



Επιστημονικό Σωματείο,
Έτος Ίδρυσης 1982, έδρα:
Κάνιγγος 27, 106 82 Αθήνα
(Ένωση Ελλήνων Χημικών)
<http://archaeometry.org.gr/index.php/en/>

**ΔΟΙΚΗΤΙΚΟ
ΣΥΜΒΟΥΛΙΟ:**

Β. Κυλίκογλου (πρόεδρος),
Ι. Μπασιάκος (αντιπρόεδρος),
Ε. Φιλιπάκη (γραμματέας),
Ι. Καρατάσιος (ταμίας),
Ν. Ζαχαριάς (μέλος),
Α. Hein (μέλος),
Γ. Φακορέλλης (μέλος)

Πληροφορίες:

Γ. Φακορέλλης (σύνταξη,
επιλογή ύλης)

E-mail: yfacorel@teiath.gr

Scientific Association, Year
of Establishment 1982,
Headquarters: Kaniggos 27,
106 82 Athens (Association
of Greek Chemists)
<http://archaeometry.org.gr/index.php/en/>

BOARD:

V. Kilkoglou (president),
J. Bassiakos (vice-president),
E. Philippaki (secretary),
I. Karatassios (treasurer),
N. Zacharias (member),
A. Hein (member),
Y. Facorellis (member)

Information: Y. Facorellis
(editor)

E-mail: yfacorel@teiath.gr

Πληροφοριακό Δελτίο της Ελληνικής Αρχαιομετρικής Εταιρείας

- Σεπτέμβριος 2017 -

You don't develop courage by being happy in your relationships everyday. You develop it by surviving difficult times and challenging adversity. (Epicurus)

Newsletter of the Hellenic Society of Archaeometry

- September 2017 -

Nr. 198

ΠΙΝΑΚΑΣ ΠΕΡΙΕΧΟΜΕΝΩΝ – TABLE OF CONTENTS

ΣΥΝΕΔΡΙΑ – CONFERENCES/WORKSHOPS

- 2ο ΠΑΝΕΛΛΗΝΙΟ ΣΥΝΕΔΡΙΟ ΨΗΦΙΟΠΟΙΗΣΗΣ ΠΟΛΙΤΙΣΤΙΚΗΣ
ΚΛΗΡΟΝΟΜΙΑΣ-EUROMED 2017, Βόλος, 1-3 Δεκεμβρίου 2017, Κτίριο
"ΠΑΠΑΣΤΡΑΤΟΣ"- Παραλία Βόλου **page 4**
- Historical Metallurgy Society - Call for Papers, University of Liverpool,
Thursday 9th November 2017 **page 10**
- 3rd International Conference on Innovation in Art Research and Technology
(inArt 2018) conference, Parma (Italy), March 26-29, 2018 **page 11**
- International Symposium on the Conservation of Monuments in the
Mediterranean Basin, campus of the National Technical University of Athens,
Greece, 20-22 September 2017, Symposium Programme Announcement,
Topic: Natural and Anthropogenic Hazards and Sustainable Preservation **page 12**

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ – JOB VACANCIES/FELLOWSHIPS

- Agnese N. Haury Graduate Fellowship in Archaeological Dendrochronology ... **page 13**
- Internship for Archaeobotany in STARC (STARC_IAB_04) **page 14**

INTERNET SITES

- IsoArch, a new open-access and collaborative isotope database for
bioarchaeological samples **page 16**

ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

- Textile Terminologies from the Orient to the Mediterranean and Europe, 1000
BC to 1000 AD **page 18**
- Genetic origins of the Minoans and Mycenaeans **page 22**
- Glassware and Glassworking in Thessaloniki **page 23**

ΕΙΔΗΣΕΙΣ - NEWS RELEASE

- The Etruscans Were Expert Beekeepers, Ancient Honeycombs Suggest, by
Rossella Lorenzi **page 24**
- Les Cananéens retrouvent une deuxième vie, par Jean-Luc Nothias **page 27**
- The Greeks really do have near-mythical origins, ancient DNA reveals, by Ann
Gibbons **page 29**
- Search for secrets intensifies as hi-tech tools help unravel the pyramids' ancient
mysteries **page 31**
- Excavations unveil mysteries of Trojan War **page 33**

| | |
|---|----------------|
| Çatalhöyük: 4,000 years of peace without war | page 35 |
| Ancient Greek papyri virtually unwrapped in Italy | page 37 |
| Who are you calling Mycenaean? By Yannis Hamilakis | page 39 |
| Mystery of 8,500-year-old copper making event revealed through materials science | page 41 |
| First-of-its-kind' Hellenistic temple discovered in Umm Qais, by Ahmed Bani Mustafa | page 43 |
| Poisonings went hand in hand with the drinking water in Pompeii | page 45 |
| Mathematical secrets of ancient tablet unlocked after nearly a century of study . | page 47 |
| Ancient Greeks Built an Eclipse-Predicting 'Computer' 2,000 Years Ago, by Tia Ghose | page 49 |
| Remarkable artistry hidden in ancient Roman painting revealed | page 51 |
| Emperor Justinian Mosaic Inscription Unearthed near Damascus Gate | page 53 |
| How Ancient Babylonians Could Have Predicted the 2017 Eclipse, by Ruth Schuster | page 55 |
| New Roman tombs discovered in Egypt's Dakhla Oasis, by Nevine El-Aref | page 58 |
| World's oldest Italian wine just discovered | page 59 |
| 'Atomic Fingerprinting' Tech Could End Counterfeit Goods, by Tracy Staedter | page 60 |
| Scientists Debunk Claim That Copper Smelting Was Invented 8,500 Years Ago in Turkey 'Slag' resulted from pretty green pigments burning accidentally with a body, not the earliest invention of metallurgy, says archaeometallurgical team, by Ruth Schuster | page 62 |
| 8,000-year-old paint workshop discovered in Turkey's Eskişehir | page 65 |

ΣΥΝΕΔΡΙΑ - CONFERENCES/WORKSHOPS

2ο ΠΑΝΕΛΛΗΝΙΟ ΣΥΝΕΔΡΙΟ **ΨΗΦΙΟΠΟΙΗΣΗΣ ΠΟΛΙΤΙΣΤΙΚΗΣ** **ΚΛΗΡΟΝΟΜΙΑΣ-EUROMED 2017, ΒΟΛΟΣ, 1-** **3 ΔΕΚΕΜΒΡΙΟΥ 2017, ΚΤΙΡΙΟ** **"ΠΑΠΑΣΤΡΑΤΟΣ"- ΠΑΡΑΛΙΑ ΒΟΛΟΥ**

**ΠΟΛΙΤΙΣΜΟΣ, ΠΑΙΔΕΙΑ, ΕΡΕΥΝΑ, ΚΑΙΝΟΤΟΜΙΑ, ΝΕΕΣ ΤΕΧΝΟΛΟΓΙΕΣ ,
ΔΙΕΘΝΗΣ ΤΟΥΡΙΣΤΙΚΗ ΠΡΟΒΟΛΗ
Η ΚΑΡΔΙΑ ΤΟΥ ΕΛΛΗΝΙΚΟΥ ΠΟΛΙΤΙΣΜΟΥ ΘΑ ΧΤΥΠΗΣΕΙ ΔΥΝΑΤΑ ΣΤΟ
ΒΟΛΟ**

Στην "πόλη των Αργοναυτών " η μεγάλη συνάντηση Ελλήνων και Κυπρίων επιστημόνων απ' όλο τον κόσμο

Άρχισαν οι εγγραφές για το 2ο Πανελλήνιο Συνέδριο Ψηφιοποίησης Πολιτιστικής Κληρονομιάς

Υπό την Αιγίδα

του Υπουργείου Ψηφιακής Πολιτικής, Τηλεπικοινωνιών και Ενημέρωσης,

του Υπουργείου Τουρισμού και

της Πρεσβείας της Κύπρου στην Αθήνα

Στις εργασίες θα συμμετέχει και ο Υπουργός Παιδείας και Πολιτισμού της Κύπρου κ. Κων. Καδής

Ανακοινώνεται η διοργάνωση του «2ου Πανελλήνιου Συνεδρίου Ψηφιοποίησης Πολιτιστικής Κληρονομιάς – 2017» , ("2nd Pan-Hellenic Conference on Digital Cultural Heritage-EuroMed 2017"), που θα γίνει στην Ελλάδα ,στην όμορφη πόλη του Βόλου, στα αμφιθέατρα του κτιρίου "ΠΑΠΑΣΤΡΑΤΟΣ " του Πανεπιστημίου Θεσσαλίας, κατά το χρονικό διάστημα από την Παρασκευή 1 έως και Κυριακή 3 Δεκεμβρίου 2017.

Το 1ο Πανελλήνιο Συνέδριο Ψηφιοποίησης , που ήταν αποτέλεσμα της συνεργασίας του Τεχνολογικού Πανεπιστημίου Κύπρου-ΤΕΠΑΚ (Εργαστήριο Ψηφιακής Πολιτιστικής Κληρονομιάς - Διευθύντης Dr Μαρίνος Ιωαννίδης) , του Παγκόσμιου Δικτύου "ΠΕΡΡΑΙΒΙΑ", ενός πολυβραβευμένου Δευτεροβάθμιου Φορέα Πολιτισμού και Επιστημών , και του ΑΕΙ Πειραιά Τ.Τ., θεωρήθηκε από όλους τους επιστήμονες υψηλής εξειδίκευσης , ως πρωτοπόρο και καινοτόμο για την Ελλάδα και στέφθηκε με απόλυτη επιτυχία, αφού συγκέντρωσε 500 Συνέδρους από την Ελλάδα , και όλο τον κόσμο , έγινε θεσμός για τη χώρα από την πρώτη στιγμή και αγκαλιάστηκε από όλη την επιστημονική Κοινότητα Ελληνικών και ξένων Πανεπιστημίων , που είχε και έχει ανάγκη από μια τέτοια διοργάνωση που αποτελεί , πλέον, τη μεγάλη συνάντηση όλων των επιστημονικών ειδικοτήτων που εμπλέκονται με κάθε τρόπο στην έρευνα , μελέτη, καταγραφή , διάσωση ,ανάδειξη και ψηφιοποίηση της Πολιτιστικής μας Κληρονομιάς.

Για το 2ο Πανελλήνιο Συνέδριο Ψηφιοποίησης της Πολιτιστικής Κληρονομιάς 2017

, που θα γίνει στις **1-3 Δεκ . 2017** , συνεργάζονται Πανεπιστημιακοί Φορείς, Πολιτεία ,ερευνητικά κέντρα ,εργαστήρια ,εκατοντάδες επιστήμονες και μεγάλες Οργανώσεις της Κοινωνίας των Πολιτών, Ελλάδα και Κύπρο , συνδυάζεται αυτό με τα παγκόσμια Συνέδρια EuroMed που διοργανώνει το ΤΕ.ΠΑ.Κ. στην Κύπρο κάθε δύο χρόνια, και φέτος διοργανώνεται για 2η φορά στην Ελλάδα , από τους Φορείς , που το θεσμοθέτησαν για τη χώρα από το έτος 2015 και είναι :

- **Τεχνολογικό Πανεπιστήμιο Κύπρου -Λεμεσός Κύπρου**
- **ΑΕΙ ΠΕΙΡΑΙΑ Τ.Τ. -Πειραιάς -ΕΛΛΑΔΑ**
- **Πανεπιστήμιο Θεσσαλίας- Θεσσαλία-ΕΛΛΑΔΑ**
- **Παγκόσμιο Δίκτυο "ΠΕΡΡΑΙΒΙΑ"- Θεσσαλία -ΕΛΛΑΔΑ**

και υποστηρίζεται από εκατοντάδες επιστήμονες και δεκάδες εθνικούς και διεθνείς Φορείς.

Ένα Συνέδριο Εθνικής σημασίας για τη διάσωση της Πολιτιστικής Κληρονομιάς

Το Συνέδριο , μπορεί να χαρακτηριστεί εθνικής σημασίας και αξίας, αφού έχει ως σκοπό την ψηφιοποίηση και ανάδειξη της Πολιτιστικής μας κληρονομιάς σε όλο τον κόσμο , με τη χρήση των τελευταίων τεχνολογιών , ήδη έχει την υποστήριξη και την Αιγίδα του **Υπουργείου Ψηφιακής Πολιτικής, Τηλεπικοινωνιών και Ενημέρωσης , του Υπουργείου Τουρισμού , του Υπουργείου Παιδείας και Πολιτισμού της Κύπρου, της Πρεσβείας της Κυπριακής Δημοκρατίας στην Αθήνα,** πολλών Κρατικών Φορέων , Κρατικών Υπηρεσιών ,Πανεπιστημίων , της Περιφέρειας Θεσσαλίας ,του ICOMOS Ελλάδος και Κύπρου , της επιστημονικής κοινότητας από την Ελλάδα και την Κύπρο, του Πανεπιστημίου Θεσσαλίας ,του Τεχνολογικού Πανεπιστημίου Κύπρου (Λεμεσός) ,του ΑΕΙ Πειραιά Τ.Τ., του Δικτύου "ΠΕΡΡΑΙΒΙΑ" , πολλών Ιδρυμάτων , το Ινστιτούτο Έρευνας και Τεχνολογίας Θεσσαλίας (ΙΕΤΕΘ), της CIPA Heritage Documentation ,το Εθνικό Κέντρο Έρευνας και Τεχνολογικής Ανάπτυξης (ΕΚΕΤΑ) ,Ερευνητικών Κέντρων, Φορέων Πανελληνίας εμβέλειας, του Δικτύου Μη Κυβερνητικών Οργανώσεων Θεσσαλίας ,αλλά και πολλών άλλων Ιδρυμάτων και συλλογικών Φορέων από όλη την Ελλάδα και το εξωτερικό (Επιμελητήρια, Μητροπόλεις , Αναπτυξιακές Εταιρίες, Βιβλιοθήκες, Επιστημονικές Ενώσεις κ.ά.).

Πέρα από την άμεση θετική απάντηση, του **Υπουργείου Ψηφιακής Πολιτικής, Τηλεπικοινωνιών και Ενημέρωσης , του Υπουργείου Τουρισμού , του Υπουργείου Παιδείας και Πολιτισμού της Κύπρου και της Πρεσβείας της Κυπριακής Δημοκρατίας στην Αθήνα,** αναμένονται οι απαντήσεις από το **Υπουργείο Παιδείας ,Έρευνας και Θρησκευμάτων , το Υπουργείο Πολιτισμού και Αθλητισμού ,**ενώ έχει σταλεί Πρόσκληση στην Α.Ε. Πρόεδρο της Ελληνικής Δημοκρατίας **κ. Προκόπη Παυλόπουλο,** στην Α.Θ. Παναγιότατο Πατριάρχη Κων/πόλεως κ. Βαρθολομαίο, όπως επίσης και στους **Πατριάρχες Ιεροσολύμων και Αλεξανδρείας ,**που εξεδήλωσαν το ενδιαφέρον να συμμετέχουν στη μεγάλη αυτή συνάντηση για τον Ελληνικό Πολιτισμό.

Η Πρόσκληση συμμετοχής στο Συνέδριο αφορά :

- Επιστημονικό δυναμικό των Πανεπιστημίων, Ιδρυμάτων και Ινστιτούτων , όλων των βαθμίδων , με ειδίκευση στην Αρχαιολογία ,Ιστορία, Γεωλογία, Βιολογία ,Ανθρωπολογία ,Χημεία, Πληροφορική ,Φυσική ,Μαθηματικά ,Πολιτισμική

Πληροφορική, Πολυτεχνεία (Ηλεκτρολόγοι Μηχανικοί, Πολιτικοί Μηχανικοί, Αρχιτέκτονες κ.ά.), Συντηρητές Ανασκαφικών Ευρημάτων και Έργων Τέχνης, Γραφιστικές Τέχνες κ.α. ,ειδικότητες δηλαδή, που εμπλέκονται με οποιονδήποτε τρόπο στο μεγάλο θέμα της Ψηφιοποίησης της Πολιτιστικής Κληρονομιάς.

