaines sont introduites par des communications orales. Des exposés plus courts et des posters permettent de présenter des avancées méthodologiques et des applications novatrices particulières. Les posters seront affichés durant toute la durée du colloque.

Le colloque se tiendra à Caen, capitale régionale de la Basse-Normandie, dans une des plus anciennes universités de France. Située à proximité du rivage de la Manche et des plages du débarquement de 1944, la ville de Guillaume le Conquérant attire de nombreux visiteurs grâce à son riche patrimoine historique, son château, ses abbayes romanes, ses nombreux monuments, net grâce à ses musées dont le Mémorial pour la Paix. Les bombardements de 1944 ont marqué à jamais la ville et son environnement. Elle en a heureusement tiré le meilleur parti pour sa reconstruction.

Comité d'honneur : Pierre BAUDUIN (CRAHAM), Pascal DEPAEPE (Inrap-UMR 7194 MNHN), Henri DUDAY (PACEA), François FICHET de CLAIRFONTAINE (MCC-DRAC/CRAHAM), Olivier MAQUAIRE (LETG CAEN-Géophen)

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Comité local d'organisation : Cécile ALLINNE (CRAHAM), Abdelkrim BENSALIM (LETG CAEN-Géophen), Laëtitia BIRÉE (CRAHAM/LETG CAEN-Géophen), Anne BOCQUET-LIÉNARD (CRAHAM), Cécile CHAPELAIN de SERÉVILLE-NIEL (CRAHAM), Nicola COULTHARD (CG14), Robert DAVIDSON (LETG CAEN-Géophen), Aline GARNIER (LETG CAEN-Géophen), Cécile GERMAIN-VALLÉE

(CG14), Laurent LESPEZ (LETG CAEN-Géophen), Christelle LEBEL (CG14), Xavier SAVARY (CG14)

Date limite de soumission des résumés : 15 OCT 2012

Notification d'acceptation : JAN 2013

Date limite d'inscription et de paiement : 28 FEV 2013

Contacts :

colloque.archeometrie@unicaen.fr

(33) [0]2 31 56 57 25/59 17

www.unicaen.fr/archeometrie2013

Les analyses micromorphologiques en géoarchéologie

Mots clés : sédiment, sol, organisation fonctionnelle, habitat, ressources environnementales, systèmes agraires, paysage

Restitution des paysages anciens

Mots clés : méthodologie, représentation, modèle 3D, SIG

Relation homme-environnement

Mots clés : écosystèmes, écofacts, artefacts, paléoenvironnement, subsistance, archéozoologie, archéobotanique

Restitution des échanges : de la production à la diffusion

Mots clés : terre crue, terre cuite, verre, pierre, métal, matière picturale, matière première, fabrication, distribution, réseau

Anthropologie et analyses biologiques

Mots clés : anthropologie physique, pathologie, épidémiologie, démographie, microbiologie, taphonomie, analyse spatiale

Chronologie et modélisation : datation, transition, rupture

Mots clés : référentiel, indicateur chronologique, outils de modélisation, hiatus

**INTERNATIONAL CONFERENCE, THE PAST
FOR SALE? NEW PERSPECTIVES ON THE
ECONOMIC ENTANGLEMENTS OF
CULTURAL HERITAGE, MAY 15-17, 2013,
UNIVERSITY OF MASSACHUSETTS
AMHERST CENTER FOR HERITAGE AND
SOCIETY**

The University of Massachusetts Amherst Center for Heritage and Society is pleased to announce an

INTERNATIONAL CONFERENCE

To be held May 15-17, 2013, at the UMass Amherst Campus

THE PAST FOR SALE?

New Perspectives on the Economic Entanglements of Cultural Heritage

The economic valuation of cultural heritage —whether protected and developed or illegally looted and exported—is among the most pressing practical research questions in the fields of both Cultural Heritage Studies and Community Development. What price in dollars or social value does heritage have in the 21st century?

On the one hand, nations, regions, cities, and even small towns are investing significant public funds in the development and public presentation of archaeological sites, historic monuments, and historic districts in the hope of economic revitalization through tourism or raised property values. On the other, unprecedented diplomatic and legal measures are being taken to repatriate looted cultural property and put an end to the enormously profitable antiquities trade. What are the REAL figures? How can we tease apart the commonly accepted narratives from the economic and social data?

The goal of this conference is to bring together a wide range of academics, economists, heritage professionals, development experts, government officials, and community leaders to examine the economic impact of cultural heritage. Yet rather than seeing tourism, urban redevelopment, and antiquities looting as distinct economic problems—as case-by-case profits and/or losses—we hope to encourage a multi-disciplinary discussion of the economic entanglements of cultural heritage.

Some of the themes to be explored include: tourism, urban revitalization, looting and its costs, and the business of ancient art. Selected papers will be published in *Heritage & Society*, a peer-reviewed journal, whose editorship has been assumed by the UMass Amherst Center for Heritage and Society.

Further details and a formal call for papers will be posted soon.

Please visit the site: <http://www.umass.edu/chs/news/conference2013.html>

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ –
JOB VACANCIES/FELLOWSHIPS

POSTDOCTORAL FELLOWSHIP,
UNIVERSITY OF TORONTO -
ARCHAEOINFORMATICS AND ANCIENT
NEAR EASTERN CIVILIZATIONS

A Postdoctoral Fellowship (PDF) is available at the Archaeology Centre, University of Toronto, as part of the CRANE initiative (“Computational Research on the Ancient Near East: An Archaeological Data Integration, Simulation, and 3-D Visualization Initiative”) under the direction of Prof. Timothy Harrison. The term of the PDF is two years beginning August 1, 2012, and the annual salary is \$50,000. The successful candidate will have a PhD in archaeology; education and field training in the archaeology of complex societies; and comprehension of archaeological methods such as ceramic analysis, chronometric analysis, and paleo-environmental reconstruction.

Experience in archaeological data management is required. Knowledge of Microsoft Office products, Adobe imaging software, GIS programs, and SQL databases (e.g., DB2) would be an asset. The PDF will oversee the integration of all research data from several participating archaeological projects within the CRANE computational environment using the OCHRE database system (“Online Cultural Heritage Research Environment”). The PDF will receive training for this from the OCHRE Data Service at the University of Chicago. The PDF will participate as a full member of the CRANE research team. There is also potential for teaching courses in archaeological informatics, contingent on funding.

Applicants who are not Canadian citizens or landed residents must have their PhD in hand by the start date of the fellowship. Applications consisting of a cover letter describing computational and archaeological experience, a complete CV, and the names and contact information for two references should be sent by email to Jennifer Campbell at the Archaeology Centre (archaeology@utoronto.ca) by July 6, 2012.

FELLOWSHIPS: AT THE BRITISH SCHOOL **AT ATHENS**

Applications are invited from graduate students or young scholars for an award to support research at the Fitch Laboratory, British School at Athens (BSA) for up to 3 months in the academic year 2012-13 in any of the fields in which the Laboratory is active (e.g. ceramic petrology, archaeometallurgy, geophysical prospection, zooarchaeology, archaeobotany, soil micromorphology, ethnoarchaeology, landscape archaeology, archaeology of technology; normally in the context of Aegean/Mediterranean archaeology). Preference may be given to research on bioarchaeology and soil micromorphology.

The Bursary includes a monthly stipend (400€), BSA membership and accommodation at the BSA Hostel in Athens and, if required for research purposes, also in Knossos. The award holder will be required to submit a report on her/his research at the Laboratory to the Laboratory's Subcommittee and Director.

The successful applicant will be expected to use the facilities of the Fitch Laboratory (including analytical equipment and reference collections) as well as the BSA library to further on-going work, in the context of a postgraduate degree or postdoctoral research. The award carries no other formal obligation, although involvement in the academic life of the BSA (for example in the form of a seminar) is welcome.

Applications should include a covering letter (indicating the preferred length and period of stay), a Curriculum Vitae, a statement of the proposed programme of research and the names and contact details of two referees. Applicants should ask referees to send their recommendations by the deadline. The successful applicant will be responsible for acquiring on time any required permits for study and transfer of archaeological material to the Fitch Laboratory.

Applicants are also advised to contact the Laboratory Director if the use of analytical facilities is necessary for the proposed research.

Applications and reference letters should be submitted by Friday 31st August 2012 via e-mail (school.administrator@bsa.ac.uk).

Potential applicants may contact Mrs Tania Gerousi, the BSA administrator (school.administrator@bsa.ac.uk), or Dr Evangelia Kiriati, the Laboratory Director (fldirector@bsa.ac.uk), for further information.

Additional details about the School and the Laboratory can be also found at <http://www.bsa.ac.uk/>.

THE MEDITERRANEAN ARCHAEOLOGICAL TRUST - GRANTS TO ASSIST PUBLICATION

The Mediterranean Archaeological Trust, set up in 1959 for the promotion of the study of archaeology, invites applications for grants, made on a competitive basis, for expenses in 2013-14, in the preparation for final publication of material from archaeological **excavation or fieldwork** in the Mediterranean world, **excluding** subventions to publishers or publication of material not from a specific excavation, or in symposia. Within the terms of the Trust, priority may be given to publication of Bronze Age sites. Grants for any amount, however small, will be considered, provided they expedite publication. The grants do not normally exceed £ 2000.

Applications comprising a 1500-word (**maximum**) description of the proposed work and an outline budget (avoiding unnecessary photography or 'inking-in'), together with two referees' names, and an indication of means of payment (full bank details) if successful, your address and e-mail, should be sent no later than 31 January 2013, to:

Professor Sir John Boardman
(Mediterranean Archaeological Trust)
Classics Centre
66 St. Giles
Oxford OX1 3LU
G.B.
[or **also** by fax to [01865 610237](tel:01865610237); **NOT** by email]

Please indicate the importance of the site, your qualifications, other sources of support, and the present or planned status of publication. Apply in good time. The references (which are **essential**) should be sent directly by the referees and must meet the deadline of 31 January, or accompany the application in a sealed envelope. Successful applicants will be informed in April 2013.

Additional information at:

<https://sites.google.com/site/medarchtrust/mediterranean-archaeological-trust-home>

INDUSTRIAL HERITAGE SUPPORT OFFICER

Dear all,

The Ironbridge Gorge Museum Trust in partnership with English Heritage, the Association of Independent Museums and the Association for Industrial Archaeology is currently inviting applications for the position of Industrial Heritage Support Officer. Could you please pass on the job description to anybody that you think it might interest.

All best wishes,

Shane Kelleher

Archaeology and Monuments Officer
Ironbridge Gorge Museum Trust
shane.kelleher@ironbridge.org.uk

The Ironbridge Gorge Museum Trust, in Shropshire, is one of the World's most entrepreneurial independent museums and an international leader in the field of industrial heritage conservation & interpretation. In partnership with English Heritage, the Association of Independent Museums and the Association for Industrial Archaeology, applications are invited for the following position:

INDUSTRIAL HERITAGE SUPPORT OFFICER

Salary £27k, 3 Year Fixed Term Post, based at Coalbrookdale, Shropshire

The post-holder will develop a national strategy to support the long-term future of preserved industrial heritage sites that are accessible to the public and recognised as needing support.

They will identify support mechanisms and sources of funding along with community groups & volunteers who could be engaged with the long-term care of the identified sites. The role would suit a graduate, museums or heritage professional who has experience of either the conservation, management or operation of heritage sites, ideally industrial in focus, knowledge of appropriate funding streams and experience of setting up support networks.

Salary £27k, 3 Year Fixed Term Post, based at Coalbrookdale, Shropshire

Applicants for this position must hold a full driving licence and have access to their own transport.

Applications are by covering letter and application form, closing date Monday 9 July 2012, 12 noon. Interviews will be held on Monday 23 July 2012 at Coalbrookdale.

To request a Job Description and application form please contact Sharon Dale, HR Officer at the e-mail address below.

Please note C.V.s are not acceptable. Previous applicants need not apply.

Sharon Dale, HR Officer, e-mail: sharon.dale@ironbridge.org.uk The IRONBRIDGE GORGE MUSEUMS Coach Road Coalbrookdale Telford Shropshire TF8 7DQ Tel: 01952 435900 www.ironbridge.org.uk

We welcome applications from all sections of the community. Applicants with the appropriate skills and abilities will be guaranteed an interview if they have a disability.

Closing Date: 9 July 2012

Please visit the site:

http://www.ironbridge.org.uk/about_us/job_vacancies/vacancy.asp?id=150

ΑΝΑΚΟΙΝΩΣΕΙΣ - ANNOUNCEMENTS

LAIS2012

Dear Colleagues,

We have received a number of messages relating to abstracts submitted to LAIS2012 that were not received by the organizers.

We are informed that the problem has been resolved and was not specific to the LAIS2012@itn.pt address, but we have been unable to recover records of all messages.