- Στελεχιακό δυναμικό του Υπουργείου Ψηφιακής Πολιτικής, Τηλεπικοινωνιών και Ενημέρωσης, του Υπουργείου Παιδείας, Έρευνας και Θρησκευμάτων, του Υπουργείου Πολιτισμού και Αθλητισμού, του Υπουργείου Τουρισμού, Εφορειών Αρχαιοτήτων, CIPA, ICOMOS Ελλάδος και Κύπρου, Μουσείων, Γενικών Αρχείων του Κράτους, κρατικών και ιδιωτικών βιβλιοθηκών, Ιερών Μητροπόλεων της Εκκλησίας της Ελλάδος και άλλων Εκκλησιών, Ιερών Μονών, ομοσπονδιών, Συλλόγων Επιστημόνων, Ένωση Ελλήνων Συντηρητών, Ελληνική Αρχαιομετρική Εταιρεία, Ένωση Αρχαιολόγων, Σύλλογο Αρχιτεκτόνων, Συλλογικοτήτων, Μελετητικών Εταιριών, Φορείς υλοποίησης Εθνικών και Ευρωπαϊκών Προγραμμάτων, Μη Κυβερνητικών Οργανώσεων κ.ά. όπως και τους αντίστοιχους Φορείς της Κύπρου.
- Στελέχη άλλων Υπουργείων και ΟΤΑ Α' και Β' Βαθμού.
- Έλληνες και Κύπριους που εργάζονται σε Ελληνικά και Ξένα Πανεπιστήμια, Ερευνητικά Κέντρα σχετικά με τον Πολιτισμό.
- Έλληνες και Κύπριους Φοιτητές Ελληνικών και Ξένων Πανεπιστημίων.
- Ανεξάρτητους Επιστήμονες και Ερευνητές στην Ελλάδα, Κύπρο και όλο τον κόσμο.
- Γενικά, κάθε ενδιαφερόμενο σε θέματα ψηφιοποίησης της Πολιτιστικής Κληρονομιάς.

Θεματικές Ενότητες Συνεδρίου Ψηφιοποίησης

Οι ενδεικτικοί θεματικοί άξονες προβληματισμού του Συνεδρίου είναι οι ακόλουθοι:

1. Νέες τεχνολογίες στις ανθρωπιστικές επιστήμες
2. Η ψηφιοποίηση στην Αρχαιολογία και τον τουρισμό
3. Ψηφιακή Πολιτιστική κληρονομιά και η διαχείριση της
4. Συντήρηση, Προστασία και ανάδειξη της πολιτιστικής κληρονομιάς στο ψηφιακό πολυμεσικό περιβάλλον και διαδίκτυο (Εκπαίδευση, Τουρισμό, κτλ)
5. Νομικό πλαίσιο και ψηφιοποίηση της Πολιτιστικής Κληρονομιάς (συμβάσεις, προγράμματα, πνευματικά δικαιώματα)
6. Εμπειρίες, νέες προκλήσεις και προοπτικές για την ψηφιακή κοινωνία της Πολιτιστικής Κληρονομιάς.

ΠΡΟΓΡΑΜΜΑΤΙΣΜΟΣ ΥΠΟΒΟΛΗΣ ΕΠΙΣΤΗΜΟΝΙΚΩΝ ΕΡΓΑΣΙΩΝ

| | |
|----------------------------------|--|
| <i>30 Σεπτεμβρίου 2017</i> | <i>Καταληκτική ημερομηνία υποβολής περιλήψεων εργασιών ή POSTERS από τους συγγραφείς</i> |
| <i>Α' δεκαπενθήμερο Οκτ 2017</i> | <i>Αξιολόγηση εργασιών από Επιστημονική Επιτροπή</i> |
| <i>15 Οκτωβρίου 2017</i> | <i>Ενημέρωση συγγραφέων σχετικά με αποδοχή εργασιών από την Επιστημονική Επιτροπή</i> |
| <i>30 Οκτ 2017</i> | <i>Καταληκτική ημερομηνία υποβολής full paper από τους συγγραφείς</i> |
| <i>Α' 10ήμερο Νοε2017</i> | <i>Αξιολόγηση εργασιών από Επιστημονική Επιτροπή</i> |
| <i>10 Νοεμβρίου 2017</i> | <i>Ενημέρωση συγγραφέων σχετικά με σχόλια / διορθώσεις από την Επιστημονική Επιτροπή</i> |
| <i>20 Νοεμβρίου 2017</i> | <i>Υποβολή Τελικών κειμένων εργασιών -Διαμόρφωση τελικού προγράμματος συνεδρίου</i> |

Συνεργασίες σε εθνικό επίπεδο

Τα **Πανελλήνια Συνέδρια Ψηφιοποίησης Πολιτιστικής Κληρονομιάς- EuroMed** έχουν ως κεντρικές έννοιες τον Πολιτισμό, την Παιδεία, την Έρευνα, την Καινοτομία, τις Ψηφιακές Τεχνολογίες και την τουριστική προβολή προορισμών, μέσω της ανάδειξης της Πολιτιστικής μας Κληρονομιάς (αρχαιολογικών και θρησκευτικών Μνημείων κ.ά.), χαρακτηρίστηκαν ως ένα εξαιρετικό εγχείρημα που πέτυχε και, ήδη, συγκεντρώνουν το έντονο ενδιαφέρον επιστημόνων πολλών ειδικοτήτων, που χρησιμοποιούν αλλά και αναπτύσσουν τις επιστήμες της Ψηφιοποίησης και των Νέων Τεχνολογιών, αλλά και κάθε άλλη επιστήμη που άπτεται την Πολιτιστικής μας Κληρονομιάς (αρχαιολογία, Βυζαντινολογία, πολυτεχνεία, εξειδ. επιστήμονες πληροφορικής και νέων τεχνολογιών αιχμής, συντηρητές μνημείων, ιστορικούς, κ.ά.).

Επίσης, θεωρούνται πολύ επίκαιρα, αν λάβουμε υπόψη ότι εξαιτίας των διενέξεων και των κοινωνικοπολιτικών αναδιατάξεων, αλλά και τρομοκρατικών ενεργειών και φυσικών καταστροφών (π.χ. σεισμοί κλπ) που συμβαίνουν γύρω μας, αλλά και σε όλο τον κόσμο, πολλά από τα Μνημεία μας, τα οποία και αποτελούν τη βαριά μας Πολιτιστική Κληρονομιά, κινδυνεύουν να καταστραφούν, χωρίς να έχουμε ακόμα μεριμνήσει να μπορούμε να τα αποκαταστήσουμε, όπως είναι στην αρχική τους μορφή (αρχαιολογικοί χώροι, Βιβλία, ιερά κειμήλια, Μονές, Εκκλησίες κ.ά.).

Όλη η επιστημονική κοινότητα, αλλά κυρίως η Πολιτεία, θεωρούμε ότι πρέπει να δείξει μεγαλύτερη ευαισθησία, αλλά και υποχρέωση, να λάβει όλα εκείνα τα αναγκαία μέτρα, έτσι ώστε αυτή η θαυμάσια πολιτιστική και θρησκευτική μας κληρονομιά, να ερευνηθεί, να καταγραφεί, να διασωθεί, να ψηφιοποιηθεί και να αναδειχθεί σε όλο τον κόσμο, με όλα τα σύγχρονα μέσα, που μας προσφέρει σήμερα η Τεχνολογία.

Πέρα από αυτό, μέσα από συνέργειες μεταξύ των Φορέων Διοργάνωσης των Συνεδρίων μας (που ήδη συνεργάζονται με πολλά πανεπιστήμια από όλες τις χώρες της Ευρώπης και υλοποιούν σημαντικά Ευρωπαϊκά Προγράμματα χρηματοδοτούμενα από την Ε.Ε.) **και όλων των Πανεπιστημίων, ερευνητικών κέντρων, Φορέων και της Εκκλησίας**, μπορούμε να αξιοποιήσουμε τους Ευρωπαϊκούς πόρους, οι οποίοι είναι στη διάθεση των χωρών και των Φορέων που υποβάλλουν τεκμηριωμένες και σοβαρές προτάσεις.

Με τον τρόπο αυτό, όχι μόνο θα δώσουμε την ευκαιρία σε εξειδικευμένους επιστήμονες να εργαστούν πάνω στην Πολιτιστική μας Κληρονομιά, αλλά το κυριότερο, θα προστατεύσουμε και θα αναδείξουμε, ότι μας άφησε ως παρακαταθήκη ο Πολιτισμός του Ανθρώπου, αλλά, κυρίως, ο Ελληνικός Πολιτισμός. Πιστεύουμε ότι σε εποχές, που και οι δύο αυτοί πυλώνες βάλονται από παντού, έχουμε ιερή υποχρέωση να συμπράξουμε και να παραδώσουμε την Κληρονομιά μας, ακέραιη στις επόμενες γενιές.

Με τη μεγάλη μας αυτή συνεργασία, αναδεικνύουμε και χαιρετίζουμε τη μεγάλη συνάντηση της Επιστήμης με την Πολιτιστική μας Κληρονομιά και την αναγκαιότητα δημιουργίας ενός Διακρατικού **Φορέα για τη χάραξη ενός Επιχειρησιακού Σχεδίου για την Ψηφιοποίηση της Πολιτιστικής μας Κληρονομιάς**, πρόταση που, ήδη, έχει διαβιβαστεί από τους Φορείς μας, προς τους ηγέτες Ελλάδας, Αιγύπτου και Κύπρου

,προς μελέτη και υλοποίηση και υποβλήθηκε μετά τη Στρογγυλή Τράπεζα που διοργανώθηκε στις 3 Ιουνίου 2016 στην Πρεσβεία της Κύπρου στην Αθήνα.

Μια Υπερεθνική προσπάθεια με πολλά μηνύματα

Πιστεύουμε ,ότι από τη μεγάλη αυτή προσπάθεια που δεν έχει προηγούμενο , κατά τη δική μας γνώμη , **δεν μπορεί και δεν πρέπει** να απουσιάζει κανείς και ακόμα , το σημαντικό αυτό Συνέδριο :

- 1. αποτελεί ιστορική αναγκαιότητα** για την Ψηφιοποίηση της Πολιτιστικής Κληρονομιάς, κάθε μορφής.
- 2. θα συγκεντρώσει τους καλύτερους επιστήμονες** που εργάζονται στο ερευνητικό πεδίο της Ψηφιοποίησης απ' όλο τον κόσμο
- 3. θα μεταδοθεί ζωντανά ολόκληρο το Συνέδριο , μέσω Live Streaming,** σε όλη την υφήλιο , όπως συνέβη και το 2015 στο 1ο Πανελλήνιο Συνέδριο ΨΠΚ
- 4. θα φέρει κοντά όλους τους Έλληνες επιστήμονες** με τη δημιουργία συνεργασιών και συμπράξεων
- 5. θα παρουσιαστούν όλες οι τελευταίες εξελίξεις στις νέες τεχνολογίες** και όλα τα Ευρωπαϊκά Προγράμματα εν όψει και του έτους Πολιτιστικής Κληρονομιάς για την Ευρώπη, που είναι το 2018
- 6. θα αναδείξει τον Ελληνικό Πολιτισμό ,** αλλά και όλα τα Μνημεία σε όλο τον κόσμο , με απώτερο στόχο τη δημιουργία Πολιτιστικού και προσκυνηματικού Τουρισμού

Όλες τις πληροφορίες για τα Συνέδρια Ψηφιοποίησης Πολιτιστικής Κληρονομιάς μπορείτε να αντλήσετε από :

- 1. Για το 1ο Πανελλήνιο Συνέδριο ΨΠΚ-** Βόλος 24-26/9/2015 Πανεπιστήμιο Θεσσαλίας στο LINK <http://euromed2015.eu/el/index.php>
- 2. Για το 2ο Πανελλήνιο Συνέδριο ΨΠΚ** - Βόλος 1-3 Δεκεμβρίου 2017 στο LINK <http://euromed2017.eu/>
- 3. Μπορείτε να αντλήσετε τα Πρακτικά του 1ου Πανελλήνιου Συνεδρίου ΨΠΚ** στο LINK <http://euromed2015.eu/documents/euromed2015.eu-conference-proceedings.pdf>

Στους Συνέδρους θα δοθούν Πιστοποιητικά Συμμετοχής.

Πληροφορίες-Συνεννοήσεις για κάθε θέμα : Δίκτυο "ΠΕΡΡΑΙΒΙΑ" - Κων. Σκριάπας
-Τηλέφ. 0030-6974-881944
E-Mail: skriapask@gmail.com

Με Εκτίμηση

ΕΚ ΜΕΡΟΥΣ ΤΩΝ ΔΙΟΡΓΑΝΩΤΩΝ ΦΟΡΕΩΝ

ΤΕΧΝΟΛΟΓΙΚΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΥΠΡΟΥ
ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΕΣΣΑΛΙΑΣ
ΑΕΙ ΠΕΙΡΑΙΑ ΤΕΧΝΟΛΟΓΙΚΟΥ ΤΟΜΕΑ
ΔΙΚΤΥΟ "ΠΕΡΡΑΙΒΙΑ"

Η Οργανωτική Επιτροπή του Συνεδρίου

- ΜΑΡΙΝΟΣ ΙΩΑΝΝΙΔΗΣ - Καθηγητής ΤΕΠΑΚ-ΚΥΠΡΟΣ
- ΘΕΟΔ.ΓΚΑΝΕΤΣΟΣ- Καθηγητής ΑΕΙ Πειραιά Τ.Τ.,

- ΙΩΑΝΝΗΣ ΒΑΡΑΛΗΣ-Επικ. Καθηγητής Πανεπιστημίου Θεσσαλίας ,
 - ΗΛΙΑΣ ΝΟΜΠΙΛΑΚΗΣ -Ομ. Καθηγητής ΤΕΙ Αθηνών ,
 - ΚΩΝ/ΝΟΣ ΣΚΡΙΑΠΑΣ -Οικονομολόγος -Σύμβουλος Ανάπτυξης ΕΛΛΑΔΑ
-

HISTORICAL METALLURGY SOCIETY - CALL FOR PAPERS, UNIVERSITY OF LIVERPOOL, THURSDAY 9TH NOVEMBER 2017

The next Historical Metallurgy Society Research in Progress Meeting will take place at the University of Liverpool on **Thursday 9th November 2017**.

This meeting is aimed at a wide variety of contributors, from historical and archaeological metallurgists to excavators, historians and economists. If you are working, or have just finished working, on a project related to archaeological or historical metallurgy, we would like to hear from you.

We are particularly interested in bringing together contract and public sector archaeologists with academic researchers, and in fostering links between the different disciplines studying metallurgy and related activities.

Whether you are a student, a researcher, an interested non-specialist, or a professional excavator, we invite you to meet others working in this field and present your research to an interested community.

Proposals for 10-15 minute oral papers are welcomed from anyone undertaking work in any area of ancient, historical, or industrial metallurgy, and from other researchers whose focus is of relevance to this subject. **Please send your abstract to hlcevent@liverpool.ac.uk by Friday 29th September 2017.**

HMS prize for the Best Student Research

The HMS prize for the Best Student Research is offered for the best presentation by a student (or recent graduate within 12 months of graduation) at the annual Research in Progress meeting as chosen by those members of HMS Council present at the meeting. So if you are eligible please indicate when you submit your abstract.

The HMS will also be offering a small number of student travel bursaries. If you wish to be considered for one of these, please indicate this alongside your abstract.

General enquiries can be directed to hlcevent@liverpool.ac.uk

Please visit the site: <https://www.liverpool.ac.uk/archaeology-classics-and-egyptology/news/stories/title,981609,en.php#.Wa1YiNFLdEZ>

**3RD INTERNATIONAL CONFERENCE ON
INNOVATION IN ART RESEARCH AND
TECHNOLOGY (INART 2018) CONFERENCE,
PARMA (ITALY), MARCH 26-29, 2018**

Dear Colleagues,

we send you the second circular, including the call of abstracts, of the 3rd International Conference on Innovation in Art Research and Technology (inArt 2018) conference taking place in Parma (Italy), March 26-29, 2018, in the Aula Magna of the historical building of the University, in the heart of the city, with a special session in the beautiful Valserena abbey, hosting the Centro Studi e Archivio della Comunicazione (CSAC - www.csacparma.it) and its very important collection of contemporary art, photography, fashion and design.