If you have submitted an abstract to LAIS2012 and have not received a reply, please re-send it to both christoph@itn.pt and liritzis@Rhodes.Aegean.gr, requesting a read receipt, and we will respond directly.

The deadline for reduced fees has been extended to 21st June to account for this.

We take the opportunity to invite contributions from any colleagues who did not submit an abstract but still wish to do so.

Warm regards,

Chris Burbidge
On behalf of the LAIS2012 organizing committee,

and

Ioannis Liritzis
LAIS President.

INTERNET SITES

WEB-SITE AEGEAN AND BALKAN PREHISTORY

Dear colleagues and friends,

once again, I would like to draw your attention to our web-site Aegean and Balkan Prehistory. This time I am especially proud to present the English version of a less accessible paper on a new and important (even if unstratified) find from Varna in coastal Bulgaria: A sword-fragment of the same type as the so called Assuwa sword from Hattusa.

http://www.aegeobalkanprehistory.net/article.php?id_art=20
<http://www.aegeobalkanprehistory.net/article.php?id_art=20>

The arena for new historical interpretations is open! :-)

Peter

www.aegeobalkanprehistory.net

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THE PLAKIAS STONE AGE PROJECT

The Plakias Stone Age Project is a Greek-American collaborative project that funds research on the Stone Age discoveries around the village of Plakias in southwest Crete (Greece). It began in 2008 with the Plakias Mesolithic Survey where both Mesolithic (11,000– 9000 B.P.) and Lower Palaeolithic sites (1.5 million years–250,000 years ago) were found

Please visit the site: <http://blogs.providence.edu/plakias/>

ΤΑ ΜΥΣΤΙΚΑ ΤΗΣ ΣΠΗΛΙΑΣ ΤΗΣ ΔΡΑΚΑΙΝΑΣ

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ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

**VOLUME 5 OF "BIOARCHAEOLOGY OF
THE NEAR EAST"**

I am glad to inform that Volume 5 of "Bioarchaeology of the Near East"
is now available online at www.anthropology.uw.edu.pl.

The volume contains two regular papers, the first by Yossi Nagar about the IAA database of human remains and the second by Michele Buzon about Nubian identity in the Bronze Age. There are also a technical report about Smith's Mean Measure of Divergence, three short fieldwork reports (Syria, Iraq and Kuwait) and two book reviews.

This message has been sent to email addresses published in several Internet directories. Please feel free to forward it to anyone who might be interested in the journal. If you wish to receive notifications about future volumes of "Bioarchaeology of the Near East", please send a message to bioarchaeology@uw.edu.pl with "SUBSCRIBE" in the subject line or subscribe via the journal's web page.

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THE OLDEST MARITIME SANCTUARY?
DATING THE SANCTUARY AT KEROS AND
THE CYCLADIC EARLY BRONZE AGE,
COLIN RENFREW, MICHAEL BOYD &
CHRISTOPHER BRONK RAMSEY,
ANTIQUITY 86.331 (MARCH 2012): 144-160

Abstract

The sanctuary on the island of Keros takes the form of deposits of broken marble vessels and figurines, probably brought severally for deposition from elsewhere in the Cyclades. These acts of devotion have now been accurately dated, thanks to Bayesian analyses of the contemporary stratigraphic sequence on the neighbouring islet of Dhaskalio. The period of use -from 2750 to 2300 cal BC- precedes any identified worship of gods in the Aegean and the site is among the earliest ritual destinations only accessible by sea. The authors offer some preliminary thoughts on the definition of these precocious acts of pilgrimage.

Key words: [Cyclades](#), [Early Bronze Age](#), [Early Cycladic period](#), [figurines](#), [Keros](#), [maritime activity](#), [maritime networks](#), [pilgrimage](#), [religion](#), [sanctuary](#)

**ANATOLIA ANTIQUA XX (2012), AKSEL
TIBET & OLIVIER HENRY (ÉD.), DE
BOCCARD, PARIS**

Néhémie STRUPLER : Reconstitution des vases à reliefs monochromes d'Alaca Höyük et d'Eskiyapar

Alice MOUTON : Trois fragments hittites inédits en provenance d'une collection privée d'Istanbul

Olivier CASABONNE avec la collaboration d'Anaïs LAMESA et de Pascal LÉBOUTEILLER : Notes anatoliennes

Åke OLSON : How Eupalinos navigated his Way through the Mountain

Anton BAMMER und Ulrike MUSS : Zu Physik und Metaphysik der Bernsteine aus dem Artemision von Ephesos

Sarjit KAUR, Edith STOUT, Tripta KAUR and Venora ESTRIDG : Infrared Spectroscopy of Amber Samples from the Artemision Excavations of 1904/1905

Ergün LAFLI and Gülseren KAN ŞAHİN : Terra Sigillata and Red-Slipped Ware from Hadrianopolis in Southwestern Paphlagonia

Guy LABARRE, Mehmet ÖZSAIT, Nesrin ÖZSAIT et İlhan GÜCEREN : La collection du Musée d'Uluborlu : nouvelles inscriptions d'Apollonia Mordiaon

Martine ASSEMAT et Antoine PEREZ : Amida 1. Un théâtre à Amida

Nergis GÜNSENİN et Eric RIETH : Un graffito de bateau à voile latine sur une amphore (IXe s. ap. J.-C.) du Portus Theodosiacus(Yenikapı)

CHRONIQUES DES TRAVAUX ARCHEOLOGIQUES EN TURQUIE, 2011

Bleda S. DÜRING, Claudia GLATZ and T. Emre ŞERİFOĞLU : The Cide Archaeological Project 2011 : Third Preliminary Report

Isabelle CHALIER, Françoise KIRNER, Julie PATRIER et Aksel TİBET, sous la direction de Dominique BEYER : Zeyve Höyük-Porsuk : rapport préliminaire de la campagne 2011

Jean-Charles MORETTI avec la collaboration de Nicolas BRESCH, Isabel BONORA et Olivier RISS Claros, le temple d'Apollon : travaux réalisés en 2011

Please visit the site:

http://www.ifea-istanbul.net/index.php?option=com_k2&view=item&id=1557%3Aanatolia-antiqua-xx&Itemid=300&lang=fr

EASTERN MEDITERRANEAN
METALLURGY IN THE SECOND
MILLENNIUM BC EDITED BY VASILIKI
KASSIANIDOU AND GEORGE PAPASAVVAS

304p, 154 b/w illus, 24 tbls. (Oxbow Books 2011)

ISBN-13: 978-1-84217-453-1

ISBN-10: 1-84217-453-3

Hardback. Price US \$120.00

James D. Muhly is a distinguished scholar with a special interest in ancient metallurgy who has dedicated much of his research to Cypriot archaeology. His work on the metallurgy of ancient Cyprus endorses the true importance of the island as a copper producing region, as well as a pioneer in the development and spread of metallurgy and metalwork in the wider eastern and central Mediterranean region. This volume contains papers from "Eastern Mediterranean Metallurgy and Metalwork in the Second Millennium BC", an international conference organised in Muhly's honour by the University of Cyprus.

Several archaeologists and archaeometallurgists from around the world whose research focuses on the metallurgy of this period in Cyprus and surrounding regions were invited to participate in the conference to compare and contrast the material culture associated with metallurgical workshops and to discuss technological issues and their cultural and archaeological contexts. Some papers are devoted to the metallurgy and metalwork of Cyprus, presenting material from various sites and discussing the production and use of copper in the eastern Mediterranean. Others are dedicated to the Minoan and Aegean metal industry and the connections between Sardinia and Cyprus. Moving eastwards, from Anatolia through the Syro-palestinian coast and Jordan and south to Egypt, papers are presented that discuss Late Bronze Age metallurgy in Alalakh, Ugarit, Faynan, Timna and Qantir. The volume also includes papers on tin and iron.

Table of Contents

Preface (V. Kassianidou and G. Papasavvas)

Reminiscences: working with Jim Muhly (R. Maddin) 1. Late Bronze Age copper production in Cyprus from a mining geologist's perspective (G. Constantinou) 2. Metallurgical production and trade on Bronze Age Cyprus: views and variations (A. B. Knapp) 3. Pyrgos-Mavrorachi in Cypriot metallurgy (M. R. Belgiorno, D. Ferro and D. R. Loepp) 4. Tinker, tailor, farmer, miner: metals in the Late Bronze Age economy at Kalavassos (A. K. South) 5. Standing on ceremony: the metallurgical finds from Maroni-Vournes, Cyprus (R. Doonan, G. Cadogan, and D. Sewell) 6. From regional gateway to Cypriot kingdom. Copper deposits and copper routes in the chora of Paphos (M. Iacovou) 7. The role of the Apliki mine region in the post c. 1400 BC copper production and trade networks in Cyprus and in the wider Mediterranean (N. H. Gale and Z. A. Stos-Gale) 8. 'Reconstructing' the Enkomi tombs (British excavations): an instructive exercise (D. Pilides) 9. Metallurgy and metalwork in Enkomi: the early phases (V. Kassianidou) 10. The Enkomi cup: niello versus kuwano (A. Giunlia-Mair) 11. Profusion of Cypriot

copper abroad, dearth of bronzes at home: reflections on a paradox in Late Bronze Age Cyprus (G. Papasavvas) 12. Cyprus and Crete: the transformation of the Minoan metalworking industry (P. Betancourt) 13. Metallurgy and metalworking in the harbour town of Knossos at Poros-Katsambas (N. Dimopoulou) 14. Cyprus and Sardinia, beyond the oxhide ingots (F. Lo Schiavo) 15. On the cessation of local copper production in the Aegean in the 2nd millennium BC (Y. Bassiakos and T. Tselios) 16. Late Bronze Age Alalakh and Cyprus: a relationship of metals? (A. K. Yener) 17. The evidence for metallurgical workshops of the 2nd millennium in Ugarit (E. Dardaillon) 18. The merchants of Ugarit: oligarchs of the Late Bronze Age trade in metals? (C. Bell) 19. A unique casting mould from the new excavations at Timna Site 30 (Israel): evidence of western influence? (E. Ben-Yosef) 20. New perspectives on Iron Age copper production and society in the Faynan region, Jordan (T. Levy, E. Ben-Yosef and M. Najjar) 21. Alloying and resource management in New Kingdom Egypt: the bronze industry at Qantir – Pi-Ramesse and its relationship to Egyptian copper sources (T. Rehren and E. B. Pusch) 22. On ancient tin, its sources and trade: further comments (V. C. Pigott) 23. Just a few rusty bits: the innovation of iron in the Eastern Mediterranean in the 2nd and 1st millennia BC (H. A. Veldhuijzen)

Please visit the site: <http://www.oxbowbooks.com/bookinfo.cfm/ID/91389>

ΕΤΟΠΟΙ: JOURNAL FOR ANCIENT STUDIES

Susan Pollock (ed.), *Between Feasts and Daily Meals. Toward an Archaeology of Commensal Spaces* Special Volume 2 (2012)

Table of Contents

Conference Publication

Between Feasts and Daily Meals. Towards an Archaeology of Commensal Spaces
PDF

Susan Pollock

Feast, Food and Fodder in Neolithic-Bronze Age Greece: Commensality and the Construction of Value PDF

Paul Halstead

The Complexities of Home Cooking: Public Feasts and Private Meals Inside the Çatalhöyük House PDF

Katheryn Twiss

Eating at Home and ‘Dining’ Out? Commensalities in the Neolithic and Late Chalcolithic in the Near East PDF

Francesca Balossi Restelli

Between Inclusion and Exclusion: Feasting and Redistribution of Meals at Late Chalcolithic Arslantepe (Malatya, Turkey) PDF

Maria Bianca D’Anna

Commensality and Labor in Terminal Ubaid Northern Mesopotamia PDF

Jason Kennedy

Home-made Bread, Municipal Mutton, Royal Wine. Establishing Social Relations during the Preparation and Consumption of Food in Religious Festivals at Late Bronze Age Emar PDF

Walther Sallaberger

Defining and Transgressing the Boundaries between Ritual Commensality and Daily Commensal Practices: the Case of Late Bronze Age Tall Bazi PDF

Adelheid Otto

Ritual Commensality between Human and Non-Human Persons: Investigating Native Ontologies in the Late Pre-Columbian Andean World PDF

Tamara Bray

Steamed or Boiled: Identity and Value in Food Preparation PDF

Christine Hastorf

Modern Restaurants and Ancient Commensality PDF

Elliott Shore

Please visit the site: <http://journal.topoi.org/index.php/etopoi/issue/view/3> [Go there for links to downloads]

THE MIDDLE PLEISTOCENE
ARCHAEOLOGICAL RECORD OF GREECE
AND THE ROLE OF THE AEGEAN IN
HOMININ DISPERSALS: NEW DATA AND
INTERPRETATIONS

Vangelis Tourloukis, Panagiotis Karkanis
Quaternary Science Reviews 43 (2012) 1e15

A B S T R A C T

In the debate about hominin dispersals, Greece is expected to have been among the core areas for the peopling of Eurasia, serving as a ‘refugium’ and source region for (re)colonizations. Yet, its early Pleistocene record is still scarce, forming a conspicuous ‘gap’ in the early human geography of the Mediterranean. Here we investigate this gap and provide for the first time a synthesis of the Lower Palaeolithic record of Greece. Our study adopts a geoarchaeological approach to explain the current status of the record and argues that the ‘absence of evidence’ should be understood as the result of the biasing effects of erosional geomorphic processes and not as an indication of a former absence of hominins. In this line, the potential for archaeological preservation and recovery is assessed as a function of landscape dynamics. Climatic seasonality, tectonic activity, high relief and marine inundations have altogether contributed to significant reworking and/or total loss of archaeological sites: in spatial terms, only about 2e5% of the Lower Palaeolithic record of Greece may have survived up to the present. On the other hand, we interpret recent geological data, which show that half of the Aegean Sea would have been subaerially exposed for most of the early Pleistocene. Our results emphasize the potentially central role of the Aegean region in hominin dispersals, both as a biogeographical landbridge and as a highly productive landscape for occupation. This conclusion opens up new prospects for future fieldwork in an area that was hitherto essentially neglected. Finally, in showing how geomorphic processes bias site distribution patterns, the results and methodological perspective developed here can be seen as having implications that are wider than the geographical limits of the Greek Peninsula: they are pertinent to the investigation and interpretation of the early Pleistocene archaeological records in the highly dynamic landscapes of southern Europe e if not in even broader scales.

THE GEOARCHAEOLOGY OF MYCENAEAN CHAMBER TOMBS

Panagiotis Karkanas, Mary K. Dabney, R. Angus K. Smith, James C. Wright
Journal of Archaeological Science 39 (2012) 2722e2732

A B S T R A C T

This study presents a revised methodology for the excavation and analysis of the stratigraphy in Mycenaean chamber tombs and other multi-use burials. For our excavation of chamber tombs at Ayia Sotira and Barnavos, Nemea, we followed a geoarchaeological approach to provide details about the process of backfilling and re-opening of the tombs and to identify the location, number, and slope of these re-openings. In the studied fill of tomb entrance corridors (dromoi) at Ayia Sotira we observed a suite of sedimentary structures based on field and micromorphological observations. These are attributed to grain flow and debris fall processes associated with the formation of small piles during the shoveling of debris into the tomb. During ancient re-opening of the tombs extensive planar erosional surfaces were produced, occasionally associated with a basal stone line feature and an abrupt change in the degree of compaction. Constructed plastered floors were identified in the dromoi and the chambers during both the initial opening and the subsequent re-openings of the tombs. The proposed geoarchaeological analysis will enable the reconstruction of complex histories of mortuary practices and their social meanings. Moreover, this analysis shows that some anthropogenic processes of sediment accumulation can be analyzed and interpreted with paradigms of natural processes. Therefore, it provides a framework for understanding other types of earthworks that involve digging and filling.

THE ROMAN AND BYZANTINE GRAVES
AND HUMAN REMAINS (ISTHMIA IX),
BY JOSEPH L. RIFE

The American School of Classical Studies at Athens has just published a new book on the Roman and Byzantine graves and human remains of the Greek site of Isthmia. Info is below:

The Roman and Byzantine Graves and Human Remains (Isthmia IX)
by Joseph L. Rife

This study describes and interprets the graves and human remains of Roman and Byzantine date recovered by excavation between 1954 and 1976 in several locales around the Isthmian Sanctuary and the succeeding fortifications. This material provides important evidence for both death and life in the Greek countryside during the Late Roman to Early Byzantine periods. Examination of burial within the local settlement, comparative study of mortuary behavior, and analysis of skeletal morphology, ancient demography, oral health and paleopathology all contribute to a picture of the rural Corinthians over this transitional era as interactive, resilient and modestly innovative.

512 pp, 267 bw figs, 61 tables

Casebound, 9" x 12"

ISBN: 978-0-87661-939-1

Published: June 2012 by the American School of Classical Studies at Athens

Read more about the book and download sample content

here: <http://www.ascsa.edu.gr/index.php/publications/book/?i=9780876619391>

Contents:

Chapter 1: Themes, Procedures, and Materials

Chapter 2: The Graves and Associated Remains

Chapter 3: Burial Chronology, Topography, and History of Settlement

Chapter 4: Funerary Ritual, Mortuary Viability, and Society

Chapter 5: The Condition and Composition of the Human Remains

Chapter 6: Teeth and Oral Health

Chapter 7: Paleopathology and Paleoepidemiology

Chapter 8: Life and Death at the Isthmus Between Rome and Byzantium

Appendix: Metric and Nonmetric Traits in the Skeletal Sample

References

Indexes (General Index, Burial Sites and Regions, Lots Cited, Objects Cited,
Ancient/Byzantine/Eastern Sources, Inscriptions)

Sincerely,

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EΙΔΗΣΕΙΣ - NEWS RELEASE

NEW SECRETS FROM 'BAY OF THE PIRATES' WARSHIP THAT SUNK 2,300 YEARS AGO

A new study puts some finishing touches on the 2,300-year history of the beak-like weapon that an ancient warship used to ram enemy ships in the First Punic War, the conflict between ancient Rome and Carthage. The report, in ACS' journal Analytical Chemistry, also identifies a major threat that conservators must address in preserving this archaeological treasure for future generations.

Patrick Frank and colleagues explain that the ram, called a rostrum, was found in 2008 under 22 feet of water, 150 feet offshore from Acqualadrone (which means "Bay of the Pirates") in northeastern Sicily. The Acqualadrone rostrum is bronze, with a wooden core that was preserved because of burial beneath the seafloor. Carbon-14 dating suggests that the warship sank around 260 B.C. after being damaged in the battle of Mylae during the opening stages of the First Punic War, which may have been among the largest wars of its time. Earlier research localized the metals in the bronze to mines in Spain or Cyprus. The authors, from the SLAC National Accelerator Laboratory at Stanford University and the University of Palermo, set out in the new research to learn more about the origin and condition of the rostrum wood.

Their analysis of the acids and other substances in the wood showed that the strutwork of the Acqualadrone rostrum was pine, waterproofed with pine tar. Other woods, like juniper and oak, and other ancient marine sealants, like beeswax, were ruled out. Importantly, the research found copious sulfur in the wood that could turn into sulfuric acid, an extremely corrosive substance. Sulfuric acid is known to appear in recovered wooden marine archaeological treasures and can threaten their existence. The authors argue that iron and copper permeating the wood may catalyze that transformation, but they suggest that removing ozone from museum air could slow the conversion.

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American Chemical Society
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Please visit the site: http://www.eurekalert.org/pub_releases/2012-06/acs-nsf060612.php

COLORIZED ARCH OF TITUS

Project Goals

The Arch of Titus in Rome commemorates the Emperor Titus' victory in the Jewish War (66-73 CE). This iconic monument contains bas reliefs of Titus' triumphal procession through Rome, including a depiction of the seven-branched menorah from the Jerusalem Temple. Long significant for Christian art, this menorah is the symbol of modern Israel. Like the other reliefs on the Arch, the original colors of the menorah relief are no longer visible. New conservation techniques have been successfully recovered traces of the original colors on ancient monuments. We will apply these to the study of the Arch: Noninvasive UV-VIS Absorption Spectrometry will be employed to it for the first time to capture traces of pigments on the relief, and 3D scanning will be used for the first time to capture the geometric detail of the relief. We hope to create the first reconstruction of the polychromy of the relief using the new digital tools for painting and displaying 3D models.

The results may transform our understanding of the Arch of Titus, especially the menorah panel, whose original coloration is unknown.

Significance

Recent scholarship has focused on the significance of polychromy in classical art and architecture. This will be the first study to restore the color on a monument from the Flavian period. This project also has the potential to give us our first glimpse of the colors used to decorate the sacred vessels of the Jerusalem Temple. Given the importance of the Arch of Titus as a Flavian Roman monument and of Temple and its menorah in Judaism and Christianity, our project may transform the way we visualize and conceptualize Roman state architecture as well as the central monument of ancient Judaism, the Jerusalem Temple.

The final results of the project will be made available at no cost on the project's Web site and in a printed scholarly publication, and will also be presented at a scholarly conference. The findings will also be integrated into the 3D digital model of the Arch in Rome

Reborn: A Digital Model of Ancient Rome.

Our Team

An international team of art historians, conservators and historians will be assembled to study the reliefs of the Arch of Titus in all of their complexity. A technology team headed by co-director Bernard Frischer will focus on the technical retrieval of evidence of polychromy, scanning of the reliefs and 3D digital modeling of the Arch. A team led by co-director Peter Schertz will focus on the Roman context of the Arch, including the topographical, artistic and political issues that naturally arise in any study of the monument.

Director Steven Fine will oversee the entire project and lead a team dedicated to the interpretation of the Arch within Jewish and Christian contexts, from antiquity to the present.

Team Members

Steven Fine, Yeshiva University, Project Director Bernard Frischer, PublicVR, Co-Director, Senior Scientist Peter Schertz, Virginia Museum of Fine Arts, Project Co-Director

Louis H. Feldman, Yeshiva University

Paolo Liverani, University of Florence

Heinrich Piening, State of Bavaria

Lawrence H. Schiffman, Yeshiva University William Stenhouse, Yeshiva University

Please visit the site: <http://yu.edu/cis/activities/arch-of-titus/>

DEEPEST EVER ROMAN-ERA SHIPWRECKS FOUND NEAR GREECE

Archaeologists have discovered two Roman-era shipwrecks in deep waters off Greece's western coast which they say challenges the belief that ancient shipmasters stuck close to coastal routes for safety.

According to Greece's Culture Ministry, the third-century wreckage were found nearly a mile deep between Corfu and Italy, which suggests that ancient seafarers didn't "hug the shore" were more adventurous than thought.

The wrecks lay between 0.7-0.9 miles deep in the sea which would place them among the deepest known ancient wrecks in the Mediterranean, apart from remains found in 1999 of an older vessel some three kilometres deep off Cyprus.

Angeliki Simossi, head of Greece's underwater antiquities department, said sunken ancient ships are generally found 100-130 feet deep.

Most scholars believe that ancient traders were unwilling to veer far offshore, unlike warships which were unburdened by ballast and cargo.

"There are many Roman shipwrecks, but these are in deep waters. They were not sailing close to the coast," Simossi was quoted as saying by the Daily Mail.

"The conventional theory was that, as these were small vessels up to 80 feet long, they did not have the capacity to navigate far from the coast, so that if there was a wreck they would be close enough to the coast to save the crew."

US archaeologist Brendan Foley, who was not involved in the project, said a series of ancient wrecks located far from land over the past 15 years has forced experts to reconsider the coast-hugging theory.

"The Ministry of Culture's latest discoveries are crucial hard data showing the actual patterns of ancient seafaring and commerce," said Foley, a deep water archaeology expert at the Woods Hole Oceanographic Institution in Massachusetts.

The wrecks were found earlier this month during a survey of an area where a Greek-Italian gas pipeline is to be sunk.

Please visit the site: <http://www.business-standard.com/generalnews/news/deepest-ever-roman-era-shipwrecks-found-near-greece/15558/>

UNCOVERING THE GREAT THEATER OF APAMEA, BY CYNTHIA FINLAYSON

New discoveries are being made at the great Roman Theater of Apamea in Syria

The Great Theater at Apamea in northern Syria vies with the Large Theater at Ephesus, Turkey for the honor of being the largest extant Roman edifice of its type to have survived the ravages of time. Both buildings are estimated to have held audiences of over 20,000 persons, and both may have had their origins in an earlier Greek Hellenistic structure that was overbuilt in the Roman Era. Only one other theater, the Theater of Pompey in Rome, is known to have been larger.

However, Pompey's lavish building is buried under the modern streets of the city, and its surviving remains can only be studied piecemeal in a few basements and cellars of Rome. The structures at Apamea and Ephesus thus provide archaeologists and historians with the largest extant visible examples of Roman Era theaters in the world, giving scholars unprecedented opportunities to study the variety of entertainments that theaters presented to the public, the roles theaters played in the socio-political milieus of their day, and the amazing accomplishments attained by Hellenistic and Roman engineers and craftsmen. The recent excavations undertaken by the Syro-American Expeditions to the Great Roman Theater at Apamea in 2008-2010 provided new insights into understanding this massive theater, the only surviving theater under study from the famous Syrian Hellenistic cities of Apamea, Seleucia, Antioch, and Latakia founded by Seleucus Nicator and eventually conquered by Rome. In addition, excavations are adding new insights into the uses of certain types of theaters as water catchment and display facilities as well as the evolution of theater structures from the Hellenistic and Roman Periods into the Byzantine Christian Era.....