The conference welcomes all contributions on archaeometry and conservation science, in particular if focused on innovative aspects, including new technological developments, experimental set-ups, degradation mechanisms, in situ experiments and mobile instrumentation, non-invasive analysis, imaging techniques, environmental issues, preservation of art and archaeological objects. A special attention will be devoted to contemporary art.

Call for abstracts: You are invited to submit one or more abstracts, according to the instructions available on the conference website, www.inart2018.unipr.it, before November 6th, 2017. Each participant can submit a maximum of two abstracts. Abstract submission procedure is now open. Conference registration and payment will be open soon.

Publications: on the occasion of inArt2018 conference, a special focus point of European Physics Journal Plus (EPJ Plus – Springer - <https://epjplus.epj.org/>) will be published. The terms and conditions for publication will be included in future communications.

See you in Parma
The conference chairman
Danilo Bersani

Prof. Danilo Bersani
Dipartimento di Scienze Matematiche, Fisiche e Informatiche
Università degli Studi di Parma
Parco Area delle Scienze, 7/A - 43124 Parma – Italy.
+39 0521 905239 / 906212 - danilo.bersani@fis.unipr.it

**INTERNATIONAL SYMPOSIUM ON THE
CONSERVATION OF MONUMENTS IN THE
MEDITERRANEAN BASIN, CAMPUS OF THE
NATIONAL TECHNICAL UNIVERSITY OF
ATHENS, GREECE, 20-22 SEPTEMBER 2017,
SYMPOSIUM PROGRAMME
ANNOUNCEMENT, TOPIC: NATURAL AND
ANTHROPOGENIC HAZARDS AND
SUSTAINABLE PRESERVATION**

Dear Colleagues,

The Organising Committee of the 10th MONUBASIN is happy to announce that the Symposium Programme is now available on our website ([click here](#)).

Over the three days of Symposium more than **85 invited lectures, oral presentations and posters** will be presented by scientists, technicians, and experts (220 authors and co-authors), in the area of conservation and restoration of monuments from 19 different countries.

The 10th International Symposium on the Conservation of Monuments in the Mediterranean Basin (10th MONUBASIN) is organized by the School of Chemical Engineering, Department of Materials Science and Engineering, National Technical University of Athens and the Region of Attica (Greece).

We remind you that the Symposium will be held on the campus of the National Technical University of Athens, Greece, from 20 to 22 of September 2017.

For your convenience, the early registration period is extended for a week, ending Friday, 8th of September 2017 (Registration System - [click here](#))

Symposium Secretariat

Dr Vasiliki Dritsa
Phone: +30 210 772 4296, +30 210 772 3233
Fax: +30 210 772 3261
Email: conference2017@monubasin.com
Web: <http://www.monubasin.com>

ΘΕΣΕΙΣ ΕΡΓΑΣΙΑΣ/ΥΠΟΤΡΟΦΙΕΣ –
JOB VACANCIES/FELLOWSHIPS

AGNESE N. HAURY GRADUATE
FELLOWSHIP IN ARCHAEOLOGICAL
DENDROCHRONOLOGY

The University of Arizona's Laboratory of Tree-Ring Research and School of Anthropology seek a motivated and well-qualified Ph.D. student for the 2018 Haury Graduate Fellowship in Archaeological Dendrochronology. The fellow will receive multi-year funding with a stipend of 20,000 USD/year, health insurance, and full tuition waiver. The successful candidate will be expected to develop additional funding sources for his or her specific doctoral project, with the assistance of her/his advisor(s).

For 2018, the fellowship is recruiting a doctoral student interested in aspects of either or both: 1) dendroarchaeology of the maritime sphere of any time, culture, or location (ships, boats, harbors, etc.) or 2) dendroarchaeology of ancient Egypt/Sudan.

Candidates need not have prior dendrochronological expertise, but should be familiar with the field. The ideal candidate will have demonstrated training or formal background in a related and complementary subject area for their proposed research topic, such as Near Eastern Studies, Egyptology, Classics, Nautical Archaeology, Maritime History, Geography, Forestry, or a temporal/cultural specialty (e.g., American History, if the proposed subject is the maritime sphere of the New World).

Candidates must meet the qualifications for admission to the School of Anthropology's doctoral program, apply for, and gain admission for matriculation beginning Fall 2018. The successful candidate will work towards a Ph.D. in Anthropology.

Candidates must write Dr. Ronald H. Towner directly to discuss their interest(s) PRIOR to submitting an application. For additional information, contact: Ronald H. Towner, Ph.D., Associate Professor of Dendrochronology and Anthropology, Agnese and Emil Haury Endowed Chair in Archaeological Dendrochronology, Laboratory of Tree-Ring Research and School of Anthropology, The University of Arizona, 1215 E Lowell, Tucson, AZ 85721. (520) 621-6465. <mailto:rht@email.arizona.edu>.

INTERNSHIP FOR ARCHAEOBOTANY IN STARC (STARC IAB 04)

Reference Number STARC_IAB_04

The Cyprus Institute (CyI) is a European non-profit science and technology institution based in Cyprus and led by an acclaimed Board of Trustees. The research aims of the Cyprus Institute are represented by three research centers: the Computation-based Science and Technology Research Center (CASTORC), the Science and Technology in Archaeology Research Center (STARC), and the Energy Environment Water Research Center (EEWRC). Considerable cross-center interaction is a characteristic of the Institute's culture.

Job Description

The Cyprus Institute invites applications for an Intern who will have the opportunity to gain hands-on working experience by supporting STARC's research activities on Archaeobotany. More specifically, the Intern will assist in archaeobotanical research activities for preparing the material for publication, recording measurements of specific species and writing the relevant reports.

Such activities will include sorting of samples and basic identification of plant remains, but also measurements of olives and grapes for morphometric analysis, as part of the project "Olive and grape cultivation and the production of olive oil and wine in the Mediterranean" led by Dr Evi Margaritis.

The archaeobotanical material derives from Greek and Cypriot sites, mainly dated to the Bronze Age.

Responsibilities

The successful candidate's responsibilities will be the following:

- Sorting of archaeobotanical samples
- Identification and quantification of plant remains

Required Qualifications

Job Requirements

- Master's degree in Environmental Archaeology or in Archaeobotany
- Previous experience on Greece and Cyprus archaeobotany preferred
- Proficiency in oral and written English and Greek languages
- Excellent interpersonal skills and ability to work as part of an interdisciplinary team.

The appointment will be on a full-time basis for a fixed term of 3 months.

Application/Contact

For full consideration, interested applicants should attach a letter of interest, CV and the names of three contactable referees (all documentation should be in English and in PDF Format). For further information, please contact Asst. Prof Evi Margaritis (e.margaritis@cyi.ac.cy). Recruitment will continue until the position is filled. Please note that applications which do not follow

the announcement's guidelines will not be considered.

Closing Date Friday, September 15, 2017

Center • [STARC](#)

Status Open

Please visit the site: <https://jobboard.cvi.ac.cy/?q=node/1760>

INTERNET SITES

ISOARCH, A NEW OPEN-ACCESS AND COLLABORATIVE ISOTOPE DATABASE FOR BIOARCHAEOLOGICAL SAMPLES

Dear colleagues,

I would like to get your attention on our new scientific contribution in press in the Journal of Archaeological Science: Reports which presents IsoArch (www.isoarch.eu). The latter is a new open-access and collaborative isotope database for bioarchaeological samples (humans, animals, plants and organic residues) from the Graeco-Roman world (sensu lato) and its margins. It covers the period from the Iron Age to the end of the Late Antiquity/the Early Middle Age (i.e. from 12th c. BC to 8th c. AD). Everyone can freely download the data and exploit them or contribute to the database growth by adding his/her own data or the ones from published isotopic studies.

I invite you to visit the website of IsoArch, to consult the paper presenting the database (see below) but also to subscribe to the IsoArch Twitter account (@isoarch_eu) to follow the news about the database. Do not hesitate to seize and promote this new tool made available to the scientific community (archaeologists, anthropologists, zooarcheologists, archaeobotanists, and others). We hope that IsoArch will support your research and facilitate your comparative works using isotopic data for these periods and regions.

IsoArch is a helpful tool to improve knowledge of past human and animal diet and mobility patterns, to ascertain ancient crop and animal management practices, to reconstruct paleoenvironments, and so on. It was build for you and will evolve thanks to you and your contributions.

IsoArch is licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License (CC BY-NC-SA 4.0), (<https://creativecommons.org/licenses/by-nc-sa/4.0/>).

You can have an access to the original article via the following links:

https://www.academia.edu/34233375/IsoArch.eu_An_open-access_and_collaborative_isotope_database_for_bioarchaeological_samples_from_the_Graeco-Roman_world_and_its_margins

https://www.researchgate.net/publication/319106205_IsoArch.eu_An_open-access_and_collaborative_isotope_database_for_bioarchaeological_samples_from_the_Graeco-Roman_world_and_its_margins

If during your visit to the website you find any typos or mistakes, please report them by emailing us. Besides, if you would like to add new data, do not hesitate to contact us to have more explanations about the process.

We will be glad to receive your feedback or any comments regarding this initiative. Feel free to contact us via contact@isoarch.fr.

We look forward to hearing from you.

Best wishes,

Kevin Salesse

Post-doctoral researcher

Anthropology and human genetics
Université Libre de Bruxelles (ULB)
Av. F. Roosevelt, 50, CP192, 1050 Bruxelles
Phone: +33 (0)6 66 98 19 75

Webpage 1: <https://ulb.academia.edu/KevinSalesse>
Webpage 2: https://www.researchgate.net/profile/Kevin_Salesse



ΝΕΕΣ ΕΚΔΟΣΕΙΣ – NEW PUBLICATIONS

TEXTILE TERMINOLOGIES FROM THE ORIENT TO THE MEDITERRANEAN AND EUROPE, 1000 BC TO 1000 AD

The following book is just out, online and open access easily downloaded for free.

Salvatore Gaspa, Cecile Michel, and Marie-Louise Nosch, *Textile Terminologies from the Orient to the Mediterranean and Europe, 1000 BC to 1000 AD*, Lincoln, Nebraska (2017). Zea E-Books. 56.

Includes 134 color and black & white illustrations. ISBN: 978-1-60962-112-4.

PREFACE

This volume is the fruit of a longstanding collaboration in the field of textile terminologies. Since 2005, Cecile Michel and Marie-Louise Nosch have collaborated on numerous academic activities – joint teaching, lectures at conferences, experimental workshops, co-publishing and co-editing. One of the highlights was the first Textile Terminologies of the 3rd and 2nd millennia conference, an exploratory workshop with a diachronic and interdisciplinary scope held in Copenhagen in March 2009 with the generous support of the European Science Foundation.

The French-Danish scholarly cooperation on textile research was further consolidated in the “Programme International de Coopération Scientifique” TexOrMed (2012-2014). The European Science Foundation Exploratory Workshop on Wool economy in the Near East and the Aegean organized in Nanterre in November 2012 was one of the flagship projects of this collaboration.

In 2013 Salvatore Gaspa joined the team with a prestigious Marie Curie Grant from the Seventh Framework Programme of the European Union (FP7). Together they fostered the idea of continuing the textile terminological research but widening the scope to Central and North European and Asian languages and focusing on the 1st millennium BC and 1st millennium CE, thus providing a platform for the textile terminological exchange of the classical languages of Greek and Latin, but also including Germanic languages, Armenian, Italic, Semitic, Chinese and Japanese.

The second conference on textile terminology was held in June 2014 at the University of Copenhagen.

Around 50 experts from the fields of Ancient History, Indo-European Studies, Semitic Philology, Assyriology, Classical Archaeology, and Terminology from twelve different countries came together at the Centre for Textile Research, to discuss textile terminology, semantic fields of clothing and technology, loan words, and developments of textile terms in Antiquity.

They exchanged ideas, research results, and presented various views and methods. It was a specific aim to cross disciplinary boundaries, both between language families and chronological phases, but also to keep the focus on textiles and garments as visual, tactile

and material items, and not simply words. This multi-faceted view is also apparent in the present volume. We have, as far as possible, included illustrations where it was possible, in order to marry images, objects and words.

The present volume has been prepared within the frame of an international cooperation, the Groupement de Recherche International ATOM = Ancient Textiles from the Orient to the Mediterranean (2015-2018) which involves several research institutions and universities in France, Denmark and the United Kingdom. ATOM aims to define both the impact of textile production on agriculture, husbandry and the environment, its role in handicrafts, in trade, and, more generally, in the ancient economy, but also the uses of clothing in the construction of gender and individual and collective identities.

We are delighted that Zea Books of the University of Nebraska–Lincoln Libraries’ Office of Scholarly Communications accepted this volume for publication. The open and free access will make our joint efforts available worldwide, and this is particularly important for a topic such as textile terminologies, which represents a truly global phenomenon. The electronic interface makes the papers searchable for those colleagues wishing to follow the paths of a textile or garment term, or for those who will search for textile techniques, tools or professions across languages and culture. We hope that the specialized papers will reach experts around the world, and enjoy a large and interested global readership who finds that the terminology of textiles is an intriguing endeavour.

| | |
|---|-----|
| Preface | 3 |
| Acknowledgements | 4 |
| List of Contributors | 9 |
| 1 Textile Terminologies, State of the Art and New Directions | 19 |
| Salvatore Gaspa, Cecile Michel, & Marie-Louise Nosch | |
| Textile terminologies across the ancient Near East and the Southern Levant | |
| 2 A Diachronic View on Fulling Technology in the Mediterranean and the Ancient Near East: Tools, Raw Materials and Natural Resources for the Finishing of Textiles . . | 24 |
| Elena Soriga | |
| 3 Garments, Parts of Garments, and Textile Techniques in the Assyrian Terminology: The Neo-Assyrian Textile Lexicon in the 1st-Millennium BC Linguistic Context | 47 |
| Salvatore Gaspa | |
| 4 Tools and Crafts, the Terminology of Textile Manufacturing in 1st-Millennium BC Babylonia | 91 |
| Louise Quillien | |
| 5 Ordinary People’s Garments in Neo- and Late-Babylonian Sources | 107 |
| Luigi Malatucca | |
| 6 Flax and Linen Terminology in Talmudic Literature | 122 |
| Nahum Ben-Yehuda | |
| 7 Jewish Terminologies for Fabrics and Garments in Late Antiquity: A Linguistic Survey Based on the Mishnah and the Talmuds | 153 |
| Christina Katsikadeli | |
| 8 Sha’atnez – The Biblical Prohibition Against Wearing Mixed Wool and Linen Together and the Observance and Enforcement of the Command in the Orthodox Jewish Communities Today | 164 |
| Orit Shamir | |

| | |
|---|-----|
| 9 Armenian karmir, Sogdian karmīr ‘red’, Hebrew karmīl and the Armenian Scale Insect Dye in Antiquity | 173 |
| Agnes Korn & Georg Warning | |
| 10 Armenian Textile Terminology | 188 |
| Birgit Anette Olsen | |
| Textile terminologies in Europe and Egypt | |
| 11 Remarks on the Interpretation of Some Ambiguous Greek Textile Terms | 202 |
| Stella Spantidaki | |
| 12 Sabellic Textile Terminology | 210 |
| Peder Flemestad & Birgit Anette Olsen | |
| 13 Beschaffung und Handel mit Farbstoffen | 228 |
| Peter Herz | |
| 14 Purple and its Various Kinds in Documentary Papyri | 235 |
| Ines Bogensperger | |
| 15 Zur Textilterminologie auf römischen Bleitafelchen: Probleme der Lesung und Interpretation | 250 |
| Herbert Graßl | |
| 16 Observations on the Terminology of Textile Tools in the Edictum Diocletiani on Maximum Prices | 256 |
| Peder Flemestad, Mary Harlow, Berit Hildebrandt, & Marie-Louise Nosch | |
| 17 Listening for licia: A Reconsideration of Latin licia as Heddle-Leashes | 278 |
| Magdalena Öhrman | |
| 18 Textile Terminology in Old High German between Inherited and Loan Words | 288 |
| Roland Schuhmann | |
| 19 Χιτών – δαλματική – μαφόρτης – σύνθεσις: Common and Uncommon Garment Terms in Dowry Arrangements from Roman Egypt | 295 |
| Kerstin Droß-Krüpe | |
| 20 Ars polymita, ars plumaria: The Weaving Terminology of taqueté and Tapestry | 301 |
| John Peter Wild & Kerstin Droß-Krüpe | |
| 21 Tunics Worn in Egypt in Roman and Byzantine times: The Greek Vocabulary | 321 |
| Maria Mossakowska-Gaubert | |
| 22 Terminology Associated with Silk in the Middle Byzantine Period (AD 843-1204) | 346 |
| Julia Galliker | |
| 23 A Name of a Private Factory (or Workshop) on a Piece of Textile: The Case of the Document A.L.18 (Vienna) | 374 |
| Anne Regourd & Fiona J. L. Handley | |
| Textile Terminologies in metaphorical language and poetry | |
| 24 Zur Bekleidung der Krieger im Avesta: Rüstung und magischer Schmuck | 383 |
| Götz König | |
| 25 Sasanian Exegesis of Avestan Textile Terms | 397 |
| Miguel Ángel Andrés-Toledo | |
| 26 “Der Faden soll nicht reißen, während ich meine Dichtung webe...”: Zum metaphorischen Gebrauch von Textilterminologie im Rigveda | 404 |
| Stefan Niederreiter | |
| 27 Der Text als Gewebe: Lexikalische Studien im Sinnbezirk von Webstuhl und Kleid | 413 |
| Oswald Panagl | |

| | |
|--|-----|
| 28 Weaving a Song. Convergences in Greek Poetic Imagery between Textile and Musical Terminology. An Overview on Archaic and Classical Literature | 421 |
| Giovanni Fanfani | |
| Textile terminologies: examples from China and Japan | |
| 29 Xie, a Technical Term for Resist Dye in China: Analysis Based on the Burial Inventory from Tomb 26, Bijiashan, Huahai, Gansu | 437 |
| Le Wang & Feng Zhao | |
| 30 The Textile Terminology in Ancient Japan | 451 |
| Mari Omura & Naoko Kizawa | |
| Technical terms of textiles and textile tools and methodologies of classifications | |
| 31 The Textile Term <i>gammadia</i> | 483 |
| Maciej Szymaszek | |
| 32 The <i>oscillum</i> Misunderstanding | 492 |
| Francesco Meo | |
| 33 Irritating Byssus – Etymological Problems, Material facts, and the Impact of Mass Media | 500 |
| Felicitas Maeder | |
| 34 Conceptualizing Greek Textile Terminologies: A Databased System | 520 |
| Kalliope Sarri | |
| 35 <i>textilnet.dk</i> – A Toolkit for Terminology Research and Presentation | 528 |
| Susanne Lervad & Tove Engelhardt Mathiassen | |

Please visit the site: <http://digitalcommons.unl.edu/zeabook/56/>

GENETIC ORIGINS OF THE MINOANS AND MYCENAEANS

Iosif Lazaridis, et al.

Nature 548, 214–218 (10 August 2017) doi:10.1038/nature23310

The origins of the Bronze Age Minoan and Mycenaean cultures have puzzled archaeologists for more than a century. We have assembled genome-wide data from 19 ancient individuals, including Minoans from Crete, Mycenaeans from mainland Greece, and their eastern neighbours from southwestern Anatolia. Here we show that Minoans and Mycenaeans were genetically similar, having at least three-quarters of their ancestry from the first Neolithic farmers of western Anatolia and the Aegean^{1, 2}, and most of the remainder from ancient populations related to those of the Caucasus³ and Iran^{4, 5}. However, the Mycenaeans differed from Minoans in deriving additional ancestry from an ultimate source related to the hunter–gatherers of eastern Europe and Siberia^{6, 7, 8}, introduced via a proximal source related to the inhabitants of either the Eurasian steppe^{1, 6, 9} or Armenia^{4, 9}. Modern Greeks resemble the Mycenaeans, but with some additional dilution of the Early Neolithic ancestry. Our results support the idea of continuity but not isolation in the history of populations of the Aegean, before and after the time of its earliest civilization.

Please visit the site:

<http://www.nature.com/nature/journal/v548/n7666/full/nature23310.html>
purchasable this article

is

GLASSWARE AND GLASSWORKING IN THESSALONIKI

1st Century BC – 6th Century AD by Anastassios Ch. Antonaras. viii+384 pages; illustrated throughout in colour and black & white (70 colour plates). 360 2017 *Archaeopress Roman Archaeology 27*. **Available both in printed and e-versions.** Printed ISBN 9781784916794. Epublication ISBN 9781784916800.

Glassware and Glassworking in Thessaloniki: 1st Century BC – 6th Century AD is a detailed examination of the production of glass and glass vessels in the eastern Mediterranean from the Hellenistic Age to the Early Christian period, analysing production techniques and decoration. The volume establishes the socio-economic framework of glassmaking and glassmakers' social status in the Roman world generally and in Thessaloniki specifically, while identifying probable local products. Presented are all the excavation glass finds from Thessaloniki and its environs found between 1912 and 2002. A typological classification was created for almost 800 objects – which encompass the overwhelming majority of common excavation finds in the Balkans – as well as for the decorative themes that appear on the more valuable pieces. Comparative material from the entire Mediterranean was studied, verified in its entirety through primary publications. A summary of the excavation history of these vessels' find-spots is provided, with details for each excavation, in many cases unpublished and identified through research in the archives of the relevant museums and Ephorates of Antiquities. The uses of glass vessels are presented, and there is discussion and interpretation of the reasons that permitted, or imposed, the choice of glass for their production. The finds are statistically analysed, and a chronological overview examining them century by century on the basis of use and place of production is given. Finally, there is an effort to interpret the data from the study in historical terms, and to incorporate the results into the political-economic evolution of the region's political history. Relatively unfamiliar glassmaking terms are explained in a glossary of glassworking technology and typology terms. The material is fully documented in drawings and photographs, and every object in the catalogue is illustrated. A detailed index of the 602 geographical terms in the work, many unknown, concludes the book

About the Author:

Anastassios C. Antonaras, a specialist in the history of glass, jewellery and textiles, is an archaeologist and curator at the Museum of Byzantine Culture, Thessaloniki. His books include: Glassworking, Ancient and Medieval: Terminology, Technology and Typology; A Greek- English-English-Greek Dictionary; Roman and Early Christian Glassworking: Vessels from Thessaloniki and its Region (which received a prize from the Academy of Athens in 2010); Fire and Sand: Ancient Glass in the Princeton University Art Museum; and Artisanal Production in Ancient and Byzantine Thessaloniki: Archaeological, Literary and Epigraphic Evidence. Antonaras has organized numerous exhibitions and symposia, and has published numerous articles on objects from Thessaloniki. He currently serves on the board of the Christian Archaeological Association and is the secretary general of the International Association for the History of Glass.

EΙΔΗΣΕΙΣ - NEWS RELEASE

THE ETRUSCANS WERE EXPERT BEEKEEPERS, ANCIENT HONEYCOMBS SUGGEST, BY ROSSELLA LORENZI

The charred remains of 2,500-year-old honeycombs, as well as other beekeeping artifacts, have been discovered in an Etruscan workshop in northern Italy.

The findings included the remains of a unique grapevine honey produced by traveling beekeepers along rivers, according to a new study.

"The importance of beekeeping in the ancient world is well known through an abundance of iconographic, literary, archaeometric and ethnographic [or cultural] sources," Lorenzo Castellano, a graduate student at the Institute for the Study of the Ancient World at New York University and first author of the new study, told Live Science. (In archaeometry, scientists use physical, chemical and mathematical analyses to study archaeological sites.)

Even so, since honeycombs are perishable, direct fossil evidence of them is "extremely rare," he added. [24 Amazing Archaeological Discoveries]

Castellano and his colleagues at the University of Milan and the Laboratory of Palynology and Paleoecology of the Institute for the Dynamics of Environmental Processes at Italy's National Research Council (CNR-IDPA) in Milan found several charred honeycombs, preserved honeybees and honeybee products scattered on the floor of a workshop at the Etruscan trade center of the ancient site of Forcello, near Bagnolo San Vito in the Mantua province.

Dating to around 510 B.C. to 495 B.C., the building had been destroyed by a violent fire and was later sealed by a layer of clay so it could be built over.

"The findings are therefore preserved in situ, albeit heavily fragmented and often warped by the heat of fire," Castellano and his team wrote in July in the Journal of Archaeological Science.

The researchers examined bee-breads (a mixture of pollen and honey), fragments of charred honeycombs, remains of *Apis mellifera* (honeybees) and a large amount of material resulting from honeycombs that had melted and clumped together.

Chemical analysis and an examination of pollen and spores collected at the site confirmed the presence of beeswax and honey on a large portion of the room. Moreover, they found that pollen from a grapevine (*Vitis vinifera*) abounded in samples from the melted honey and in the honeycomb fragments, indicating the presence of a unique grapevine honey produced from predomesticated or early-domesticated varieties of grapevine.

The charred remains of 2,500-year-old honeycombs, as well as other beekeeping artifacts, have been discovered in an Etruscan workshop in northern Italy.

The findings included the remains of a unique grapevine honey produced by traveling beekeepers along rivers, according to a new study.

"The importance of beekeeping in the ancient world is well known through an abundance of iconographic, literary, archaeometric and ethnographic [or cultural] sources," Lorenzo Castellano, a graduate student at the Institute for the Study of the Ancient World at New York University and first author of the new study, told Live Science. (In archaeometry, scientists use physical, chemical and mathematical analyses to study archaeological sites.)

Even so, since honeycombs are perishable, direct fossil evidence of them is "extremely rare," he added. [24 Amazing Archaeological Discoveries]

Castellano and his colleagues at the University of Milan and the Laboratory of Palynology and Paleoecology of the Institute for the Dynamics of Environmental Processes at Italy's National Research Council (CNR-IDPA) in Milan found several charred honeycombs, preserved honeybees and honeybee products scattered on the floor of a workshop at the Etruscan trade center of the ancient site of Forcello, near Bagnolo San Vito in the Mantua province.

Dating to around 510 B.C. to 495 B.C., the building had been destroyed by a violent fire and was later sealed by a layer of clay so it could be built over.

"The findings are therefore preserved in situ, albeit heavily fragmented and often warped by the heat of fire," Castellano and his team wrote in July in the *Journal of Archaeological Science*.

The researchers examined bee-breads (a mixture of pollen and honey), fragments of charred honeycombs, remains of *Apis mellifera* (honeybees) and a large amount of material resulting from honeycombs that had melted and clumped together.

Chemical analysis and an examination of pollen and spores collected at the site confirmed the presence of beeswax and honey on a large portion of the room. Moreover, they found that pollen from a grapevine (*Vitis vinifera*) abounded in samples from the melted honey and in the honeycomb fragments, indicating the presence of a unique grapevine honey produced from predomesticated or early-domesticated varieties of grapevine.

"*Vitis* pollen is missing in bee-breads, suggesting that we are dealing with an unprecedented *Vitis* honey preserved by charcoalification," the researchers concluded. (Charcoalification, also called carbonization, is a process in which organic carbon substances are converted into a carbon-containing residue.)

Today, grapevine honey really has nothing to do with bee-produced honey; it is a kind of syrup produced by boiling grape juice.

The analyses revealed other unique aspects about the Etruscan beekeeping.

Pollen composition showed that honeybees were feeding on plants, including grapevines and fringed water lily, from an aquatic landscape, some of which weren't known to grow in the area.

Such a scenario would have been possible for beekeepers who collected bees along a river while aboard a boat, bringing the bees and their hives to workshops to extract the honey and beeswax.

Indeed, the finding confirms what Roman scholar Pliny the Elder wrote more than four centuries later about the town of Ostiglia, some 20 miles (32 kilometers) from the site. According to Pliny, the Ostiglia villagers simply placed the hives on boats and carried them 5 miles (8 km) upstream at night.

"At dawn, the bees come out and feed, returning every day to the boats, which change their position until, when they have sunk low in the water under the mere weight, it is understood that the hives are full, and then they are taken back and the honey is extracted," Pliny wrote.

The finding also shows the Etruscans' high level of specialization in beekeeping.

"It also provides unique information on the ancient Po Plain environment [a geographical feature in northern Italy] and on honeybees' behavior in a pre-modern landscape," Castellano and colleagues concluded.

Please visit the site: <https://www.livescience.com/59970-etruscans-were-expert-beekeepers.html> [Go there for pix and caps]

LES CANANEENS RETROUVENT UNE DEUXIEME VIE, PAR JEAN-LUC NOTHIAS

Des analyses génétiques d'ADN ancien montrent que les Libanais sont les descendants de ce peuple mystérieux.

Mais qui étaient les Cananéens? Ils ont pourtant eu leur heure de gloire et apparaissent dans l'Ancien et le Nouveau Testament, dans la Torah ainsi que dans des textes égyptiens et grecs. Il y a 5000 ans (3000 av. J.-C.), les Cananéens étaient installés dans une région qui comprend Israël, la Palestine, le Liban, une partie de la Syrie et de la Jordanie. Dans ce Levant, le pays de Canaan est très commerçant et son influence est grande. Ses relations avec l'Égypte sont fortes. Mais on ne sait finalement que peu de chose car les Cananéens n'ont laissé que très peu de traces écrites, de rares tablettes d'argile portant des textes en cunéiforme. Après 2000 ans d'existence, ils disparaissent de l'histoire et laissent la place à leurs successeurs, les Phéniciens. Grâce à de l'ADN ancien de 5 Cananéens, leur origine et leurs descendants actuels ont pu être précisés par une équipe du Wellcome Trust Sanger Institute britannique (travaux publiés dans The American Journal of Human Genetics). Les Cananéens n'ont pas disparu, ce sont les Libanais actuels.

C'est grâce à des fouilles archéologiques à Sidon, port du Liban, autrefois capitale du Canaan (Sidon aurait été fondée par Tsidone, fils de Canaan, lui-même petit-fils de Noé) que des restes de cinq personnes, 3 de sexe féminin, dont un petit enfant, et deux de sexe masculin, dont un enfant de 8-12 ans, datant d'environ 3700 ans (1700 av. J.-C.), donc de l'âge du bronze, ont pu être analysés. Ces squelettes étaient enterrés dans des tombes bien structurées. Ces ADN anciens ont été comparés d'une part à ceux publiés un peu partout en Europe et datant de la même période ou plus anciens, et d'autre part avec ceux de 99 Libanais actuels.

«Nous avons constaté que les Cananéens étaient un mélange de personnes établies là dans des fermes depuis le néolithique, entre 9000 et 3300 ans, et de migrants venus d'Eurasie il y a environ 5000 ans»

Marc Haber, premier signataire des travaux

«Nous avons constaté que les Cananéens étaient un mélange de personnes établies là dans des fermes depuis le néolithique, entre 9000 et 3300 ans, et de migrants venus d'Eurasie il y a environ 5000 ans», estime Marc Haber, premier signataire de ces travaux. «Les Libanais actuels sont certainement les descendants directs de ces Cananéens, avec des traces des invasions ou occupations d'Eurasiens comme les Assyriens, les Perses ou les Macédoniens.»

Il y aurait donc eu deux vagues successives d'invasion. L'une entre 6600 et 3550 ans, par des groupes venant de l'Iran et du Caucase, et correspondant à des mouvements de populations à partir de la Mésopotamie ; l'autre entre 3750 et 2170 ans par des nouveaux venus du nord. C'est du moins ce que racontent les ADN.

Des conclusions qui ne sont pas en contradiction avec les résultats obtenus par les archéologues et les historiens. Pour les chercheurs, cette étude suggère que ceux qui

vivaient sur cette côte du Levant, aussi bien que d'autres groupes vivant à l'intérieur des terres avaient un patrimoine génétique commun. Ainsi, les Ammonites, Moabites, Israélites et Phéniciens de l'âge du bronze, bien qu'ayant des pratiques culturelles différentes, partageaient des racines génétiques et ethniques avec les Cananéens.

Chris Tyler-Smith, responsable des travaux, estime qu'«à la lumière de la grande complexité de l'histoire de cette région dans ces derniers millénaires, c'est vraiment très surprenant de voir que près de 90 % du patrimoine génétique des Libanais d'aujourd'hui soit celui des Cananéens».