While the Large Theater at Ephesus (where St. Paul's teachings caused a demonstration by the pagan worshippers of Artemis/Diana) has been excavated, the Great Roman Theater at Apamea has never been fully exposed, studied, or understood in its cultural contexts utilizing the most up-to-date archaeological techniques. This massive structure at Apamea is associated with many unresolved questions and archaeological mysteries. For example, do the current visible remains of the Apamea Theater rest over earlier structures, possibly dating back to the Hellenistic Era and Seleucus Nicator's expansion of the Macedonian/Greek city after its founding by Alexander the Great? Significantly, very few Hellenistic buildings have survived from antiquity due to later Roman overbuilding and the quarrying of their finely finished building stones in the Christian and Islamic Periods.

Thus, determining the structural evolution of the Great Theater of Apamea could be important in understanding both Hellenistic and Roman engineering techniques in the East as well as the archaeological and cultural history of this region of Greater Syria. Another question to be addressed is, how did the Great Theater relate to the overall city of Apamea with its famous philosophical schools rivaling Alexandria and Rhodes, its oracle Temple of Zeus Belos, as well as Apamea's famous actors who are known from extant inscriptional evidence to have been some of the most talented entertainment professionals in the East? Was the Great Theater part of a ritual processional way

associated with the Zeus Belos Temple and that of an as yet unknown temple of a female consort? As theatrical entertainments in the Roman world evolved from formal Greek performances to those of mime and dance, how did these changes in theatrical presentations affect the architectural elements of the stage in theaters in the Eastern Empire? The discovery and excavation of an intact stage structure would be extremely helpful in understanding these processes and entertainments. The Great Theater at Apamea presents our archaeological research team with just such an opportunity due to the fact that the support structures of the stage appear to have been preserved under the collapse of the elaborate backdrop wall (See Figure 2). How were the large crowds of over 20,000 people serviced in relation to their needs for hygiene, food, and other types of audience facilities? The areas surrounding other extant theaters both in the East and in Rome have been greatly disturbed or destroyed over time, thus our present knowledge of the support systems of Roman theaters of this size is currently very limited. This fact makes the relatively undisturbed contexts of the Apamea Theater potentially important in understanding the service industries associated with entertainment structures of this theater's massive size, especially in the Eastern What do the Great Theater's extant archaeological remains tell us about the variety of the theater's entertainments, including religious and cultural presentations, but also possibly small gladiatorial events that became popularized in theater contexts from the Hellenistic Period and into the Roman Era? In turn, what might these types of entertainments tell us about both the general public who attended such events, as well as the financial patrons of the Great Theater at Apamea? Since Apamea had previously served as the Hellenistic center for the Seleucid cavalry and elephant contingents before being conquered and turned into a major training center for Rome's legions in the East, did the Great Theater at Apamea evolve over time to also serve the entertainment needs of military audiences as well as the local populations of the region? How might these audiences have impacted the evolution of the theater's design and layout over time? Did the Great Theater also serve the famous philosophical schools of the city? All of these questions may be answered by a careful excavation of the site and retrieval of extant dedicatory inscriptions.

Given its size and the importance of Apamea as one of the great Syrian Tetrapolis cities of the East, did the Great Theater have the capabilities to capture and display water as its sister theaters in Antioch and Daphne are noted to have done according to extant inscriptions, primary documents, and the excavation of the Daphne Theater earlier in the twentieth century? If so, did the Great Theater at Apamea also host naumachia (naval theatrical displays) and/or the Maiumas Festival that celebrated the Spring harvest by the dunking of the temple prostitutes of Aphrodite under water -- a ceremony celebrated throughout the Classical world that symbolically renewed their virginity and thus the fertility of each community's crops and herds? With the rise of Christianity, how were such pagan-centered edifices as theaters dedicated to Dionysus and other pagan deities and rituals altered and utilized in the Early Byzantine Period under the auspices of a new religious paradigm?

Recent excavations by the Syro-American Expedition to Apamea (2008-2010) have begun to address some of these questions. The first three seasons of excavation have resulted in new information that now causes us to think about the Great Theater of Apamea in new ways. The first season in 2008 exposed a completely intact Roman Era terracotta piping system running along the northern wall of the eastern ground entrance (the eastern *aditus maximus*) (See Figure 3). Significantly, this elaborate water system with carefully spaced access holes for repairs did not drain away from the theater, but

rather down toward the orchestra floor. Additionally, the piping system had been repaired in the Byzantine Era, demonstrating that the theater was still being utilized in some capacity during the Christian Period.

A subsequent test trench in a damaged section of the orchestra floor also proved that the current Roman Era limestone and marble flooring had been laid over a previous limestone bedrock surface that contained carved out runnels that ran parallel with the lower seating of the theater (See Figure 4). This has given renewed plausibility to the theory that a Hellenistic Era theater lies under the present Roman Era structure. Interestingly, we now also know that the Roman Era stone floor had been placed over a concrete support subsurface reinforced with broken terracotta tiles in a manner discussed by the Roman author Vitruvius. Vitruvius associated such support substructures with the water proofing of flooring surfaces, again giving evidence for the possibility that the Great Theater at Apamea was modified to hold water. Renewed excavations of the lower stage in 2009-2010 also revealed Roman Era terracotta piping systems running toward the center of the stage. These Roman Era pipes had been subsequently overbuilt with a very substantial Byzantine qanat (water channel) indicating that some of the water carrying systems of the theater were preserved into the Christian Era (See Figure 5). All of the above seemingly indicate that the Great Roman Theater at Apamea did contain and display water in some fashion. As the major city of a region heavily associated with agricultural production, the Great Theater at Apamea may have hosted the Maiumas festival, just as her sister theaters on the coastal plains did at Antioch. Today, only the Birktein Complex at Jerash, Jordan is known by an extant inscription to have been a Maiumas Festival Center. The location of the theater at Antioch is unknown. Thus, we see the importance of the Great Roman Theater at Apamea in understanding the ritual uses of water containment theaters in the Eastern Provinces during the Late Hellenistic and Roman Eras.

Additionally, did the increasing presence of Roman legions at Apamea during the second and third centuries C.E. also impact the demands for naumachia displays and gladiatorial combats as part of the entertainments offered by the later incarnations of the Great Theater at Apamea?

One of the other interesting features of the Great Theater at Apamea is its large well-designed back central entrance. This entrance consists of a carefully engineered series of stairs that descend through a processional access that narrows as it approaches the major seating areas of the upper theater. This access was structurally designed to safely slow down audience flow as patrons approached the seating regions of the upper and middle theater via a major street access at the top of the theater's southern side. A large support hole for a possible turnstile was also discovered at the very bottom of the back central entrance stairs that would have enhanced the corridor's functions with relation to crowd control. The back central entrance could also be locked down by a series of massive sets of doors set within at least two platform levels of the stairs. The existence of such a large and carefully designed back central access is unusual in Greater Syria in theaters, but appears in theaters outside of Rome at Volterra and Ostia--buildings that have known water containment and distribution features. The design of the back central entrance at Apamea may also be due to the dual influences of earlier Hellenistic theaters in Asia Minor, as well as the presence of Roman Legions from outside of Greater Syria who were stationed at Apamea after its capture from the Seleucid Empire. For example, back central entrances are known especially in small theaters that were not water containment

theaters in Britain and in Gaul. Significantly, we know by inscriptional evidence that not only the I, II, and III Legio Parthica were stationed at Apamea, but also the cavalry units of the Ulpia Contariorum and Flavia Britannica, and possibly the Danubian equites were cycled through Apamea for training in order to be utilized in Rome's constant struggles against Persian forces in the East. Rome's legions and their engineers often participated in regional construction projects when not actively engaged in military maneuvers. An ongoing study of the carved graffiti and quarry marks discovered in the exposed regions of the theater may give further clues to answering the question of whether or not Roman military personnel participated in the building and evolution of various phases of the Great Theater at Apamea.

The above information gleaned from the first three years of excavations has also encompassed a careful study of the differences in limestone block sizes, finishes, and their placements throughout the theater as they are exposed through excavation. Indeed, every fallen building block is measured, drawn, photographed, numbered, and data-based according to type, as well as being plotted into an overall grid plan of the site with laser transit technology. This allows us to document both the horizontal and vertical positions of every stone in the theater. All in-situ walls and structures are also measured and drawn. This comprehensive study, along with the test soundings in the orchestra floor, have allowed us to propose a new building sequence for the theater itself. This proposed building sequence will be tested in subsequent excavation seasons. Differences in ashlar building blocks with relation to size, masonry finishing, sequential wall placements, etc. are now documented between the eastern entrance and the back central entrance of the theater. Given the study noted above we now know that even within the eastern ground entrance, there are substantial differences between the north wall of the entrance and the south wall, as well as between the lower coursings of the north wall and subsequent changes to the upper wall on the same side of the corridor. Professor Jean Charles Balty has previously proposed that the Great Theater of Apamea was built during the reign of the Roman Emperor Marcus Aurelius. However, given our excavation and the careful study of all of the elements noted above, we now propose that the Great Theater at Apamea was constructed in four major phases. The first phase may have begun during the Seleucid Hellenistic Period probably during the reign of Seleucus Nicator. This theater would have utilized bedrock limestone as the surface of its orchestra floor and would have consisted of a theater constructed in the Greek style against its supporting hill with a horse-shoe shaped orchestra opening to the north. The stage would have been a one level structure separated from the orchestra floor. After the Battle of Actium and the defeat of Mark Antony and Cleopatra VII by Octavian/Augustus in 31 B.C.E., Augustus began a number of ambitious building programs in the East. As Apamea and her sister cities of the Tetrapolis had been previously associated with Mark Antony and Cleopatra, it would have been especially important for Augustus to have focused on overbuilding previous Hellenistic theaters at Antioch, Apamea, Seleucia, and Latakia in order to put a Roman stamp on these conquered cities, but also to have given local communities economic and cultural incentives to welcome Roman governance. Of these cities, only the theater at Apamea is extant today, thus enhancing its importance for excavation and study. We believe that the earlier Hellenistic theater in the Greek style was modified during the reigns of Augustus and Tiberius to become a theater built in the Roman Western style with its lower seating changed and a stage complex attached to the regions of the orchestra in typical Roman fashion. Following a cataclysmic regional earthquake in 115 C.E., the theater was again repaired, modified, and expanded probably under the emperors Trajan and Hadrian. Trajan had been residing at Antioch in 115 C.E.

when the massive earthquake had struck, and the emperor had nearly lost his life in the disaster.

Trajan's personal experiences with the destruction endured by the populations and cities of the region probably explains his active participation in the rebuilding of the East after 115 C.E., as well as the subsequent interests of his successor, Hadrian in the Hellenistic architecture of Greater Syria where Hadrian had also served as governor. A final expansion of the Great Theater of Apamea may have occurred in the late second or early third centuries C.E. with the addition of the upper seating that rests on Roman vaulting and includes the back central entrance mentioned above. During our transit survey of the theater, reutilized column drums were noted in the substructures of the vaults in this region of the theater, thus indicating that they were constructed at a different time period than the middle and lower seating regions of the building. Additionally, these historical eras in the East were characterized by increasing tensions between Rome and both Parthian and later Sassanian Persian incursions in the East, thus increased concentrations of Roman legions are noted at Apamea by inscription. These concentrations of Roman military elements at the cavalry training facilities at Apamea may have been important in subsequent alterations of the theater's upper seating and the back central entrance. During our laser transit of the overall theater, we discovered that the back central entrance does not align with the center of the current stage, but drifts 2-3 degrees to the northeast, thus possibly indicating that it was added to the theater after the base support structures of the present stage.

Excavations of the first 10 meters of the lower stage closest to the eastern ground entrance also indicate alterations of the stage front itself. Initially, we ran into a section of the stage where the earth that was removed contained many more scorpions than usual. This seemed puzzling at first. We then discovered that the front of the stage was altered in the Byzantine Period to include a large qanat/water channel. The scorpion concentration was due to the increases in moisture still caused by the existence of the qanat. We propose that this water channel was constructed to replace the water carrying functions of the earlier Roman terracotta piping system that runs directly under the qanat. The Roman pipes may have been damaged due to the numerous earthquakes that are noted in Greater Syria during the early Christian Era. The water containment features of the theater were thus still valued by the populace as is demonstrated by the numerous examples of pottery fragments of water carrying vessels found in association with the discovery of the qanat. These clues and the discovery of the Roman piping system along the north wall of the eastern ground entrance point to the possible existence of water cisterns under the northeastern terrace of the theater itself that were still functional into the Christian Era.