Please visit the site: <http://sante.lefigaro.fr/article/les-cananeens-retrouvent-une-deuxieme-vie>

THE GREEKS REALLY DO HAVE NEAR-MYTHICAL ORIGINS, ANCIENT DNA REVEALS, BY ANN GIBBONS

Ever since the days of Homer, Greeks have long idealized their Mycenaean “ancestors” in epic poems and classic tragedies that glorify the exploits of Odysseus, King Agamemnon, and other heroes who went in and out of favor with the Greek gods. Although these Mycenaeans were fictitious, scholars have debated whether today’s Greeks descend from the actual Mycenaeans, who created a famous civilization that dominated mainland Greece and the Aegean Sea from about 1600 B.C.E. to 1200 B.C.E., or whether the ancient Mycenaeans simply vanished from the region.

Now, ancient DNA suggests that living Greeks are indeed the descendants of Mycenaeans, with only a small proportion of DNA from later migrations to Greece. And the Mycenaeans themselves were closely related to the earlier Minoans, the study reveals, another great civilization that flourished on the island of Crete from 2600 B.C.E. to 1400 B.C.E. (named for the mythical King Minos).

The ancient DNA comes from the teeth of 19 people, including 10 Minoans from Crete dating to 2900 B.C.E. to 1700 BCE, four Mycenaeans from the archaeological site at Mycenae and other cemeteries on the Greek mainland dating from 1700 B.C.E. to 1200 B.C.E., and five people from other early farming or Bronze Age (5400 B.C.E. to 1340 B.C.E.) cultures in Greece and Turkey. By comparing 1.2 million letters of genetic code across these genomes to those of 334 other ancient people from around the world and 30 modern Greeks, the researchers were able to plot how the individuals were related to each other.

The ancient Mycenaeans and Minoans were most closely related to each other, and they both got three-quarters of their DNA from early farmers who lived in Greece and southwestern Anatolia, which is now part of Turkey, the team reports today in *Nature*. Both cultures additionally inherited DNA from people from the eastern Caucasus, near modern-day Iran, suggesting an early migration of people from the east after the early farmers settled there but before Mycenaeans split from Minoans.

The Mycenaeans did have an important difference: They had some DNA—4% to 16%—from northern ancestors who came from Eastern Europe or Siberia. This suggests that a second wave of people from the Eurasian steppe came to mainland Greece by way of Eastern Europe or Armenia, but didn’t reach Crete, says Iosif Lazaridis, a population geneticist at Harvard University who co-led the study.

Not surprisingly, the Minoans and Mycenaeans looked alike, both carrying genes for brown hair and brown eyes. Artists in both cultures painted dark-haired, dark-eyed people on frescoes and pottery who resemble each other, although the two cultures spoke and wrote different languages. The Mycenaeans were more militaristic, with art replete with spears and images of war, whereas Minoan art showed few signs of warfare, Lazaridis says. Because the Minoans script used hieroglyphics, some archaeologists thought they were partly Egyptian, which turns out to be false.

The continuity between the Mycenaeans and living people is “particularly striking given that the Aegean has been a crossroads of civilizations for thousands of years,” says co-author George Stamatoyannopoulos of the University of Washington in Seattle. This suggests that the major components of the Greeks’ ancestry were already in place in the Bronze Age, after the migration of the earliest farmers from Anatolia set the template for the genetic makeup of Greeks and, in fact, most Europeans. “The spread of farming populations was the decisive moment when the major elements of the Greek population were already provided,” says archaeologist Colin Renfrew of the University of Cambridge in the United Kingdom, who was not involved in the work.

The results also show it is possible to get ancient DNA from the hot, dry landscape of the eastern Mediterranean, Renfrew says. He and others now have hope for getting DNA from groups such as the mysterious Hittites who came to ancient Anatolia sometime before 2000 B.C.E. and who may have been the source of Caucasian ancestry in Mycenaeans and early Indo-European languages in the region. Archaeologist Kristian Kristiansen of the University of Gothenburg in Sweden, who was not involved in the work, agrees. “The results have now opened up the next chapter in the genetic history of western Eurasia—that of the Bronze Age Mediterranean.”

Please visit the site: <http://www.sciencemag.org/news/2017/08/greeks-really-do-have-near-mythical-origins-ancient-dna-reveals>

SEARCH FOR SECRETS INTENSIFIES AS HI-TECH TOOLS HELP UNRAVEL THE PYRAMIDS' ANCIENT MYSTERIES

Some archaeologists have pinned hopes on the sophisticated technology to locate the burial place of the legendary queen Nefertiti

From the Giza pyramids to the pharaonic tombs of Luxor, Egypt's ancient monuments are holding on to mysteries which researchers now aim to unravel with cutting-edge technology.

For more than 200 years since Napoleon Bonaparte landed in Egypt with a retinue of scholars who laid the groundwork for modern Egyptology, experts have used science to unlock the secrets of the country's ancient treasures.

In the 21st century, the scientists have been using electronic devices and chemical testing to date artefacts.

Chemical testing still requires small samples, but advanced techniques coming into use are meant to be non-invasive so as not to damage the ancient relics.

ScanPyramids is among the most ambitious of the projects to demystify the Khufu Pyramid near Cairo, the only surviving monument from the ancient Seven Wonders of the World. It has employed infrared thermography and muography – a technique that records images using muon particles – in its quest.

The project had announced last October that the massive pyramid may contain undiscovered recesses.

“All the devices we put in place are designed to find where the cavity is located. We know there is one, but we're trying to find out where,” said Mehdi Tayoubi, president of the HIP Institute heading the ScanPyramids project.

The muon devices include chemical emulsion instruments from Japan's University of Nagoya, electronic sensors from the KEK Japanese Research Laboratory, and muon telescopes from the French Atomic Energy Commission. The results are then compared with infrared and 3D images.

Some archaeologists have pinned hopes on the sophisticated technology to locate the burial place of the legendary queen Nefertiti.

The wife of King Akhenaten, who initiated a monotheistic cult in ancient Egypt, Nefertiti remains an enigma, best known for a bust depicting her that is now on exhibition in Berlin's Neues Museum.

A British Egyptologist, Nicholas Reeves, believed her remains were hidden in a secret chamber in the tomb of Tutankhamun, in the southern Valley of the Kings. In 2015, archaeologists scanned the tomb with radar hoping for clues.

Both Reeves' theory and the inconclusive results have been dismissed by other Egyptologists.

One of them, former antiquities minister Zahi Hawass, said that an adept of the sun god Aton would never have been allowed to be buried in the Valley of the Kings.

The excitement over the possible discovery has died down since the inconclusive results, but a team from Politecnico University in Turin, Italy, intends to give it another shot.

This time they will employ tomography – a method used in medical scans – and magnetometry, which measures magnetic fields.

Neither the Politecnico team nor the antiquities ministry has been inclined to discuss the fresh attempt, possibly put off by the anticlimactic media frenzy over the previous bid.

Elsewhere, Egyptologists are undertaking a project to nail down the chronology of Egypt's ancient dynasties more precisely.

The French Institute of Eastern Archaeology (IFAO) in Cairo has a dating laboratory that the researchers are putting to use for the project.

“The chronology of ancient Egypt is not clearly defined. We use a relative chronology,” said Anita Quiles, head of research at the IFAO. “We refer to reigns and dynasties but we do not know exactly the dates.”

The investigation, which involves chemical testing, is expected to take several years. But Egyptologists say that science cannot replace archaeologists and their work on the ground.

“It is important to have science in archaeology,” Hawass said. “But it is very important not to let scientists announce any details about what they found unless it has been seen by Egyptologists.”

Please visit the site: <http://www.scmp.com/news/world/middle-east/article/2105509/search-secrets-intensifies-hi-tech-tools-help-unravel>

EXCAVATIONS UNVEIL MYSTERIES OF TROJAN WAR

New findings that will shed light on the 10-year Trojan War, mentioned by Homer in his epic "Iliad," were unearthed during excavations in the 5,000-year-old ancient city of Troy in the northwestern province of Çanakkale's Tevfikiye village.

Visited by thousands of people every year, mostly from the Far East, Troy saw excavations begin in July that are being led by a team of 40 people, with Culture and Tourism Ministry official Veysel Öztürk joining the excavations as an observer.

A member of Çanakkale Onsekiz Mart University's (ÇOMU) archaeology department and the head of the excavations, Professor Rüstem Aslan said they have been trying for the last three years to find the traces of Troy-6 and Troy-7, which have links to Homer.

He said all archaeologists who have so far joined the excavations wanted to reach some information about the legendary war and were putting great efforts to reveal more new findings about the war.

Aslan said this year's excavations are ongoing in the Agora field, located close to the southern entrance to the Troy-6 and Troy-7 periods.

"As we went deep into the lower layers, we found the late-Roman era structures and a water system, Hellenistic-era walls and a 3,500-year-old stone road from the Troy-6 and Troy-7 periods. We are about to reach new information particularly about the Troy-6 period, which is considered as Homer Troy and associated with the Trojan War. We have obtained some information. We have also reached very important architectural findings into the Trojan War. We will work to detail these findings until the end of the excavations in September," he added.

Skeletons from late Byzantine era

Three human skeletons from the late Byzantine era were discovered in the upper layers of the excavation field.

"The skeletons date back to some time around the 12th century. There are findings here referring to the late Byzantine era. We partially cleaned and unearthed one of these skeletons. The examinations on the skeleton showed that this person was young and did not die of natural causes. Its skull and body were damaged and it was buried there," Aslan said.

A water system they found is believed to date back to 500 B.C., according to Aslan.

"There is a Roman-era bath opposite the Odeon. The water system goes to this place. We know that Troy has become a sacred place because of Homer's Trojan War and the stories of heroism. We also know that the population increased especially in the Roman era. They carried water from seven-eight kilometers away to meet the need for water

here. One of the nearly 1,500-year-old water systems has survived until today without any damage," he added.

Bronze Age cemetery still a mystery

Aslan said Troy had many unanswered questions buried for some 150 years. "One of these questions is that the field of the latest Bronze Age cemetery was not found. We know that there are cemeteries from the Hellenistic, Roman and late Byzantine eras. But we were not able to find the latest Bronze Age cemetery which is associated with the Trojan War. We have some plans regarding it; we will start working on some spots in the coming years," Aslan added.

Please visit the site: <http://www.hurriyetdailynews.com/excavations-unveil-mysteries-of-trojan-war.aspx?pageID=238&nid=116282&NewsCatID=375>

ÇATALHÖYÜK: 4,000 YEARS OF PEACE WITHOUT WAR

Archaeologists working at the ancient site conduct research in various fields like the social life, food and clothing of the people who used to live in 9,000-year-old adobe houses built adjacently with doors in the roofs.

Archaeologists working at the ancient site conduct research in various fields like the social life, food and clothing of the people who used to live in 9,000-year-old adobe houses built adjacently with doors in the roofs.

One of the oldest and most prominent cultural heritage sites on the UNESCO World Heritage List, the small town of Çatalhöyük is located in Konya's Çumra district, which did not witness war for 4,000 years

It was recently announced that Çatalhöyük, which was founded by 8,000 people during the Neolithic Age in the Çumra district of Konya province, never experienced war, battles or violence for an astounding 4,000 years.

As a town which bears traces of the Neolithic Age, Çatalhöyük is accepted as one of the oldest settlements of ancient humanity.

Having been accepted as one of the oldest and most prominent cultural heritage sites on the UNESCO World Heritage List, Çatalhöyük is gaining worldwide attention.

After it was discovered by British archaeologist James Mellaart in the 1960s, Çatalhöyük became subject to excavations that began under the pioneership of Stanford University Professor of archaeology and British national Ian Hodder in 1993.

Archaeologists working on the ancient site have conducted research on various topics including social life, culinary traditions and cultural garb worn by people who used to live in adobe houses dating back 9,000 years, constructed adjacently with doors on the rooftops of these homes leading inside.

Covered by a wooden roof designed to protect the excavation site, Çatalhöyük is attracting worldwide attention as one of the most popular spots for local and foreign tourists alike.

Peaceful life without a leader

Speaking to Anadolu Agency (AA), Prof. Hodder said that numerous findings have been unearthed as the result of 25 years of excavations so far.

Emphasizing that the town of Çatalhöyük is an important site which dates back 9,000 years and is located on a large area, Prof. Hodder pointed out, "The area which was home to about 8,000 people initially is being examined for the first time apart from the Middle East."

Hodder spoke about the findings unearthed at the archaeological site, saying: "Çatalhöyük was once a truly stable society. The ancient inhabitants successfully lead a simple life in peace, without fighting, for 4,000 years. It's a superb example and model of a way of life free from fighting. Since collective life within society was important in ancient times, individuality was not seen in Çatalhöyük. The locals used to share a common life and sustained a lifestyle living in peace, without any leader. Family relationships were not very common between them. Rather than living together with family members, these people used to live together with other people from within the society. They were a complex society genetically. Thought to consist of between 3,000 and 8,000 people, they were a truly large family."

Conservation and restoration

Stating that initial excavations have been completed and that archaeologists and researchers are planning to initiate new projects at the site, Prof. Hodder said that conservation and restoration projects will be conducted in the next stage of excavations.

Hodder said the new findings will be evaluated in light of scientific methods, adding: "Within a science committee, teams consisting of experts are being organized. There will be 32 experts on a team, in search of answers to various questions like, 'What did these ancient people eat?' and, 'Why did they come here and from where?' Also, 'How did they protect themselves genetically?'"

Prof. Hodder said that he plans to retire upon completion of the excavations, which began 25 years ago when he was an assistant.

Please visit the site: <https://www.dailysabah.com/history/2017/08/03/catalhoyuk-4000-years-of-peace-without-war>

ANCIENT GREEK POPYRI VIRTUALLY UNWRAPPED IN ITALY

Scientists in Italy continue – with new methods of modern digital technology – the virtual unwrapping and reading of the ancient popyri of Heraklion (Herculaneum) in Campania and, as they announced, made new progress in their very difficult work. The Herculaneum scrolls, many of which concern works by Greek philosophers, were discovered in 1752-54 in archaeological excavations in the so-called Villa of the Popyri in Heraklion (Ercolano in Italian) of Campania in Italy near Pompeii. The villa was destroyed and buried in the ashes after the devastating eruption of Vesuvius, the nearby volcano, in 79 AD.

Today, approximately 1,800 popyruses are kept at the Institute of France in Paris and the National Archaeological Museum in Naples. Essentially this is the only ancient Greek-Roman library that has survived and which was in a small room of the Roman villa. They are the first popyri of Greek script that have been found in archaeological excavations.

After Vesuvius' eruption, a wave of hot air, which reached 320 degrees Celsius, burned the sensitive popyri and left them charred in a state too vulnerable for the researchers to try to open and read them without seriously risking destroying them. Up to now, archaeologists have attempted to open around 800, but often the project has had devastating or limited results.

But scientists now have alternatives that are less destructive. The physicists at the Institute of Nanotechnology of the Italian National Research Council in Rome, headed by Alessia Cedola and Inna Bukreeva, have announced that – despite the use of appropriate algorithms – they have further improved the advanced X-ray Phase-Contrast Tomography (XPCT). They were able to partially “unwrap” two popyri (PHerc 375 and PHerc 495) and begin to read literally their content. Creating initially at the European Synod in Grenoble a tomographic, three-dimensional reconstruction of each popyrus, they could then, with the help of the new specialized software, isolate one by one each successive layer, while on the path to read the letters on the burnt and distorted material.

So far, they have identified 14 rows in Greek letters, more than ever before, some of which have already been read, while others have not. Two Italian popyrologists, who collaborate with the physicists to fully decode the text, believe that it is a work of the epic philosopher and poet Philodemos of the 1st century BC from Gadara.

Scientists hope they will have completed their work by the end of 2017 and by 2018 they will begin digitizing other popyri.

For the first time in 2015, other Italian scientists from the Institute of Microelectronics and Microsystems of the National Research Council in Naples, led by the natural Vito Mocella, had, with the help of the XPCT technique, read – without opening them – a small part of the content of half-damaged folded popyri.

X-ray tomography separates the burnt substrate of popyrus from the letters with black ink, thanks to the subtle but distinct difference with which the two materials (popyrus and

ink) refract X-rays. The letters are just 0.1 mm above the surface of the papyrus, but they can be read.

Mocella, who had revealed the first words of the papyri, said the new research of his colleagues is “interesting work,” but he claimed that “it does not make significant progress” in relation to his own 2015 efforts and stated that his own research team has since made consistent progress. The eternal competition continues, but if they end up reading the papyri, it will be worth it.

Material from ANA-MPA was used in this report by the National Herald.

Please visit the site: <http://www.tornosnews.gr/en/greek-news/culture/26695-ancient-greek-papyri-virtually-unwrapped-in-italy-video.html> [Go there for video]

WHO ARE YOU CALLING MYCENAEAN? **BY YANNIS HAMILAKIS**

The photograph on the front page of the neo-fascist Golden Dawn's website last week was a collage by the photographer Nelly's, produced as propaganda for the Metaxas regime and displayed in the Greek Pavilion at the 1939 New York World's Fair. There's a ruined temple in the background, and in the foreground the ancient bronze statue known as the Artemision Zeus or Poseidon, next to an elderly modern Greek shepherd who looks remarkably like the classical god. The message of racial continuity between ancient and modern Greeks that the regime was keen to project, alongside its tourism campaign, could not have been more obvious.

The Golden Dawn headline above the picture claims that 'the 4000-year racial continuity of the Greeks has been proved'. The article is based on a study published in Nature, 'Genetic origins of Minoans and Mycenaeans', by Iosif Lazaridis et al. It was reported in the international as well as the Greek press, and the emphasis in most headlines was on the genetic continuity between people in the Bronze Age Aegean and contemporary Greeks: 'Minos, our grandfather', for example.

The scientific paper takes 'Minoans' and 'Mycenaeans' as truthful ethnic categories, representing coherent groups of people who identified themselves as such, but they are in fact archeological constructs originating in the late 19th and early 20th century, coined by the likes of Heinrich Schliemann, Arthur Evans and their predecessors. This is the 'pots equal people' approach which most archeologists have left behind, aware of the complexities and intricacies of social and cultural identity. (There's also old-fashioned talk of 'the rise of civilisation'.)

The researchers say they 'generated genome-wide data from 19 ancient individuals', classed as 'Minoan' or 'Mycenaean' depending on their dates and whether they came from Crete or mainland Greece. (Why 19? They don't say. 'No statistical methods were used to predetermine sample size.')

Other data were used for the purposes of analysis, including DNA from 30 'Modern Greek' individuals, from mainland Greece, Cyprus and Crete.

One of the questions the researchers set out to answer was: 'Do the labels "Minoan" and "Mycenaean" correspond to genetically coherent populations or do they obscure a more complex structure of the peoples who inhabited Crete and mainland Greece at this time?' But they'd already answered it in the affirmative by their choice of categories, by the labels they attached to the sampled skeletons.

'Modern Greeks resemble the Mycenaeans,' they conclude, 'but with some additional dilution of the Early Neolithic ancestry.' The results of the study 'support the idea of continuity but not isolation in the history of populations of the Aegean, before and after the time of its earliest civilisations'. But it's hardly surprising that a few modern individuals living in the Eastern Mediterranean should share genetic material with a few individuals who lived in the same region in the Bronze Age; it's a big jump from there to the neo-Nazi fantasy of 4000 years of 'racial continuity'.

In a press interview following the publication of the study, one of the main authors claimed that ‘there is no doubt that our findings reflect historical events in the Greek lands’: ‘the picture of historical continuity is crystal clear, as is very clear the fact that through the centuries Greeks evolved receiving genetic influences from other populations.’ The category of ‘Greekness’ here appears more or less given and stable, despite the ‘influences’, from the Early Bronze Age to the present. It sounds like a version of the 19th-century national narrative of the power of eternal Hellenism to absorb external influences.

The researchers stray beyond genetics for some shaky supportive evidence. The article mentions ‘the distribution of shared toponyms in Crete, mainland Greece and Anatolia’, supported by a single bibliographic reference dating to 1896. ‘The appearance of the Bronze Age people of the Aegean has been preserved in colourful frescos and pottery,’ the researchers say, ‘depicting people with mostly dark hair and eyes.’ They ‘infer that the appearance of our ancient samples matched the visual representations ... suggesting that art of this period reproduced phenotypes naturalistically.’ But there were well-known non-naturalistic artistic conventions in the Bronze Age Eastern Mediterranean, such as the depiction of men and women with red and white skin respectively.

The idea that facial features denote ethnic types takes us back to the interwar years, and even to the late 19th century. The choice of photograph on the Golden Dawn website may not have been so inappropriate after all. Whatever its authors’ intentions, this single study, with its small sample, out-dated rationale and circular logic, is being consumed as a rehearsal of 19th and early 20th-century racial discourse, updated with a modern and seemingly authoritative toolkit.

Please visit the site: <https://www.lrb.co.uk/blog/2017/08/10/yannis-hamilakis/who-are-you-calling-mycenaean/>

MYSTERY OF 8,500-YEAR-OLD COPPER MAKING EVENT REVEALED THROUGH MATERIALS SCIENCE

Stone Age metallurgical ‘slag’ from Çatalhöyük - once thought to be the earliest known example of copper smelting in western Eurasia - now re-identified as incidentally fired green copper pigment.

An international team of archaeological scientists have put an end to the more than half-a-century old claim about the earliest copper smelting event at the Late Neolithic site of Çatalhöyük in central Turkey - one of the world’s best-studied prehistoric archaeological sites.

Scholars have been hotly debating the origins and spread of metallurgy for decades, mainly due to the relationship this technology had with the rise of social complexity and economy of the world’s first civilisations in the Near East. Whether metallurgy was such an exceptional skill to have only been invented once or repeatedly at different locations is therefore still contentious. The proponents of the latter have just provided conclusive evidence of the incidental nature of what was held to be the key find for the single origin of metallurgy claim.

Published today in the <http://www.sciencedirect.com/science/article/pii/S0305440317301024>, the re-examination of a c. 8,500-year-old by-product from metal smelting, or ‘slag’, from the site of Çatalhöyük presents the conclusive reconstruction of events that led to the firing of a small handful of green copper minerals.

“From the beginning of our study it was clear that the small handful of ‘slag’ samples were only semi-baked. This indicated a non-intentional, or accidental copper firing event, but the ‘eureka’ moment of how and why that happened arrived quite late”, says <http://www.arch.cam.ac.uk/directory/mr664>, lead author and researcher at the McDonald Institute for Archaeological Research at the University of Cambridge.

“The co-authors had a lengthy debate about why the semi-baked copper minerals were deposited in a burial, but then when our pigment specialist (Camurcuoğlu) mentioned earlier examples of green and blue copper pigments in graves and our excavation specialist (Farid) reported firing events that charred bones and materials in the shallow graves, the penny started to drop”, she explains.

“The native copper artefacts from the site of Çatalhöyük were not chemically related to this non-intentionally produced metallurgical slag sample”, adds Professor Ernst Pernicka, of the University of Heidelberg, further strengthening the claim these authors elaborated in the article.

Professor Thilo Rehren, of the UCL Institute of Archaeology, explains the significance of these results: “The invention of metallurgy is foundational for all modern cultures, and clearly happened repeatedly in different places across the globe. As we have seen, not

every piece of semi-molten black and green stuff from an excavation is necessarily metallurgical slag. Only materials science methods, in combination with good archaeological records, can distinguish between debris from intentional metal smelting and accidental waste from a destructive fire”.

“It has been a long journey for the materials now identified as vitrified copper minerals to be recognised as once important solely for their colour properties, and we can finally put this debate to rest”, comments Professor Ian Hodder, from Stanford University, who has been directing the excavations of Çatalhöyük for the past 25 years.

Please visit the site: <http://www.arch.cam.ac.uk/mystery-of-8-500-year-old-copper-making-event-revealed-through-materials-science> [Go there for pix]

‘FIRST OF-ITS-KIND’ HELLENISTIC TEMPLE DISCOVERED IN UMM QAIS, BY AHMED BANI MUSTAFA

A “first-of-its-kind” Hellenistic temple in the Levant region has been discovered in Umm Qais, an archaeologist said on Monday.

An archaeological excavation team from Yarmouk University has recently discovered a Hellenistic temple and network of water tunnels, Atef Sheyyab, president of the archaeology department at the university told the Jordan Times.

The temple dates from the Hellenistic era (332 BC to 63 BC) and was later reused during the Roman, Byzantine and Islamic eras, Sheyyab said.

The temple, built following the Greek architectural design of “Distyle in Antis”, consists of a pronaos (the inner area of the portico of a Greek or Roman temple), a podium and a naos, the holy chamber of the temple, he explained.

At the temple, the team has found a number of Ionic-order columns that once supported the structure’s roof, Sheyyab added.

The team has taken pottery samples to examine in order to identify the exact date of the temple. The experts will also use them to prepare a blueprint showing the temple’s layout at the time, according to Sheyab.

The team has also discovered a network of water tunnels at the centre of the ancient town, which are separated from the external tunnel that was discovered decades ago in the area, the professor said.

The network consists of a number of Hellenistic wells and Roman tunnels, he noted, adding that the tunnels lead to a hot bath inside the town.

In addition to Jerash and Amman, Gadara (now Umm Qais) and Pella (Tabaqit Fahl) were once Decapolis cities — a league of 10 ancient Greek cities in eastern Palestine that was formed after the Roman conquest of Palestine in 63 BC which also included Philadelphia (modern Amman) and Damascus, according to Encyclopaedia Britannica — and each has particularities.

Perched on a scenic hilltop overlooking the Jordan Valley and the Sea of Galilee, Umm Qais, some 125km north of Amman, boasts impressive ancient remains, such as the black basalt theatre, the basilica and adjacent courtyard strewn with intricately carved black sarcophagi.

Other remains include the colonnaded main street and a side street lined with shops, an underground mausoleum, two baths, a nymphaeum (fountain), a city gate and the faint outlines of what used to be a massive hippodrome (stadium for chariot races), according to the Jordan Tourism Board website.

Please visit the site: <http://www.jordantimes.com/news/local/first-its-kind%E2%80%99-hellenistic-temple-discovered-umm-qais>

POISONINGS WENT HAND IN HAND WITH THE DRINKING WATER IN POMPEII

The ancient Romans were famous for their advanced water supply. But the drinking water in the pipelines was probably poisoned on a scale that may have led to daily problems with vomiting, diarrhoea, and liver and kidney damage. This is the finding of analyses of water pipe from Pompeii.

- The concentrations were high and were definitely problematic for the ancient Romans. Their drinking water must have been decidedly hazardous to health.

This is what a chemist from University of Southern Denmark reveals: Kaare Lund Rasmussen, a specialist in archaeological chemistry. He analysed a piece of water pipe from Pompeii, and the result surprised both him and his fellow scientists. The pipes contained high levels of the toxic chemical element, antimony.

The result has been published in the journal Toxicology Letters.

Romans poisoned themselves

For many years, archaeologists have believed that the Romans' water pipes were problematic when it came to public health. After all, they were made of lead: a heavy metal that accumulates in the body and eventually shows up as damage to the nervous system and organs. Lead is also very harmful to children. So there has been a long-lived thesis that the Romans poisoned themselves to a point of ruin through their drinking water.

- However, this thesis is not always tenable. A lead pipe gets calcified rather quickly, thereby preventing the lead from getting into the drinking water. In other words, there were only short periods when the drinking water was poisoned by lead: for example, when the pipes were laid or when they were repaired: assuming, of course, that there was lime in the water, which there usually was, says Kaare Lund Rasmussen.

Instead, he believes that the Romans' drinking water may have been poisoned by the chemical element, antimony, which was found mixed with the lead.

Advanced equipment at SDU

Unlike lead, antimony is acutely toxic. In other words, you react quickly after drinking poisoned water. The element is particularly irritating to the bowels, and the reactions are excessive vomiting and diarrhoea that can lead to dehydration. In severe cases it can also affect the liver and kidneys and, in the worst-case scenario, can cause cardiac arrest.

This new knowledge of alarmingly high concentrations of antimony comes from a piece of water pipe found in Pompeii.

- Or, more precisely, a small metal fragment of 40 mg, which I obtained from my French colleague, Professor Philippe Charlier of the Max Fourestier Hospital, who asked if I

would attempt to analyse it. The fact is that we have some particularly advanced equipment at SDU, which enables us to detect chemical elements in a sample and, ever more importantly, to measure where they occur in large concentrations.

Volcano made it even worse

Kaare Lund Rasmussen underlines that he only analysed this one little fragment of water pipe from Pompeii. It will take several analyses before we can get a more precise picture of the extent, to which Roman public health was affected.

But there is no question that the drinking water in Pompeii contained alarming concentrations of antimony, and that the concentration was even higher than in other parts of the Roman Empire, because Pompeii was located in the vicinity of the volcano, Mount Vesuvius. Antimony also occurs naturally in groundwater near volcanoes.

This is what the researchers did

The measurements were conducted on a Bruker 820 Inductively Coupled Plasma Mass Spectrometer.

The sample was dissolved in concentrated nitric acid. 2 mL of the dissolved sample was transferred to a loop and injected as an aerosol in a stream of argon gas which was heated to 6000 degrees C by the plasma.

All the elements in the sample were ionized and transferred as an ion beam into the mass spectrometer. By comparing the measurements against measurements on a known standard the concentration of each element is determined.

Please visit the site: https://www.eurekalert.org/pub_releases/2017-08/uosd-pwh081717.php

MATHEMATICAL SECRETS OF ANCIENT TABLET UNLOCKED AFTER NEARLY A CENTURY OF STUDY

Dating from 1,000 years before Pythagoras's theorem, the Babylonian clay tablet is a trigonometric table more accurate than any today, say researchers

At least 1,000 years before the Greek mathematician Pythagoras looked at a right angled triangle and worked out that the square of the longest side is always equal to the sum of the squares of the other two, an unknown Babylonian genius took a clay tablet and a reed pen and marked out not just the same theorem, but a series of trigonometry tables which scientists claim are more accurate than any available today.

The 3,700-year-old broken clay tablet survives in the collections of Columbia University, and scientists now believe they have cracked its secrets.

The team from the University of New South Wales in Sydney believe that the four columns and 15 rows of cuneiform – wedge shaped indentations made in the wet clay – represent the world's oldest and most accurate working trigonometric table, a working tool which could have been used in surveying, and in calculating how to construct temples, palaces and pyramids.

The fabled sophistication of Babylonian architecture and engineering is borne out by excavation. The Hanging Gardens of Babylon, believed by some archaeologists to have been a planted step pyramid with a complex artificial watering system, was written of by Greek historians as one of the seven wonders of the ancient world.

Daniel Mansfield, of the university's school of mathematics and statistics, described the tablet which may unlock some of their methods as "a fascinating mathematical work that demonstrates undoubted genius" – with potential modern application because the base 60 used in calculations by the Babylonians permitted many more accurate fractions than the contemporary base 10.

Mathematicians have been arguing for most of a century about the interpretation of the tablet known as Plimpton 322, ever since the New York publisher George Plimpton bequeathed it to Columbia University in the 1930s as part of a major collection. He bought it from Edgar Banks, a diplomat, antiquities dealer and flamboyant amateur archaeologist said to have inspired the character of Indiana Jones – his feats included climbing Mount Ararat in an unsuccessful attempt to find Noah's Ark – who had excavated it in southern Iraq in the early 20th century.

Mansfield, who has published his research with his colleague Norman Wildberger in the journal *Historia Mathematica*, says that while mathematicians understood for decades that the tablet demonstrates that the theorem long predated Pythagoras, there had been no agreement about the intended use of the tablet.

“The huge mystery, until now, was its purpose – why the ancient scribes carried out the complex task of generating and sorting the numbers on the tablet. Our research reveals that Plimpton 322 describes the shapes of right-angle triangles using a novel kind of trigonometry based on ratios, not angles and circles. It is a fascinating mathematical work that demonstrates undoubted genius.