Many questions and mysteries concerning the Great Roman Theater still need to be answered through ongoing excavation and study, and our proposed dating sequence for the theater needs to be confirmed through further study and retrieval of archaeological data. Due to the present political situation in Syria our research team has been doing a comparative theater study in Turkey, Italy, Sicily, Greece, and Britain. This survey is especially focused in an attempt to understand the differing types of water catchment and display functions that theaters played in the Hellenistic and Roman Eras, and to compare and contrast them to the Great Theater at Apamea. Such a study will result in a new categorization of theaters in the ancient world based on function and water feature

designs. Such research will also provide a much-needed expansion, update and correction of previous studies.

Those interested in participating or funding ongoing excavations and research expeditions with relation to these projects as well as others in Jordan should contact:

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Please visit the site:

<http://popular-archaeology.com/issue/june-2012/article/uncovering-the-great-theater-of-apamea> [Go there for nice pix]



**ARCHAEOLOGISTS LOOK FOR WRECKS
OFF QATAR COAST CONSIDERING THAT
THE GULF HAS BEEN PART OF A
MARITIME TRADE NETWORK EXTENDING
BACK INTO THE 7TH MILLENNIUM, THE
REGION HAS THE POTENTIAL FOR
SHIPWRECKS FROM BOTH THE HISTORIC
AND PREHISTORIC, BY BONNIE JAMES**

A team of maritime archaeologists will conduct extensive underwater surveys in the northwest coast of Qatar from October to look for signs of ancient trade and human inhabitation before the Gulf was flooded by sea level rise thousands of years ago.

“Considering that the Gulf has been part of a maritime trade network extending back into the 7th millennium, the region has the potential for shipwrecks from both the historic and prehistoric periods,” Qatar National Historical Environmental Record (QNHER) Project co-director Richard Cuttler told Gulf Times.

QNHER is being developed as part of the Remote Sensing Project, a joint initiative between the Qatar Museums Authority (QMA) under the guidance of Faisal al-Naimi (Head of Antiquities), and the University of Birmingham, where Cuttler is a research fellow.

More recent work by the team of marine archaeologists included underwater inspections of areas in advance of the dredging of new channels for the New Doha International Port to the south of Wakrah.

Recently concluded under the supervision of Cuttler’s colleague Eoghan Kieran, the project did not lead to any substantial findings other than two anchors, abandoned fish traps and several old reefs.

Kieran and his team of maritime archaeologists Jamie Lewis, Konstantina Vafidou, Jenny Breslin, Saad al-Naimi, master scuba diver Rosheen Khan, and scuba cameraman Cathal Twomey were engaged in the geophysical survey and marine inspections since February.

The exercise investigated the archaeological potential of the north and south channels before dredging commences for the new port project. “A major issue is that the seabed is very rocky and corralled and if anything did sink hundreds of years ago in the area we surveyed it would be smashed up and would probably erode very quickly,” Kieran observed.

A team led by Cuttler recently concluded this season’s archaeological excavations at Wadi Debayan, situated on the northwestern side of Qatar, where human occupation has been radio carbon dated back to about 7,500 years.

Discovery of an unmarked grave with remains of a skeleton was among the highlights of the exploration, also part of the QNHER Project.

Cuttler believes it is very likely that people used to live in the area between Qatar and Bahrain long ago and were pushed out due to sea level rise to Wadi Debayan and other areas around the western coast of Qatar.

“The excavations and explorations on the land and sea in the coming seasons have all the potential to unravel more surprises,” he added.

Please visit the site:

http://www.gulf-times.com/site/topics/article.asp?cu_no=2&item_no=511125&version=1&template_id=57&parent_id=56

HUMAN EVOLUTION DISCOVERIES IN IRAQ

Iraq is the home of the Fertile Crescent, the Cradle of Civilization. But the country's importance in human history goes back even further, to the time of the Neanderthals. In 1951, American archaeologist Ralph Solecki discovered Neanderthal remains in Shanidar Cave. The cave sits in the Zagros Mountains in the Kurdistan region of northern Iraq, about 250 miles north of Baghdad. From 1951 to 1960, Solecki and colleagues excavated the cave and recovered fossils belonging to 10 individuals dating to between 65,000 and 35,000 years ago. Politics prevented further archaeological work, but the Shanidar fossils still provide important insights on the Neanderthals of West Asia. Here are a few of the most intriguing finds:

Shanidar 1: Nicknamed Nandy, Shanidar 1 lived sometime between 45,000 and 35,000 years ago. He had a hard life. A blow to the head in his youth probably blinded him in his left eye. A withered right arm and leg suggest the head injury probably also caused brain damage that paralyzed the right side of Nandy's body. He also fractured his foot at some point. Yet his bones all show signs of healing, and Nandy lived to be a senior citizen by Neanderthal standards, dying sometime between the ages of 35 and 45. The find revealed that Neanderthals must have taken care of their sick and wounded.

Shanidar 3: Also an adult male, Shanidar 3 had plenty of problems of his own. In addition to suffering from arthritis, the Neanderthal seems to have been violently attacked. A tiny groove on one of his ribs indicates he was probably struck in the chest. A 2009 analysis (PDF) points to a modern human, *Homo sapiens*, as the assailant. Based on experimental stabbings of pig carcasses, a team led by Steven Churchill of Duke University determined that the most likely weapon was some kind of dart, shot from long range. Because modern humans are the only hominids known to have made projectile weapons, the researchers blamed our species for the wound. The wound may have harmed Shanidar 3's lungs, but it's possible he survived the attack. A callous that formed over the groove shows that he must have lived at least a few weeks after the incident. And modern people with similar injuries can survive even with little medical care.

Today, you can examine Shanidar 3 for yourself at Smithsonian's National Museum of Natural History, where the fossil is on display.

Shanidar 4: Yet another adult male, Shanidar 4 was found on his side curled up in the fetal position. An analysis of the ancient pollen found in association with the fossilized skeleton revealed bright flowers had been brought into the cave. Solecki interpreted the pollen studies as evidence that Neanderthals buried their dead and adorned the graves with flowers, suggesting Neanderthals had rituals.

Skeptical anthropologists say natural forces—perhaps burrowing rodents—introduced the pretty flora into the cave. Although Neanderthals might not have decorated the graves, they were responsible for burying at least some of the individuals in Shanidar.

Please visit the site: <http://blogs.smithsonianmag.com/hominids/2012/05/human-evolution-discoveries-in-iraq/> [Go there for embedded links]

PUZZLE OF PALMYRA IN SYRIAN DESERT **SOLVED**

NORWEGIAN ARCHAEOLOGISTS HAVE SOLVED ONE OF THE GREAT PUZZLES OF THE ROMAN EMPIRE: WHY WAS THE VIBRANT CITY OF PALMYRA LOCATED IN THE MIDDLE OF THE SYRIAN DESERT?

In ancient Roman times A.D., Palmyra was the most important point along the trade route linking the east and west, reaching a population of 100 000 inhabitants. But its history has always been shrouded in mystery: What was a city that size doing in the middle of the desert?

How could so many people live in such an inhospitable place nearly 2 000 years ago? Where did their food come from? And why would such an important trade route pass directly through the desert?

Norwegian researchers collaborated with Syrian colleagues for four years to find answers.

“These findings provide a wealth of new insight into Palmyra’s history,” says project manager Jørgen Christian Meyer, a professor at the University of Bergen. The project has received funding of over NOK 9 million from the Research Council of Norway’s comprehensive funding scheme for independent basic research projects (FRIPRO).

NEW RESEARCH USING MODERN ARCHAEOLOGICAL METHODS

The Bergen-based archaeologists approached the problem from a novel angle – instead of examining the city itself, they studied an enormous expanse of land just to the north. Along with their Syrian colleagues from the Palmyra Museum and aided by satellite photos, they catalogued a large number of ancient remains visible on the Earth’s surface.

“In this way,” explains Professor Meyer, “we were able to form a more complete picture of what occurred within the larger area.”

The team detected a number of forgotten villages from ancient Roman times. But what finally solved the riddle of Palmyra was the discovery of the water reservoirs these villages had utilised.

NOT A DESERT

The archaeologists located this and other reservoirs used nearly 2 000 years ago.

Professor Meyer and his colleagues came to realise that what they were studying was not a desert, but rather an arid steppe, with underground grass roots that keep rain from sinking into the soil. Rainwater collects in intermittent creeks and rivers called wadi by the Arabs.

The archaeologists gathered evidence that residents of ancient Palmyra and the nearby villages collected the rainwater using dams and cisterns. This gave the surrounding

villages water for crops and enabled them to provide the city with food; the collection system ensured a stable supply of agricultural products and averted catastrophe during droughts.

Local farmers also cooperated with Bedouin tribes, who drove their flocks of sheep and goats into the area to graze during the hot season, fertilising the farmers' fields in the process.

SAFE TRADE ROUTE

Palmyra's location also had a political foundation. Important east-west trade routes, including along the Euphrates River to the north, were not under the control of the Romans to the west or the Persians to the east. Local lords and chieftains demanded high fees for passage.

his practice of extortion translated into a tremendous opportunity for the Palmyrians; they joined forces with the Bedouins to provide security, beasts of burden and guides through the desert.

“Tradesmen from Palmyra made the most of the city's unique location to build up a comprehensive trade network,” says the professor. “This explains much of the city's prosperity.”

ARABLE LAND IN THIS TIME OF NEED

The solution to the mystery of Palmyra can also teach us something today. As the world seeks arable land to feed its billions, we can learn from the Palmyrians' experience. If they were able to cultivate the desert soil almost 2 000 years ago, surely we can do the same with all the available modern aids and methods.

“Occasionally an enormous amount of rain falls in the desert,” says Professor Meyer. “Anyone can see how green the desert becomes after the rain. The Palmyrians must have realised the potential of this type of land, which covers large areas of our planet.”

Please visit the site: <http://www.heritagedaily.com/2012/06/puzzle-of-palmyra-in-syrian-desert-solved/>

NEANDERTHALS MAY HAVE BEEN FIRST CAVE PAINTERS, BY SERGIO PROSTAK

The practice of cave art in Europe began up to 10,000 years earlier than previously thought, a new uranium-series dating study has revealed. The study has also suggested that Iberian cave paintings were created either by the first anatomically modern humans in Europe or, perhaps, by Neanderthals.

The Panel of Hands in the El Castillo Cave showing red disks and hand stencils made by blowing or spitting paint onto the wall. A date from a disk shows the painting to be older than 40,800 years making it the oldest known cave art in Europe (Pedro Saura / Science/AAAS)

A team of UK, Spanish and Portuguese researchers led by Dr Alistair Pike of the University of Bristol dated fifty paintings in 11 caves in Northern Spain, including the UNESCO World Heritage sites of Altamira, El Castillo and Tito Bustillo.

As traditional methods such as radiocarbon dating don't work where there is no organic pigment, the team dated the formation of tiny stalactites on top of the paintings using the radioactive decay of uranium. This gave a minimum age for the art. Where larger stalagmites had been painted, maximum ages were also obtained.

Hand stencils and disks made by blowing paint onto the wall in El Castillo cave were found to date back to at least 40,800 years, making them the oldest known cave art in Europe, 5-10,000 years older than previous examples from France.

A large club-shaped symbol in the famous polychrome chamber at Altamira was found to be at least 35,600 years old, indicating that painting started there 10,000 years earlier than previously thought, and that the cave was revisited and painted a number of times over a period spanning more than 20,000 years.

“Evidence for modern humans in Northern Spain dates back to 41,500 years ago, and before them were Neanderthals,” Dr Pike explained. “Our results show that either modern humans arrived with painting already part of their cultural activity or it developed very shortly after, perhaps in response to competition with Neanderthals – or perhaps the art is Neanderthal art.”

The creation of art by humans is considered an important marker for the evolution of modern cognition and symbolic behavior, and may be associated with the development of language.

“We see evidence for earlier human symbolism in the form of perforated beads, engraved egg shells and pigments in Africa 70-100,000 years ago, but it appears that the earliest cave paintings are in Europe,” Dr Pike said. “One argument for its development here is that competition for resources with Neanderthals provoked increased cultural innovation from the earliest groups of modern humans in order to survive. Alternatively, cave painting started before the arrival of modern humans, and was done by Neanderthals. That would be a fantastic find as it would mean the hand stencils on the walls of the

caves are outlines of Neanderthals' hands, but we will need to date more examples to see if this is the case.”

The findings, detailed in a paper in the journal *Science*, are particularly significant because cave art has always been difficult to date accurately.

“Engravings and, in many cases, paintings lack organic pigments or binders suitable for radiocarbon dating,” the researcher said. “Where suitable material – such as charcoal pigments – does exist, only small samples can be dated to minimize damage to the art. This magnifies the effects of contamination and produces less accurate results.

“Instead, we measured uranium isotopes in the thin calcite flowstone growths that formed on the surfaces of the paintings and engravings to date the art. This technique, known as uranium-series disequilibrium, is used extensively in Earth Sciences and avoids the problems related to radiocarbon dating.”