“The tablet not only contains the world’s oldest trigonometric table; it is also the only completely accurate trigonometric table, because of the very different Babylonian approach to arithmetic and geometry. This means it has great relevance for our modern world. Babylonian mathematics may have been out of fashion for more than 3,000 years, but it has possible practical applications in surveying, computer graphics and education. This is a rare example of the ancient world teaching us something new.”

The tablet also long predates the Greek astronomer Hipparchus, traditionally regarded as the father of trigonometry.

Wildberger said: “Plimpton 322 predates Hipparchus by more than 1,000 years. It opens up new possibilities not just for modern mathematics research, but also for mathematics education. With Plimpton 322 we see a simpler, more accurate trigonometry that has clear advantages over our own.”

He and Mansfield believe there is more to learn of Babylonian maths, still buried in untranslated or unstudied tablets.

“A treasure trove of Babylonian tablets exists, but only a fraction of them have been studied yet. The mathematical world is only waking up to the fact that this ancient but very sophisticated mathematical culture has much to teach us.”

They suggest that the mathematics of Plimpton 322 indicate that it originally had six columns and 38 rows. They believe it was a working tool, not – as some have suggested – simply a teaching aid for checking calculations. “Plimpton 322 was a powerful tool that could have been used for surveying fields or making architectural calculations to build palaces, temples or step pyramids,” Mansfield said.

As far back as 1945 the Austrian mathematician Otto Neugebauer and his associate Abraham Sachs were the first to note that Plimpton 322 has 15 pairs of numbers forming parts of Pythagorean triples: three whole numbers a , b and c such that $a^2 + b^2 = c^2$. The integers 3, 4 and 5 are a well-known example of a Pythagorean triple, but the values on Plimpton 322 are often considerably larger with, for example, the first row referencing the triple 119, 120 and 169.

Please visit the site:

<https://www.theguardian.com/science/2017/aug/24/mathematical-secrets-of-ancient-tablet-unlocked-after-nearly-a-century-of-study> [Go there for pix] [Also, with variations, at <http://www.telegraph.co.uk/science/2017/08/24/3700-year-old-babylonian-tablet-rewrites-history-maths-could/> and <http://www.newsweek.com/babylonian-tablet-ancient-maths-654978>]

ANCIENT GREEKS BUILT AN ECLIPSE- PREDICTING 'COMPUTER' 2,000 YEARS AGO, BY TIA GHOSE

More than 2,000 years before the Great American Solar Eclipse, which will darken the skies over the U.S. on Aug. 21, astronomers in ancient Greece developed their own "supercomputer" to predict eclipses just like this one.

The ancient gearbox, called the Antikythera mechanism, was used to identify astronomical events that could anchor their calendar. [See Photos of the Ancient Antikythera Shipwreck and Treasure]

Ancient supercomputer

Sponge divers discovered the mysterious gearbox in 1900, when they took shelter from a nearby storm on the island of Antikythera. The divers unearthed an ancient shipwreck, and archaeological investigations revealed that the Antikythera shipwreck likely sank about 2,000 years ago, on its way between Rome and Asia Minor, Live Science previously reported.

When explorers looked through the wreckage, they found a shoe-box-size contraption covered with dials and filled with about 30 gears made of bronze. Though the mysterious object had fragmented into dozens of pieces, archaeologists soon figured out what the enigmatic object was used for: The hand-cranked gearbox would have allowed ancient Greek astronomers to figure out the position of the sun, moon and stars at any given time in the future.

Though the mysterious astronomical calculator's 2,000 years under the sea have corroded it, scientists have used 3D imaging to reveal some of the text on the box, which provides instructions on how to use it, according to a 2016 study published in the journal *Almagest*.

"Before, we could make out isolated words, but there was a lot of noise — letters that were being misread or gaps in the text," Alexander Jones, a professor of the history of science at New York University, told Live Science last year. "Now, we have something that you can actually read as ancient Greek. We can tell what these texts were saying to an ancient observer."

For instance, the new information reveals that there was a zodiac chart on the front of the gearbox showing the planets moving through the different constellations, the study found.

Eclipse predictions

In 2014, scientists reported in the journal *PLOS ONE* that they had deciphered the dial and algorithm used to predict eclipses. It turned out that a four-turn spiral revealed eclipses using specific glyphs to denote the time and type of eclipse. Lunar eclipses, for instance, were denoted by the glyph for Σ, which was short for the moon goddess

ΕΛΗΝΗ (Selene), while solar eclipses were denoted by Η, which is short for the sun god ΗΛΙΟΣ (Helios). (The English word "eclipse" comes from the Greek word "ekleipsis," meaning abandonment, because the ancients believed the sun was literally abandoning the Earth during that time.)

What's more, the Greek computer was surprisingly sophisticated. The Antikythera mechanism could not only predict the timing of eclipses but also reveal characteristics of those eclipses, such as the amount of obscuration, the angular diameter of the moon (which is the angle covered by the diameter of the full moon) and the position of the moon at the time of the eclipse, the study found.

Though the full meaning of eclipse events in Greek culture isn't entirely clear, it's evident that the eclipses were seen as important omens. For instance, the ancient historian Herodotus claimed that the eclipse of Thales (allegedly in 585 B.C.) literally stopped a war between Median king Cyaxares and Lydian king Alyattes, who saw the darkness as a sign to stop fighting. However, many scholars doubt that truly occurred, according to a 1997 paper published in the journal *Electronic Antiquity*. Ancient Greek astronomers also used eclipse events to calculate distances between celestial objects.

Many ancient cultures have long tied eclipses to other civilizational cataclysms. For instance, historical texts reveal that the Assyrians believed that a king's rule was in jeopardy during a lunar eclipse if Jupiter was obscured, according to "Letters from Assyrian Scholars the Kings Esarhaddon and Ashurbanipal" (Eisenbrauns, 2007).

Please visit the site: <https://www.livescience.com/60144-antikythera-computer-predicted-eclipses.html>

REMARKABLE ARTISTRY HIDDEN IN ANCIENT ROMAN PAINTING REVEALED

Molten lava, volcanic ash, modern grime, salt, humidity. The ancient painting of a Roman woman has been through it all, and it looks like it. Scientists now report that a new type of high-resolution X-ray technology is helping them discover just how stunning the original portrait once was, element-by-element. The technique could help conservators more precisely restore this image, as well as other ancient artworks.

The researchers are presenting their work today at the 254th National Meeting & Exposition of the American Chemical Society (ACS). ACS, the world's largest scientific society, is holding the meeting here through Thursday. It features nearly 9,400 presentations on a wide range of science topics.

"Science is allowing us to get closer to the people who lived in Herculaneum," says Eleonora Del Federico, Ph.D. "By unraveling the details of wall paintings that are no longer visible to the naked eye, we are in essence bringing these ancient people back to life. And learning more about the materials and techniques they used will help us to better preserve this artistry for future generations."

Herculaneum was an ancient Roman resort town near modern-day Naples on the Italian coast. The city, along with nearby Pompeii, was destroyed during an eruption of Mount Vesuvius in 79 A.D. For centuries, Herculaneum was buried under 66 feet of volcanic material, which helped preserve much of the artwork in the city. Ironically, it was only when Herculaneum was rediscovered and excavation began in the mid-19th century that many of the paintings, frescos and statues started to deteriorate. Humidity, temperature variations, salt and other atmospheric agents have done most of the damage. The portrait of the young woman, for instance, was only excavated about 70 years ago. Del Federico, who is at Pratt Institute's School of Liberal Arts and Sciences, speculates that when it was first uncovered, the image was probably stunning. But she says just a few decades of exposure to the elements has wrought incalculable damage to it.

To help scientists involved with the Herculaneum Conservation Project better understand what they need to do to preserve this artwork, Del Federico and colleagues at the Pratt Institute and XGLab SRL sought to find out more about the wall paintings hidden beneath accumulating layers of crystalized salt and muck.

In one of the first-of-its-kind field studies, the researchers used a recently developed portable macro X-ray fluorescence (macro XRF) instrument, ELIO by XGLab SRL, to scan and analyze a painting of a young woman in the ancient city. This new instrument allows scientists to noninvasively analyze a painting without having to move it or have the device come into contact with the artwork. ELIO can produce maps of the elements, such as iron, lead and copper, in the painting. Del Federico says these insights could help conservators choose cleaning solvents that are compatible with the elements in a painting and possibly allow much of its original magnificence to be restored.

After she used the method, Del Federico was surprised at how much detail it uncovered. The analysis revealed that the artist had sketched the young woman with an iron-based

pigment and then highlighted around her eyes with a lead pigment. High levels of potassium in her cheeks suggested that green earth pigment was used as an underpainting to help create a "flesh" color. But the analysis also revealed much more.

"This young woman is gone forever, but our study has revealed in remarkable detail her humanity, her thoughtful expression and her beauty," Del Federico says.

Please visit the site: <http://popular-archaeology.com/issue/summer-2017/article/remarkable-artistry-hidden-in-ancient-roman-painting-revealed> [Go there for pix]

EMPEROR JUSTINIAN MOSAIC INSCRIPTION UNEARTHED NEAR DAMASCUS GATE

A 1,500-year-old mosaic floor, with a Greek inscription, was discovered this summer following groundwork for Partner communications cable infrastructures near the Damascus Gate in the Old City of Jerusalem.

David Gellman, director of the excavation on behalf of the Israel Antiquities Authority said, “The fact that the inscription survived is an archaeological miracle. The excavation in a relatively small area, exposed ancient remains that were severely damaged by infrastructure groundwork over the last few decades. We were about to close the excavation, when all of a sudden, a corner of the mosaic inscription peeked out between the pipes and cables. Amazingly, it had not been damaged. Every archaeologist dreams of finding an inscription in their excavations, especially one so well-preserved and almost entirely intact.”

Dr. Leah Di Segni, of the Hebrew University in Jerusalem, the expert on ancient Greek inscriptions, deciphered the inscription. The inscription reads, “In the time of our most pious emperor Flavius Justinian, also this entire building Constantine the most God-loving priest and abbot, established and raised, in the 14th indiction.” According to Di Segni, “This inscription commemorates the founding of the building by Constantine, the priest. The inscription names the emperor Flavius Justinian. It seems that the building was used as a hostel for pilgrims.” Di Segni added, “‘Indiction’ is an ancient method of counting years, for taxation purposes. Based on historical sources, the mosaic can be dated to the year 550/551 AD.”

According to Gellman, “The Damascus Gate served for hundreds of years as the main northern entrance to Jerusalem. Knowing that, it is no surprise that this area is rich with archaeological remains. In the Byzantine period, with the emergence of Christianity, churches, monasteries and hostels for pilgrims were built in the area north of the gate, and the area became one of the most important and active areas of the city.”

The two people mentioned in the inscription are well-known from both ancient historical sources and archaeological finds. The emperor Flavius Justinian was one of the most important rulers of the Byzantine period, and one of the most colorful and charismatic rulers of antiquity. Under his reign, the eastern Roman empire was at its strongest, and its conversion to Christianity was completed. In the year 543 AD he established a large church in Jerusalem, dedicated to Mary, mother of Jesus, known as The Nea Church. This was the largest church built in Jerusalem and one of the largest in the entire empire. The abbot of the church was Constantine, whose name appears in the inscription discovered recently near the Damascus gate. Remains of this church were partially excavated in 1970, in the Jewish quarter of the Old City of Jerusalem, even then sparking interest among archaeologists and scholars of Jerusalem, throughout Israel and across the globe. This excavation was a part of the Jewish quarter excavations carried out immediately following the Six Day War in 1967.

According to Di Segni, the inscription found near the Damascus gate is fairly similar to an inscription found in the vaults of the Nea Church, currently exhibited in the Israel museum. The same two people are mentioned in the inscription, the emperor Justinian and the abbot Constantine. Di Segni adds, “This new inscription helps us understand Justinian’s building projects in Jerusalem, especially the Nea Church. The rare combination of archaeological finds and historical sources, woven together, is incredible to witness, and they throw important light on Jerusalem’s past.”

The new but ancient inscription was removed from its site by the conservation experts of the Israel Antiquities Authority, and is being treated in the IAA ‘s mosaic workshop in Jerusalem.

Please visit the site: <http://www.jewishpress.com/news/israel/jerusalem/emperor-justinian-mosaic-inscription-unearthed-near-damascus-gate/2017/08/23/> [Go there for pix]

HOW ANCIENT BABYLONIANS COULD HAVE PREDICTED THE 2017 ECLIPSE, BY RUTH SCHUSTER

Though they believed the disappearing sun was a sign of divine wrath, Babylonians were already calculating the probability of eclipses 4,000 years ago

Ancient Babylonians living almost 4,000 years ago could have predicted Monday's total solar eclipse.

In fact the ancient Babylonians were the fathers of modern astronomy. They could track and predict the relative movements of the sun and moon, and even those of the Solar System planets that they recognized, Venus and Mercury.
skip - live eclipse

How exactly could peoples living thousands of years ago who hadn't even discovered iron yet, predict a solar eclipse today?

Absent computer technology, they did it the old-fashioned way: by keeping records over generations, and noticing patterns. And doing math. Cuneiform tablets found in Babylonia and Uruk show they could predict the position of celestial bodies using advanced geometric techniques that westerners had thought were invented in 14th-century Europe.

The ancient Babylonians meticulously mapped the stars over 3,000 years ago, and recorded each and every celestial event, including the motions of the planets they could see – and the eclipses of the sun and moon. They wrote their findings in cuneiform on clay tablets, some of which were found in the city of Ugarit.

Some archaeologists suspect astronomical observations began much earlier, possibly with the first known Mesopotamian civilization in the early Bronze Age: the Sumerians, because some of the star names in the Babylonian list of stars are in Sumerian. Alternatively, some think the original sky-gazers were the Elamites, a mysterious ancient people who destroyed the Sumerian capital and rule in round 1750 B.C.E.

We can be sure that the Babylonians realized cyclicity was involved in cosmic phenomena like eclipses, and began predicting solar and lunar eclipses based on the so-called Saros cycle of 223 synodic months, which is 18 years and 11.3 days and a bit. And that is how they could have, with decent accuracy, predict today's eclipse.

The gods are peeved

Despite noting the periodicity, and therefore the predictability of eclipses, the ancients persisted in associating them with the wrath of their uneven-tempered gods.

Why the gods should be predictable about eclipses and nothing else has never been explained.

Children watch a presentation about the eclipse in Columbia, South Carolina, August 20 2017 Sean Rayford/AFP

So, despite their periodicity, the ancient civilizations also believed that eclipses, particularly of the moon, might portend evil, such as the imminent death of a king. Thus being able to predict the date actually gave the Mesopotamian kings of yore an elegant solution: they could abdicate briefly, handing the reins to some unfortunate who would then, fitly, be killed. Alexander the Great is believed to have sacrificed just a substitute king named for an eclipse to save his own skin, not that it helped him achieve long life.

Another unwitting achievement of the moon-sun juxtaposition in space was to end a war between Medes and Lydians in Turkey on May 28. 585 B.C.E. Both the parties assumed the gods were displeased, even though the eclipse seems to have been predicted by the Greek genius Thales of Miletus, according to the historian Herodotus.

Thales is thought to be the first westerner to predict an eclipse, but neither he nor the Babylonians were thought to understand how eclipses happen.

Earliest records and a mystery

The earliest known Babylonian record of a solar eclipse dates to May 3, 1375 B.C.E. but there could of course be previous ones. The record famously included the sun's disappearance on July 31, 1063 B.C.E. and some 61 eclipses altogether.

There is even a cuneiform tablet recording Halley's Comet passing by the planet in 164 B.C.E.

A Babylonian cuneiform tablet recording Halley's comet during an appearance in 164 B.C.E. Linguica

The Babylonian knowledge would reach the peoples around them. Assyrian observers in Nineveh recorded an eclipse on June 15, 763 B.C.E., almost 2,800 years ago, which became known as the "Assyrian eclipse" (Pur-Sagal). Some scribe of the time wrote a single sentence: "Pur-Sagal of Guzana, revolt in the city of Assur. In the month Simanu an eclipse of the sun took place."

One might think that based on the fear of eclipse and evil portents, the sun's disappearance led the terrified people to revolt against the king of the time, Ashur-Dan the Third, but it seems the unrest was more a function of poverty and plague. By the way, if the jury's out on anything in this regard, it's which eclipse the Assyrian one was: some scholars argue they were referring to the sun's disappearance on June 24, 791 B.C.E.