Please visit the site: <http://www.sci-news.com/archaeology/article00395.html>

UNDERWATER ARCHAEOLOGISTS GET EDUCATION FAR AWAY FROM THE SEA

Although the city is 250 kilometers away from the sea Konya's Selçuk University runs Turkey's only underwater archaeology department. The head of the department, says it sheds light on underwater richness

Turkey's first underwater archaeology department isn't located near the sea, but resides at Selçuk University in the central Anatolian province of Konya, 250 kilometers away from the sea. Students in the department are trained to carry out all kinds of underwater research and excavations.

The head of the university's archaeology department, Professor Adil Tırpan, said it was very important for the university and for Konya that the first underwater archaeology department in Turkey, a country surrounded by water on three sides, be located in a central Anatolian city university.

The department had been filling a big gap in Turkey's underwater research for 12 years, Tırpan said, adding that the department offered all kinds of technical equipment and expert teams in the field of underwater archaeology.

Three professors, three assistant professors and two research assistants work in the department, according to Tırpan. Selçuk was the only university to also have master and doctorate students in the underwater archaeology department.

“This is the first and only department in Turkey that is also recognized internationally and was chosen in 2011 as the leading university in the field of underwater archaeology. Turkey has a coastal line of 850 kilometers. The line was used as a trade route in the ancient ages. If five ships sank every year since 2000 B.C., when overseas trade began, until today, it equals 25,000 ships in 5,000 years. All of these ships lie under the sea. And of course they are very important cultural artifacts if they are removed. We are trying to shed light on a long history by educating underwater archaeologists,” Tırpan said.

‘We have found many ship wreckages’

The department has so far carried out many research projects especially in the Mediterranean and Aegean seas, according to the professor. “Turkey has a big richness under the sea as well as on the ground. We have so far joined many underwater research projects to reveal this richness.”

Not only have they worked in the seas, but they have also dived in the country's lakes, Tırpan said. “For example, Muğla-Datça Knidos excavations, Myra-Anriake excavation and underwater research, Myndos underwater research, Aydıncı-Kalenderis port excavations, Çamaltı Cape sunken are among these works. Also, we were present in underwater research in Bafa and Beyşehir lakes. We have found a lot of sunken ships and their remains.”

Tirpan said it was not necessary to open the underwater department in a maritime city. “The Institute of Nautical Archaeology (INA), which has also carried out underwater archaeology in Turkey, is in Texas. Is it a maritime city? No, but they come to our country and conduct research on our underwater history. We want to prevent it,” he said.

Please visit the site: <http://tinyurl.com/84f7jeb>

OLDEST NATURAL PEARL FOUND IN ARABIA, ANALYSIS BY ROSSELLA LORENZI

French researchers have unearthed the oldest natural pearl ever found at a Neolithic site in Arabia, suggesting that pearl oyster fishing first occurred in this region of the world.

Discovered in the Emirate of Umm al Quwain, United Arab Emirates (UAE), the pearl was believed to have originated between 5547 and 5235 BC.

"Gemmologists and jewellers have popularised the idea that the oldest pearl in the world is the 5000-year-old Jomon pearl from Japan.

Discoveries made on the shores of south-eastern Arabia show this to be untrue," Vincent Charpentier, Sophie Méry and colleagues at the French Foreign Ministry's archeological mission in the UAE, wrote in the journal *Arabian Archaeology and Epigraphy*.

NEWS: How Cleopatra Won Her Bet

Some 7,500 years old and 0.07 inches in diameter, the newly discovered pearl is just the last of a series of findings at archeological sites in the Arabian Peninsula.

Over the years, researchers unearthed a total of 101 Neolithic pearls, coming from the large pearl oyster *Pinctada margaritifera* and from *Pinctada radiata*, a much smaller, easier to collect species, which provides higher quality pearls.

"The discovery of archaeological pearls demonstrates an ancient fishing tradition that no longer exists today," wrote the researchers.

Although diving for pearls was difficult and dangerous, mother-of-pearl was an important resource in the economy of local Neolithic societies, said the researchers.

NEWS: Mother of Pearls Mass-Produced

The large valves of *P. margaritifera*'s were used to make fish hooks for the capture of fish as large as tuna and sharks, while spherically shaped pearls were collected for their esthetic value and for funeral rites.

Indeed, the Umm al Quwain pearl, which was not drilled, had been recovered from a grave.

According to the researchers, findings at local necropolis reveal that pearls were often placed on the deceased's face, often above the upper lip.

In the fifth millennium BC, half-drilled natural pearls were associated with men, and full-drilled pearls with women.

"In this region, pearls still hold an important place. Indeed, today they remain a central, identifying "element," the researchers wrote.

Please visit the site: <http://news.discovery.com/history/oldest-pearl-arabia-120618.html>

CHEMICAL ANALYSIS OF POTTERY REVEALS FIRST DAIRYING IN SAHARAN AFRICA IN THE FIFTH MILLENNIUM BC

The first unequivocal evidence that humans in prehistoric Saharan Africa used cattle for their milk nearly 7,000 years ago is described in research by an international team of scientists, led by the University of Bristol, UK, published today in Nature.

By analysing fatty acids extracted from unglazed pottery excavated from an archaeological site in Libya, the researchers showed that dairy fats were processed in the vessels. This first identification of dairying practices in the African continent, by prehistoric Saharan herders, can be reliably dated to the fifth millennium BC.

Around 10,000 years ago the Sahara Desert was a wetter, greener place; early hunter-gatherer people in the area lived a semi-sedentary life, utilising pottery, hunting wild game and collecting wild cereals.

Then, around 7,000-5,000 years ago as the region became more arid, the people adopted a more nomadic, pastoral way of life, as the presence of cattle bones in cave deposits and river camps suggests.

Domesticated animals were clearly significant to these people: the engraved and painted rock art found widely across the region includes many vivid representations of animals, particularly cattle. However, no direct proof that these cattle were milked existed – until now.

Researchers at the Organic Geochemistry Unit in Bristol's School of Chemistry, with colleagues at Sapienza, University of Rome, studied unglazed pottery dating from around 7,000 years ago, found at the Takarkori rock shelter in the Tadrart Acacus Mountains, Libya.

Using lipid biomarker and stable carbon isotope analysis, they examined preserved fatty acids held within the fabric of the pottery and found that half of the vessels had been used for processing dairy fats. This confirms for the first time the early presence of domesticated cattle in the region and the importance of milk to its prehistoric pastoral people.

Julie Dunne, a PhD student in Bristol's School of Chemistry and one of the authors of the paper said: "We already know how important dairy products such as milk, cheese, yoghurt and butter, which can be repeatedly extracted from an animal throughout its lifetime, were to the people of Neolithic Europe, so it's exciting to find proof that they were also significant in the lives of the prehistoric people of Africa.

"As well as identifying the early adoption of dairying practices in Saharan Africa, these results also provide a background for our understanding of the evolution of the lactase persistence gene which seems to have arisen once prehistoric people started consuming milk products.

“The gene is found in Europeans and across some Central African groups, thus supporting arguments for the movement of people, together with their cattle, from the Near East into eastern African in the early to middle Holocene, around 8,000 years ago.”

Co-author Professor Richard Evershed of Bristol’s School of Chemistry, added: “While the remarkable rock art of Saharan Africa contains many representations of cattle – including, in a few cases, depictions of the actual milking of a cow – it can rarely be reliably dated. Also, the scarcity of cattle bones in archaeological sites makes it impossible to ascertain herd structures, thereby preventing interpretations of whether dairying was practiced.

“Molecular and isotopic analysis of absorbed food residues in pottery, however, is an excellent way to investigate the diet and subsistence practice of early peoples. It’s an approach my colleagues and I have previously applied to successfully determine the chronology of dairying, beginning in the Fertile Crescent of the Near East and spreading across Europe.”

The research was funded by the UK’s Natural Environment Research Council (NERC).

For more information on using small molecules to answer archaeological questions please visit the Organic Geochemistry Unit

For a taste of research themes in the OGU play the Palaeodetectives interactive science adventure!

Paper

‘First dairying in green Saharan Africa in the fifth millennium BC’ by Julie Dunne, Richard P. Evershed, Mélanie Salque, Lucy Cramp, Silvia Bruni, Kathleen Ryan, Stefano Biagetti and Savino di Lernia in Nature

<http://www.bris.ac.uk/news/2012/8566.html/2012-06-13.9881058806/image>

A fresco of painted cattle at the wadi Imha, site 03/705, in the Tadrart Acacus Mountains, Libyan Sahara. Numerous rich and vivid rock art images depicting scenes of cattle are found widely across north Africa, dating from at least 7,000 years ago Image by Roberto Ceccacci, © The Archaeological Mission in the Sahara, Sapienza University of Rome

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<http://www.upenn.edu/pennnews/news/chemical-analysis-pottery-reveals-first-dairying-saharan-african-fifth-millennium-bce>

Penn News
University of Pennsylvania
June 20, 2012

Chemical Analysis of Pottery, Informed by Penn Research, Reveals First Dairying in Saharan Africa

PHILADELPHIA — The first unequivocal evidence that humans in prehistoric Saharan Africa used cattle for their milk nearly 7,000 years ago is described in research by an international team of scientists, led by researchers from the University of Bristol in the United Kingdom and including Kathleen Ryan of the University of Pennsylvania Museum of Archaeology and Anthropology. Their work was published today in *Nature*.

By analyzing fatty acids extracted from unglazed pottery excavated from an archaeological site in Libya, the researchers showed that dairy fats were processed in the vessels. This first identification of dairying practices in the African continent, by prehistoric Saharan herders, can be reliably dated to the fifth millennium B.C.E.

Around 10,000 years ago the Sahara Desert was a wetter, greener place; early hunter-gatherer people in the area lived a semi-sedentary life, utilizing pottery, hunting wild game and collecting wild cereals.

Then, around 7,000-5,000 years ago as the region became more arid, the people adopted a more nomadic, pastoral way of life, as suggested by the presence of cattle bones in cave deposits and river camps.

Domesticated animals were clearly significant to these people. The engraved and painted rock art found widely across the region includes many vivid representations of animals, particularly cattle. However, no direct proof that these cattle were milked existed until now.

Researchers from the University of Bristol's School of Chemistry, with colleagues at Sapienza, University of Rome, studied unglazed pottery dating from around 7,000 years ago, found at the Takarkori rock shelter in the Tadrart Acacus Mountains in Libya.

Ryan, a consulting scholar in the Penn Museum's African Section and an author on the study, had previously collected data on reference animal fats and plant remains from Kenya.

"Though the Kenyan remains have so far not turned up any evidence of dairying there, they were valuable in that they served as controls in our study of the Libyan samples," Ryan said.

The researchers used these reference samples to inform lipid biomarker and stable carbon isotope analyses of preserved fatty acids held within the fabric of the pottery.

"Without this collection the project would not have come to fruition in the way it has," said Richard Evershed, a professor in Bristol's School of Chemistry and co-author on the paper.

The team found that half of the vessels had been used for processing dairy fats. This confirms for the first time the early presence of domesticated cattle in the region and the importance of milk to its prehistoric pastoral people.

“We already know,” said Julie Dunne, a doctoral student in Bristol’s School of Chemistry and lead author of the study, “how important dairy products such as milk, cheese, yogurt and butter, which can be repeatedly extracted from an animal throughout its lifetime, were to the people of Neolithic Europe, so it’s exciting to find proof that they were also significant in the lives of the prehistoric people of Africa.

“As well as identifying the early adoption of dairying practices in Saharan Africa, these results also provide a background for our understanding of the evolution of the lactase persistence gene which seems to have arisen once prehistoric people started consuming milk products.

“The gene is found in Europeans and across some Central African groups, thus supporting arguments for the movement of people, together with their cattle, from the Near East into eastern Africa in the early to middle Holocene, around 8,000 years ago,” she said.

“While the remarkable rock art of Saharan Africa contains many representations of cattle – including, in a few cases, depictions of the actual milking of a cow – it can rarely be reliably dated,”

Evershed said. “Also, the scarcity of cattle bones in archaeological sites makes it impossible to ascertain herd structures, thereby preventing interpretations of whether dairying was practiced.

“Molecular and isotopic analysis of absorbed food residues in pottery, however, is an excellent way to investigate the diet and subsistence practice of early peoples. It’s an approach my colleagues and I have previously applied to successfully determine the chronology of dairying, beginning in the Fertile Crescent of the Near East and spreading across Europe.”

The research was supported by the United Kingdom’s Natural Environment Research Council. The National Science Foundation funded the collection of reference animal fat and plant samples in Kenya.

Please visit the site: <http://www.bris.ac.uk/news/2012/8566.html> [Go there for pix]

ARCHAEOLOGIST HOPES TO RESUME INVESTIGATION IN SYRIA, BY ALVIN POWELL

There's a mystery in the Syrian desert shielded by the conflict tearing apart the Middle Eastern nation.

In 2009, archaeologist Robert Mason of the Royal Ontario Museum was at work at an ancient monastery when, walking nearby, he came across a series of rock formations: lines of stone, stone circles, and what appeared to be tombs.

Mason, who talked about the finds and about archaeology at the monastery on Wednesday at Harvard's Semitic Museum, said that much more detailed examinations are needed to understand the structures, but that he isn't sure when he will be able to return to Syria, if ever.

Analysis of fragments of stone tools found in the area suggests the rock formations are much older than the monastery, perhaps dating to the Neolithic Period or early Bronze Age, 6,000 to 10,000 years ago.

Mason also saw corral-like stone formations called "desert kites," which would have been used to trap gazelles and other animals. The region is dry today ("very scenic, if you like rocks," Mason said), but was probably greener millennia ago.

It was clear, Mason said, that the purpose of the stone formations was entirely different from that of the stone-walled desert kites. The kites were arranged to take advantage of the landscape and direct the animals to a single place, while the more linear stone formations were made to stand out from the landscape. In addition, he said, there was no sign of habitats.

"What it looked like was a landscape for the dead and not for the living," Mason said. "It's something that needs more work and I don't know if that's ever going to happen."

In a talk in 2010, Mason said he felt like he'd stumbled onto England's Salisbury Plain, where Stonehenge is located, leading to the formations being dubbed "Syria's Stonehenge."

Mason also talked about the monastery, Deir Mar Musa. Early work on the building likely began in the late 4th or early 5th century. It was occupied until the 1800s, though damaged repeatedly by earthquakes.

Following refurbishment in the 1980s and 1990s, it became active again.

Mason thinks the monastery was originally a Roman watchtower that was partially destroyed by an earthquake and then rebuilt. The compound was enlarged, with new structures added until it reached the size of the modern complex, clinging to a dry cliff face in the desert about 50 miles north of Damascus.

Mason was searching Roman watchtowers when he came across the stone lines, circles, and possible tombs.

The monastery is the home to many frescoes — some badly damaged — depicting Christian scenes, female saints, and Judgment Day. Mason also explored a series of small caves that he believes were excavated and lived in by the monks, who returned to the monastery for church services.

Mason said that if he's able to return, he'd like to excavate the area under the church's main altar, where he thinks there might be an entrance to underground tombs. He's already received the permission of the monastery's superior, who was recently ejected from the country.

**Please visit the site: <http://news.harvard.edu/gazette/story/2012/06/desert-mystery/>
[Go there for pix]**

TECHNOLOGY IDENTIFIES LOST COLOR **AT ROMAN FORUM, BY ELISABETTA** **POVOLEDO**

Historical sources describe the menorah looted by the Romans when they destroyed the Second Temple in Jerusalem in A.D. 70 as made of gold, as God instructed Moses in Exodus.

So the recent discovery that a version of the menorah in a bas-relief on the first-century Arch of Titus in the Roman Forum was originally painted a rich yellow should not come as much of a surprise. But given that the image faded to the color of its underlying stone long ago — like so much else in and around the Forum — precise knowledge of its once-bright pigmentation comes as an exciting revelation to historians and archaeologists.

“The Bible said it was gold, but the monument, as it was seen for centuries, told us it was white,” said Steven Fine, the director of the Arch of Titus Digital Restoration Project and a professor of Jewish history at Yeshiva University in New York, which is sponsoring the project. “Isn’t it cool to be that much closer to the viewers of the first and second century?”

The findings were made possible using noninvasive spectrometry readings carried out on the arch this month.

“The advantage of this method is that it doesn’t harm the monument,” said Cinzia Conti, the state archaeologist responsible for the arch.

The monument is not only an important part of Rome’s physical history but also “very significant for the Jewish community,” she said.

The arch, inaugurated in A.D. 81, has two interior reliefs that commemorate the Roman victory over Judea by Titus, a military commander and future emperor, and his father, the emperor Vespasian, a decade earlier. One relief shows Titus’ triumphal ride on a chariot, the other depicts a procession into Rome with loot from the temple, including the menorah as well as a sacred table and trumpets.

Professor Fine, who is the director of the Center for Israel Studies at Yeshiva, said that the menorah was a natural meeting ground for “both Jewish and Roman studies.”

For Jews, he said, the Arch of Titus has been an emotional lightning rod for nearly two millennia. The Jewish community in Rome is the oldest in Europe. “For centuries the Jews in Rome would not walk under it, as they saw themselves as exiles from Jerusalem forcibly brought to Rome,” Professor Fine said. “Then in the 19th century the arch became a marker of Jewish antiquity and pride, a symbol of exile and redemption that is so important to Jewish heritage.”

The arch’s menorah is thought to be the image used for the emblem of the State of Israel, though that hypothesis has been debated.

In recent years there has been a drive on the part of archaeologists and historians to discover the original colors of ancient statues and monuments, boosted by technical advances in the field. (Tests for color carried out on many of the monuments in the Forum in the 1980s that removed samples from the stone did not yield significant results.)

The latest generation of ultraviolet-visual absorption spectrometers are more manageable and more sensitive, “so we can get a reading analyzing a grain of pigment on a square centimeter, and that is very helpful,” said Heinrich Piening, a conservator with the State of Bavaria Department for the Conservation of Castles, Gardens and Lakes in Germany.

Mr. Piening did spectrometric readings on the arch and compared them with a database of pigments and dyes to identify the original color.

The menorah, he said, was painted a particular yellow ocher “that would have looked like gold from far away.”

Ms. Conti said more tests would be carried out on the rest of the arch, depending on financing.

The spectrometric readings will also be used to fine-tune “Rome Reborn,” a 3-D model of ancient Rome developed by Bernard Frischer, a professor of art history and classics at the University of Virginia.

“The Arch of Titus will be the first monument in ‘Rome Reborn’ that will have full restored color,” said Dr. Frischer, who was part of the team working on the monument. “But we still have another 10,000 buildings to color.”

Please visit the site: <http://www.nytimes.com/2012/06/25/arts/design/menorah-on-arch-of-titus-in-roman-forum-was-rich-yellow.html> [Go there for pix]

ROME ICON ACTUALLY YOUNGER THAN THE CITY, BY ROSSELLA LORENZI

The icon of Rome's foundation, a life-size bronze statue of a she-wolf with two human infants suckling her, is about 1,700 years younger than its city, Rome's officials admitted on Saturday.

The official announcement, made at the Capitoline Museums, where the 30 inch-high bronze is the centerpiece of a dedicated room, quashes the belief that the sculpture was adopted by the earliest Romans as a symbol for their city.

"The new dating ranges between 1021 e il 1153," said Lucio Calcagnile, who carried radiocarbon tests at the University of Salento's Center for Dating e Diagnostics.

Recalling the story of a she-wolf which fed Romulus, the legendary founder of Rome, and his twin brother, Remus, after they had been thrown in a basket into the Tiber River, the so called "Lupa Capitolina" (Capitoline she-wolf) was donated to the museum in 1471 by Pope Sixtus IV.

The sculpture was thought to be either the product of an Etruscan workshop in the 5th century B.C. or the masterpiece of the 6th century B.C. Etruscan sculptor Vulca of Veii.

NEWS: Ancient Images of a Mother Giving Birth Found Considered the archetypal symbol of Rome, as potent as the Colosseum, St Peter's Basilica and the Trevi Fountain, the Capitoline she-wolf was used in the poster of the 1960 Rome Olympics and is one of the most popular items among souvenir sellers in Rome.
shakespeare

With her defiant stance and raised eyebrows, the Lupa Capitolina was also one of the favored images of Benito Mussolini, the fascist dictator, who considered himself the founder of the New Rome.

Scholars had long established that the bronze figures of Romulus and Remus were added in the Renaissance, in accordance to the legend of Rome's foundation. Yet the sculpture's link to antiquity wasn't seriously questioned until the 1997 restoration.

At that time, restorer Anna Maria Carruba noticed that the she-wolf was cast as a single unit, a technique typically used in the Middle Ages.

On the contrary, ancient bronzes were cast in separate parts, and then brazed together. First used by the Greeks and then adopted by Etruscan and Roman artists, the technique basically consisted of brazing the separate joints using bronze as welding material.

After much discussion, Rome's officials decided to carry more in-depth tests to clear any doubt.

Using accelerator mass spectrometry, the researchers extracted, analyzed and radiocarbon dated organic samples from the casting process. The results revealed with an accuracy by 95,4 percent that the sculpture was crafted between the 11th and 12th century AD.

"The new thesis is that it is a medieval copy of an original Etruscan work," Rome's municipality supervisor for culture, Umberto Broccoli, said.

He remarked that the Etruscan attribution was first made by 18th-century German art historian Johann Joachim Winckelmann on the basis of how the wolf's fur was represented.

HOW STUFF WORKS: Rome and the Roman Empire "From Winckelmann onward, scholars have debated on the sculpture's dating. In my opinion, we will never have a definitive answer," Broccoli said.

"However, the latest study had brought much more clarity," he admitted.

Please visit the site: <http://news.discovery.com/history/she-wolf-rome-icon-120625.html?print=true>

PAKISTAN: BUDDHA ATTACKED BY TALIBAN GETS FACELIFT, BY SEBASTIAN ABBOT

JAHANABAD, Pakistan (AP) — When the Taliban blew the face off a towering, 1,500-year-old rock carving of Buddha in northwest Pakistan almost five years ago, it fell to an intrepid Italian archaeologist to come to the rescue.

Thanks to the efforts of Luca Olivieri and his partners, the 6-meter (nearly 20-foot)-tall image near the town of Jahanabad is getting a facelift, and many other archaeological treasures in the scenic Swat Valley are being excavated and preserved.

Hard-line Muslims have a history of targeting Buddhist, Hindu and other religious sites they consider heretical to Islam. Six months before the Sept. 11, 2001 attacks, the Taliban shocked the world by dynamiting a pair of 1,500-year-old Buddhist statues in central Afghanistan.

The Jahanabad Buddha, etched high on a huge rock face in the 6th or 7th century, is one of the largest such carvings in South Asia. It was attacked in the fall of 2007 when the Pakistani Taliban swarmed across the scenic Swat Valley. The army drove most of them out two years later, but foreign tourists who used to visit the region still tend to stay away.

Olivieri himself had to leave in 2008 after more than two decades of tending to the riches dating back to Alexander the Great and the Buddhist, Hindu and Muslim invaders who followed. The 49-year-old head of the Italian Archaeological Mission in Pakistan returned in 2010 and is back at work.

Taliban militants climbed ropes to insert explosives in holes drilled into the face and shoulders of the Jahanabad Buddha, said Olivieri.

The explosives in the shoulders failed to detonate, but the others blew off most of the face above the lips and cracked other parts of the carving and surrounding rock.

Olivieri and his team began work this month on fixing the cracks and what's left of the face. A full reconstruction is impossible because detailed documentation and fragments of the face are lacking.

"Whatever you do in the absence of perfect data is a fake," said Olivieri, who says he has wanted to be an archaeologist since age 6 and still brings a youthful exuberance to his work even as his beard grows gray.

Arriving as a university student in 1987, he was fascinated by Swat, once an important center of Buddhist culture and trade. The monk credited with introducing Buddhism to Tibet, Padmasambhava, was born in Swat.

In more recent decades, the area was known as "the Switzerland of Pakistan," popular with religious tourists from China, Japan and South Korea, and the hope is that restoration of the Jahanabad Buddha will spark a revival of tourism here.

Olivieri's mission is funded by the Italian government, which works with local Pakistani antiquities authorities. It has uncovered over 120 Buddhist sites among Swat's soaring hills and rushing rivers. Of roughly 200 Buddhist rock carvings in Swat, the Jahanabad Buddha was among the few to survive with its face intact for so long, said Olivieri. Most were defaced centuries ago by Muslim invaders who, like the Taliban, consider Buddha a false idol.

Maulana Shamsur Rehman, a leading Islamist politician in Swat, says the attack on the Buddha should never have happened. Islam preaches freedom and protection for followers of all religions, he told The Associated Press, and "in line with Islamic rules, nobody should have an objection to the repair work on the Buddha statue."

In 2001, militants damaged the excavated ruins of a 7th century Hindu temple in Swat overlooking a stronghold conquered by Alexander in the 4th century B.C. Unable to protect the temple, the Italian mission had to rebury it.

Ironically, the site that Olivieri was most worried about during the Taliban's violent reign in Swat was an Islamic one — the roughly 1,000-year-old Udegram Ghaznavid mosque, the third oldest in Pakistan.

He feared the militants would occupy and damage it, but that never happened.