Fascinatingly, some scholars suggest that the ancient Babylonian stargazers could (and did) predict solar eclipses that weren't even visible from Babylon.

Either way, their knowledge would continue on with the peoples around them and following them, including the ancient Egyptians, Greeks and Jews, and later, Islamic astronomers as well.

Meanwhile, at the bottom of the sea

The ancient Greeks, or at least one of them, might not have needed the Babylonians' charts and records any more to predict eclipses. In the year 1907 sponge divers off the Greek coast found a congealed lump of corroded metal, that turned out to be a computer made of bronze dating back more than 2,000 years.

Dubbed the Antikythera Mechanism, the device consists of multi-layered meshing bronze gears (some think, up to 50 of them!) and was made some time from 220 B.C.E. to 60 B.C.E.

The degree of precision metalwork – the largest gear is only 5.5 inches in diameter but has 224 teeth – and of miniaturization astounded the modern world. Its calculator could add, multiply, divide and subtract. It could align the number of lunar months with years and show the positions of the sun and the moon, corrected for orbital anomalies, along the zodiac.

Naturally, it could predict eclipses. Yet even then, with the absolute ability to remove the mystery from solar motions, the ancients persisted in believing the gods were involved, and that they were signaling something. Some people still do.

Please visit the site: <http://www.haaretz.com/archaeology/1.808116>

NEW ROMAN TOMBS DISCOVERED IN EGYPT'S DAKHLA OASIS, BY NEVINE EL- AREF

Five mud-brick tombs uncovered in Beir Al-Shaghala necropolis in the Western Desert

An Egyptian archaeological mission from the Ministry of Antiquities has uncovered five Roman tombs during excavation works carried out in Beir Al-Shaghala site in Dakhla Oasis in Egypt's Western Desert.

Ayma Ashmawi, head of the Ancient Egyptian Antiquities Department, explained that the tombs are built in mud brick and have different architectural style.

The first tomb has an entrance leading to a rectangular hall with two burial chambers while the second has a vaulted ceiling and its entrance leads to a burial chamber.

The third tomb is a pyramid-shaped tomb. The mission has succeeded in uncovering its upper part while the lower part is still buried in sand. The fourth and fifth tombs share one entrance and each tomb has a separate burial chamber with a vaulted ceiling.

Ashmawy pointed out that the mission's excavations in the area will continue.

Gamal Al-Semestawi, general director of antiquities of the Middle Egypt, said that a number of artefacts were found inside the tombs, including the remains of a funerary mask depicting a human face painted in yellow, a set of pottery vessels of different shapes and sizes, as well as two ostraca, one of which contains hieroglyphic text while the second bears text written in Hieratic.

A clay incense burner and remains of a small sandstone sphinx, 14 centimetres by 12.7 centimetres tall, have also been found within the tombs.

Magdi Ibrahim, director general of Dakhla Oasis and head of the mission, said the mission succeeded in its six previous excavation seasons to discover eight Roman tombs in a good state of conservation and with similar architectural design. They are composed of a rectangular hall and two side chambers with sandstone vaulted ceilings. The hall has a mud brick ceiling.

Al-Shaghala area is located to the west of Mout city almost 3 kilometres from Dakhla Oasis in a mid-point between three other archaeological sites.

Please visit the site:

<http://english.ahram.org/NewsContent/9/41/275873/Heritage/GrecoRoman/New-Roman-tombs-discovered-in-Egypt-Dakhla-Oasis.aspx>

WORLD'S OLDEST ITALIAN WINE JUST DISCOVERED

Chemical analysis conducted on ancient pottery could dramatically predate the commencement of winemaking in Italy. A large storage jar from the Copper Age (early 4th millennium BC) tests positive for wine.

This finding published in *Microchemical Journal* is significant as it's the earliest discovery of wine residue in the entire prehistory of the Italian peninsula. Traditionally, it's been believed wine growing and wine production developed in Italy in the Middle Bronze Age (1300-1100 B.C.) as attested just by the retrieval of seeds, providing a new perspective on the economy of that ancient society.

Lead author Davide Tanasi, PhD, University of South Florida in Tampa conducted chemical analysis of residue on unglazed pottery found at the Copper Age site of Monte Kronio in Agrigento, located off the southwest coast of Sicily. He and his team determined the residue contains tartaric acid and its sodium salt, which occur naturally in grapes and in the winemaking process.

It's very rare to determine the composition of such residue as it requires the ancient pottery to be excavated intact. The study's authors are now trying to determine whether the wine was red or white.

Please visit the site: <http://popular-archaeology.com/issue/summer-2017/article/world-s-oldest-italian-wine-just-discovered> [Go there for pix]

'ATOMIC FINGERPRINTING' TECH COULD END COUNTERFEIT GOODS, BY TRACY STAEDTER

In the sophisticated world of counterfeiting, it can often be difficult to tell fakes from the real deal. But now, scientists have developed a new method that can stamp things with "atomic fingerprints" to keep phony products at bay.

"There is no bigger crime than counterfeit crime," said Robert Young, a professor of physics at Lancaster University in the United Kingdom and chief technology officer of the tech startup Quantum Base. [Faux Real: A Gallery of Forgeries]

Earlier this month, Young and his colleagues announced a relatively simple technique for confirming the authenticity of an object — an advance that could put a dent in the counterfeit industry, where fakes, forgeries and imitations cost the global economy half a trillion dollars in lost revenue each year, according to the most recent data from the Organization for Economic Co-operation and Development, headquartered in Paris.

The new anti-counterfeiting method, published online in ArXiv, the open-access preprint journal from Cornell University, has two components: a unique molecular pattern that can be incorporated into a holographic label and a smartphone app.

The unique pattern is created by intentionally fabricating flaws into an atom-thin layer of material, such as graphene oxide. Flaws may include removing a carbon atom, or adding extra oxygen atoms, or creating a ridge of atoms, according to the researchers. Once the flaw is set, the material is incorporated into an ink and then, using an inkjet printer, printed onto a hologram, which can be added as a label to any product.

To confirm the presence of the atomic pattern, a person would use a smartphone camera and its built-in flash to photograph the label. The flash excites the atoms, which produce a unique color based on the pattern. A corresponding app can instantly analyze the image and confirm whether the label is authentic or not, the researchers said.

"I'm really satisfied by how simple it is," Young told Live Science.

Solving such an extensive problem like counterfeiting requires a solution that can be adopted by a large number of people, Young added. A technique that's easy to incorporate and easy to analyze could ensure that it's widely adopted much faster, he said.

Young and his team are working with a company that prints 10 billion holograms per year and said that the first application could be in the automotive industry, where parts are already spray-painted with labels. By piggybacking onto existing manufacturing applications, the researchers can prove that the method works, according to Young.

"We're expecting the first products in market in the first quarter of next year, in 2018," he said.

From there, the researchers would like to branch out to other industries, including pharmaceuticals, where \$200 billion a year is lost from counterfeit drugs, Young said. And what's worse, this illegal medicine can sometimes lead to death.

"Thirty percent of counterfeit pharmaceuticals don't contain the correct active ingredient," Young said. "People buy these things, believe they're real, but they're not being treated for the disease."

Young said that eventually, the atomic fingerprints his team has developed could be laminated directly onto individual pills.

"This is genuinely a really exciting application," he said.

Please visit the site: <https://www.livescience.com/59853-atomic-fingerprinting-could-end-counterfeits.html>

**SCIENTISTS DEBUNK CLAIM THAT
COPPER SMELTING WAS INVENTED 8,500
YEARS AGO IN TURKEY 'SLAG' RESULTED
FROM PRETTY GREEN PIGMENTS
BURNING ACCIDENTALLY WITH A BODY,
NOT THE EARLIEST INVENTION OF
METALLURGY, SAYS
ARCHAEOLOGICAL TEAM,
BY RUTH SCHUSTER**

Scientists have debunked the claim that prehistoric peoples living in central Turkey 8,500 years ago invented copper smelting, putting an end to one fierce controversy.

It was known all along that the copper beads found in 8,500-year-old graves at the famous Late Neolithic site of Çatalhöyük were made by hammering native metal found in nature, not by smelting. But 15 bits of supposed "metallurgical slag", supposedly the "earliest evidence" for metal smelting in the world, are now shown to have been accidentally produced in a conflagration that half-melted green pigments that had been placed in a grave.

Smelting involves isolating metal from ore-bearing rock by intense heating. Professor Ernst Pernicka, of the University of Heidelberg, confirms that the native-copper beads found at Çatalhöyük and this "slag" were not chemically related.

That further supports the theory that the artifacts were made by manipulating local rocks and the "slag" wasn't from smelted copper ornaments put into the grave, but from copper-rich pigment that burned with the dead.

"Not every piece of semi-molten black and green stuff from an excavation is necessarily metallurgical slag. Yes, there are native copper beads in Çatalhöyük and no, they don't count as 'copper production' because they are just stones collected and hammered into shape, no melting involved!" Professor Thilo Rehren of the UCL Institute of Archaeology told Haaretz. "The native copper beads are part of a Neolithic (Stone Age) technology of collecting and hammering minerals and stones. And therefore they don't constitute metallurgy."

Fifty years ago, the analytical technology didn't exist to check whether these 15 semi-baked bits in an 8,500 year-old grave were made of native copper or the result of metallurgy, Rehren explains. Now such technology exists, enabling the re-assessment of the earlier assumptions, including by the same team seven years ago.

Burying the dead in the house

The metallurgists had realized all along that the handful of Çatalhöyük "slag" samples were only semi-baked. That indicated a non-intentional, accidental copper firing event.

But the 'eureka' moment of how and why that happened arrived quite late, says Miljana Radivojevic of the University of Cambridge, lead author of the paper published this month in the *Journal of Archaeological Science*.

"When our pigment specialist (Duygu Camurcuoğlu of the British Museum) mentioned earlier examples of green and blue copper pigments in graves and our excavation specialist (Shahina Farid of the UCL Institute of Archaeology) reported firing events involving charred bones and materials in shallow graves, the penny started to drop," she told Haaretz.

"The people of Çatalhöyük had the habit of burying some of their dead within their houses, in shallow graves and even in benches around the inner walls. Some of these burials contained packs of green and blue pigment, crushed malachite, as Duygu Camurcuoğlu, one of our co-authors has been able to demonstrate from some more recent finds from the site," Rehren told Haaretz.

For some long-lost reason, several of the houses in Çatalhöyük had been set ablaze in what seem to have been massive, intentional conflagrations. The "slag" was formed by incidental baking of green pigments that had been placed in the grave beneath the building, which was set on fire 8,500 years ago. The green pigments, not that the ancients necessarily realized it, were copper-rich.

As the blaze rose to 600 degrees and beyond, it reached as much as 90 centimeters into the soil and charred human bones buried under the floor of the house. It also half-melted pigment bits into metal – in other words, slag began to form, but only on the outside of these pigment pieces.

No metal was intentionally or otherwise produced and was certainly not made into jewelry or any other artifacts, say Rehren and Radivojevic.

So, the oldest known proven smelting remains are in Belovode, Serbia, from around 7,000 years ago, Radivojevic told Haaretz. There Radivojevic and the team did identify intentionally-produced copper slag, which has been analytically confirmed as the source for at least 16 heavy copper implements found across the Balkans.

In their elements

Prehistoric men were aware of at least seven elemental metals: gold, silver, copper, tin, lead, mercury, and iron, the last of which requires the highest smelting temperature. Of these, gold, silver and copper were mostly used in their "native" form.

The prehistoric smiths created decorative objects from native metal by intensive hammering combined with heating (or annealing), at temperatures no higher than those required for cooking, around 200 degrees.

All the copper objects found at Çatalhöyük dating to around 6,700 B.C.E. were made of native metal, meaning naturally-occurring rock rich in copper.

Seated goddess flanked by lionesses, found (separately) at Çatalhöyük from around 5,500-6,000 B.C.E. Roweromaniak Native copper is bright red, like copper metal. Other forms of mineral copper, such as malachite, were also picked up for their aesthetic appeal for making jewelry, or used as a pigment. Indeed, to this day, in some areas of the Levant and Middle East, that greenish-blue hue remains popular, and is associated with good luck.

"We need to be clear," Radivojevic wrote to Haaretz. "There is no evidence for extractive copper metallurgy of any kind at the site of Çatalhöyük, and our research presents a definitive explanation how this contentious 'slag' had formed."

Generally, the excavations at Çatalhöyük, which began in 1958, have been very rich. It was a huge site in the Neolithic and Chalcolithic ages, but was abandoned some time in the Bronze Age. In 2012, it was declared a UNESCO heritage site. The numerous finds of the ancient settlement, which housed thousands of people at a time, include figurines that are presumably of deities, bull heads, an extraordinary mural that some people call "the earliest known map," and some of the oldest preserved textiles in the world. And beads.

Actually, most of the copper metal artifacts found at Çatalhöyük were beads of a type common in Anatolia going back almost 11,000 years. "Archaeologists unearthed many of these in other prehistoric Turkish, Iraqi and Iranian sites in the past century," Radivojevic says. These beads were all made of native, not smelted, copper."

"The invention of metallurgy is foundational for all modern cultures, and clearly happened repeatedly in different places across the globe," Rehren sums up. Some think copper smelting originated in what is today Iran, and spread through the region and to Europe. Copper artifacts have been found in the region that date to about 7,000 years of age.

A copper awl broadly dated from the Middle Chalcolithic period (5200-4600 B.C.E.) was found in a woman's grave at Tell Tsaf, in the Beit She'an Valley, in 2014, though precise dating is yet to be investigated.

Israel was evidently not the spot where smelting per se developed; however, the earliest examples of alloyed metal come from the Nahal Mishmar hoard, discovered in a cave near the Dead Sea and permanently displayed in the Israel Museum in Jerusalem. More than 400 objects, amongst which crowns and scepters, were made of then-unique alloys of copper with arsenic and antimony, and with a craftsmanship unparalleled at the time of production, almost 6,000 years ago.

Their color, however, remains until today the most spectacular display of aesthetical preferences of that period: besides bright red copper, it included silver (copper-arsenic) and purple (copper-antimony) objects, say Radivojevic and Rehren. Some of the metal for making these items probably originated in the Caucasus, more than 1,000 kilometers away. In other words, international trade was booming even then.

The million-shekel question remains whether smelting was discovered once and disseminated, or discovered multiple times. This paper has firmly promoted the latter.

Please visit the site: <http://www.haaretz.com/archaeology/1.809367> [Go there for pix and nicer format]

8,000-YEAR-OLD PAINT WORKSHOP DISCOVERED IN TURKEY'S ESKİŞEHİR

One of the oldest paint workshops of the world have been found at an ancient settlement in northwestern Turkish province of Eskişehir, Anadolu Agency reported Thursday.

Archaeologists working at the ancient settlement mound of Kanlıtaş discovered traces of paint from 6,000 B.C. at a workshop.

Located north of central Eskişehir, the settlement lies on the northern slope of a hill in the middle of a valley.

Considered to be the oldest settlement of Central-West Anatolian region, the mound was a permanent settlement encircled with large retaining walls to the east and the west.

8,000-year-old paint workshop discovered in Turkey's Eskişehir

Anadolu University Archaeology Professor Ali Umut Türkcan told the Anadolu Agency that the large walls provided protection for the ancient people.

He noted that their research concluded that the mound was used as a production center and a workshop.

"Since the beginning of excavations we wondered if a paint workshop existed here. We discovered samples of paint in mortars, ground stones and a container" Türkcan said.

8,000-year-old paint workshop discovered in Turkey's Eskişehir

The researchers will not analyze the source of the paint to determine whether or not they were from organic or mineral sources.

Türkcan also noted that they think the paint could be red ochre, which is produced from mineral sources.

Research at Kanlıtaş Settlement Mound started in 1989 after Eskişehir Archaeology Museum's discovery. Türkcan and his team have been working at the site since 2008.

They have discovered two mounds, Paleolithic workshops and three necropolis sites.

Please visit the site: <https://www.dailysabah.com/history/2017/08/31/8000-year-old-paint-workshop-discovered-in-turkeys-eskisehir>