Pakistani security officials say the Taliban are again trying to infiltrate Swat, but militants are not the only threat to the archaeological sites. Looters are perhaps a bigger problem. Many relics looted from Swat are in private and public collections around the world.

In December police arrested several men in Swat and seized a roughly one-meter-(three-foot) tall, 1,800-year-old Buddhist statue that could have fetched tens of thousands of dollars on the international antiquities market.

The Italian mission has posted guards at the most important sites and is also training them to become guides by teaching them English, first aid and basic conservation techniques, said Olivieri.

The mission opened in 1955 in an office provided by the Wali of Swat, the one-time princely ruler of the territory. To furnish a taste of home, its first draftsman painted a mural of Rome's Spanish Steps in the dining room.

The feeling of glimpsing Italy in the wilds of Pakistan's northwest continues today. There's espresso in the morning and Italian olive oil on the dining room table. A Fiat Campagnola jeep shipped from Italy in 1955 is due to end up in a museum in Swat.

Associated Press writer Sherin Zada contributed to this report.

Read more: <http://www.timesunion.com/news/article/Pakistan-Buddha-attacked-by-Taliban-gets-facelift-3659644.php#ixzz1yuRAqeqe>

Please visit the site: <http://www.timesunion.com/news/article/Pakistan-Buddha-attacked-by-Taliban-gets-facelift-3659644.php> [Go there for pix]

SYRIA’S SECRETIVE HERITAGE **UNEARTHED, SCIENTISTS CAN’T WAIT TO** **RESUME RESEARCH**

Archaeologists in Syria have reportedly come across what they described as a “landscape for the dead”. The ancient stone formations found north of the capital Damascus could be about 10,000 years old.

According to The Daily Mail, the ruins were first unearthed in the desert in 2009, by Robert Mason an archaeologist at the Royal Ontario Museum.

He was searching Roman watchtowers when he detected a series of grave looking rock formations.

“What it looked like was a landscape for the dead and not for the living,” Mason said. ‘It’s something that needs more work and I don’t know if that’s ever going to happen.’

Scientists had to cut short their research due to the ongoing conflict in the region.

The ruins were found near the monastery of Deir Mar Musa, home to a selection of Christian frescoes, and could possibly date to the Neolithic period or early Bronze Age.

Please visit the site: <http://rt.com/art-and-culture/news/ruins-rock-monastery-archeologists-777/>

PREHUMAN SPECIES PREFERRED FOREST FOODS, FOSSIL TEETH SUGGEST BY JOHN NOBLE WILFORD

Almost two million years after their last meals, two members of a prehuman species in southern Africa left traces in their teeth of what they had eaten then, as well as over a lifetime of foraging.

Scientists were surprised to find that these hominins apparently lived almost exclusively on a diet of leaves, fruits, wood and bark.

If you are what you eat, the new research and other recent studies suggest there was more diversity in the diets of early prehumans, both within and between species, than previously understood. And this could in part account for the recently recognized physical diversity among the long intermediate line of hominins belonging to the genus *Australopithecus*.

The dietary pattern of the enigmatic species, *Australopithecus sediba*, discovered four years ago in the Malapa caves northwest of Johannesburg, was unexpected for several reasons. It contrasted sharply with available data for other hominins in the region and elsewhere in Africa; they mainly consumed grasses and sedges from the savanna.

The *Au. sediba* diet also appeared to be a matter of choice, not necessity. Other evidence from animal fossils and sediments in the area indicated the presence at the time of vast grasslands in the vicinity. Yet these hominins, their skeletons adapted for tree climbing as well as upright walking, chose to feed themselves in adjacent woodlands. In this, scientists said, their behavior was more like that of modern chimpanzees, which tend to ignore savanna grasses, or perhaps the more apelike hominin *Ardipithecus ramidus*, which lived largely on hard foods some 4.4 million years ago.

An international team of scientists led by Amanda G. Henry of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, reported on Wednesday the research that supported their findings.

Their paper was published online by the journal *Nature* and will appear later in a printed edition.

“If these individuals are representative of the species,” the scientists wrote, “*Au. sediba* had a diet that was different from those of most early African hominins studied so far.”

They also concluded that the “inferred consumption” of woodland products “increased the known variety of early hominin foods.” But there is still much that is unknown or unclear about the newfound species: how or if it is related to modern humans and just where it fits on the hominin family tree.

The discovery, by Lee Berger of the University of Witwatersrand in Johannesburg, of two partial skeletons — one an adult female, the other a juvenile male — was the basis for the announcement two years ago of the new hominin species. These and at least one other adult specimen indicate that these hominins stood little more than four feet tall and

had small brains and a mix of primitive and more modern anatomies. Dr. Berger was an author of the new journal report.

Few other paleoanthropologists agree with Dr. Berger's contention that the new species is the most plausible known ancestor of archaic and modern humans. Dr. Henry's group said that studies of additional fossils from the Malapa caves "will provide a better understanding of the dietary ecology of Au. sediba."

Ian Tattersall, a paleoanthropologist at the American Museum of Natural History in New York, who was involved in the research, called the findings "very intriguing" and the research "an imaginative and multisided approach that makes you want to know more about this morphologically unusual species."

"Fortunately," Dr. Tattersall added, "rumor has it that more specimens are on the way."

Dr. Henry's team followed three lines of research. One was an analysis of carbon isotopes extracted by laser from tooth enamel, one of the most durable and least contaminated body parts, and one that preserves chemical signatures of what was eaten in one's youth. The type and amount of isotopes left from a diet of tree leaves, fruit and bark were well outside the range of those seen in all previously tested hominins — at least 95 percent forest food.

A second approach was an examination of dental microwear, which can reveal pits, scratches and cracks left by hard foods consumed shortly before death. Dr. Tattersall said that this "doesn't help much to clarify the situation, since it appears to differ significantly between the two individuals."

Finally, microscopic plant particles, called phytoliths, were recovered from dental tartar for the first time from a very ancient hominin (but from only one of the two individuals). Scientists said this apparently confirmed the carbon isotopic evidence for woodland diets.

Benjamin H. Passey, a geochemist at Johns Hopkins University, who conducted the tests determining the high ratio of carbon isotopes indicating a diet mostly of forest foods, explained why the research was important to an understanding of human evolution.

"One thing people probably don't realize is that humans are basically grass eaters," Dr. Passey said in a statement. "We eat grass in the form of the grains we use to make breads, noodles, cereals and beers, and we eat animals that eat grass. So when did our addiction to grass begin? At what point in our evolutionary history did we start making use of grasses? We are simply trying to find out where in the human chain that begins."

Please visit the site: http://www.nytimes.com/2012/06/28/science/australopithecus-sediba-preferred-forest-foods-fossil-teeth-suggest.html?_r=1&hp

ANCIENT DAIRY FARMERS OF THE GREEN SAHARA, BY SINDYA N. BHANOO

Prehistoric people in Saharan Africa had dairy farming operations 7,000 years ago, a new study reports — an insight revealed by their pottery. Researchers performed isotope analysis on samples drawn from excavated pottery, and were able to identify organic residues that originated from dairy fat.

The findings appear in the current issue of the journal *Nature*. The researchers found that the pottery, from a site in Libya known as the Takarkori rock shelter, retained an abundance of carbon isotopes related to fats from ruminant animals, like dairy and adipose fats, said Julie Dunne, an archaeologist at the University of Bristol in England and the study's first author.

The analysis also indicates that the prehistoric dairy farmers were processing milk.

“We know that they were heating it, to make butters and so on,” Ms. Dunne said. “We can't tell whether it was butter, cheese or yogurt, but we can tell they were processing it in the pots.”

This makes sense, she said, because people at the time were probably lactose-intolerant, and processing would have helped them digest the dairy more easily.

Rock art found throughout the region also offers hints that dairy might have been an important part of people's diet. “There are scenes of people and cattle, and the fact that they bothered to draw the udders — that's why it was thought so,” Ms. Dunne said.

In a few cases, there are even depictions of cows being milked.

These images, however, could not be reliably dated.

The technology to perform the isotope analysis was developed over the last decade, “but nobody had thought to look at the pottery and check the organic residue,” Ms. Dunne said.

Please visit the site: <http://www.nytimes.com/2012/06/26/science/in-african-pottery-evidence-of-ancient-dairy-farmers.html>

DES DOUTES PESENT SUR LA CONSERVATION DE LASCAUX



Une peinture rupestre paléolithique de la grotte de Lascaux en juillet 2008, envahie par des taches noires et blanches. Crédits photo : PIERRE ANDRIEU/AFP

L'origine des moisissures n'a pas été réellement explorée, selon des experts.

La conservation de la grotte de [Lascaux](#) n'est pas une affaire réglée. Loin de là. Deux études publiées cette année expliquent que les taches noires apparues en 2007 sur trois fresques et à plusieurs endroits de la grotte seraient dues à la pulvérisation de biocides (nos éditions du 5 avril 2012). Destinés à éliminer des moisissures blanches apparues en 2001, ils ont été utilisés dans la grotte pendant plus de deux ans. Un scénario contesté.

«C'est une hypothèse de travail, l'étude a été mal faite, elle ne démontre rien et elle n'apporte aucune proposition crédible pour la conservation de la grotte», assure Michel Goldberg, porte-parole du List ([Lascaux International Scientific Thinktank](#)). Le List regroupe des physiciens et des biologistes dont plusieurs ont participé à la sauvegarde de la grotte dans les années 1960. Pour eux, les taches sont plus vraisemblablement dues à l'installation d'un nouveau système d'assistance climatique en 2000.

Sur le [site Web de Lascaux](#), en effet, on voit que les champignons sont arrivés peu après la mise en marche de la machine. Le précédent système qui avait été conçu par le physicien Paul-Marie Guyon, aujourd'hui au List, avait fonctionné de 1967 à 2000 sans qu'il y ait eu la moindre contamination. «De très faible puissance (100 W), il permettait d'enlever l'excès d'humidité par condensation avec un pilotage très fin à 1 % d'humidité près», explique Michel Goldberg. Dans les conditions optimum de préservation, l'air de la grotte doit être saturé à 99 % d'humidité.

Les taches sont arrivées en rafale à partir de 2000. «Le nouvel appareil était beaucoup trop puissant et inadapté», estime Paul-Marie Guyon. Trop grand, il a fallu démonter le sas d'entrée et le toit protégeant l'entrée de la grotte contre les intempéries pour l'installer à l'intérieur. Les travaux ont été réalisés en plein hiver, provoquant des infiltrations d'eau. Pendant des mois, les conditions climatiques internes de la grotte ont été très fortement perturbées par les travaux. Deux mois après sa mise en route, les ventilateurs ont dû être arrêtés car ils refroidissaient trop la grotte et provoquaient des courants d'air violents.

«On est dans le flou»

L'opération a été un fiasco, mais l'affaire n'a jamais été instruite. «Nous avons demandé à voir le cahier des charges de la machine, il ne nous a jamais été communiqué», déplore Michel Goldberg. Le List réclamait aussi depuis plusieurs années les données physiques enregistrées à l'intérieur de la grotte de 1967 à aujourd'hui. «Nous les avons reçues il y a un mois. Il faut remonter là où se trouve l'erreur et voir à partir de là ce qu'on peut faire», affirme le chercheur de l'[Institut Pasteur](#).

Au cours de la décennie de crise, de nombreuses personnes ont défilé à Lascaux pour retirer les moisissures, faire des photos ou des relevés, ce qui a nécessité des éclairages prolongés. Toutes ces visites ont pu perturber le climat de la grotte, modifier la température et l'humidité. «On sait aujourd'hui que la formation des taches noires est principalement due à une légère diminution de l'humidité», indique Thomas Warscheid, expert allemand ayant siégé au précédent conseil scientifique (CS) de Lascaux.

Le List tire la sonnette d'alarme depuis plusieurs années. En 2009, ses membres ont été sollicités par le [ministère de la Culture](#) pour proposer des noms au nouveau CS. Mais le remplacement de Mme Albanel par M. Mitterrand a tout bouleversé. On retrouve dans ce conseil présidé par Yves Coppens trop peu de spécialistes des sciences dures et des personnes qui ont décidé l'installation du système de climatisation. Ils ont tout intérêt à noyer le poisson: au lieu d'analyser ce qui s'est passé pour en tirer les leçons, des programmes de recherche fondamentale sont lancés qui ne tiennent pas compte des acquis du passé.

Les études soutenues par le CS montrent que les biocides et le réchauffement climatique sont à l'origine des taches. «Il faut définir des règles pour savoir, par exemple, ce qu'il faut faire en cas d'accident. On est dans le brouillard, dans le flou». Si la situation dans la grotte n'évolue plus de manière rapide, elle n'est pas entièrement stabilisée et l'on peut craindre de nouveaux épisodes de croissance de champignons sans que l'on soit aujourd'hui mieux préparé à y faire face qu'il y a onze ans.

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