



Association for the Study
of Marble and Other
Stones in Antiquity

Asmosia Newsletter

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ASMOSIA Officers 1995 - 98

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Archaeometry - Norman Herz
Archaeology & Art History - Susan Kane

President's Report

From our first meeting, May, 1988, in Il Ciocco, near Lucca, Italy, held as an Advanced Research Workshop supported by NATO, attended by fifty persons; through the second meeting October, 1990 in Leuven, Belgium; followed by the third May 1993, in Athens, Greece; to the recently held fourth meeting October, 1995 in Bordeaux with about 100 attendees, ASMOSIA can now be declared an unqualified success. We have brought together those people with the problems—art historians, archaeologists and museum curators—with those who have the means to solve many of the problems—the scientists. We have succeeded in our goal to provide a forum to the two groups who normally do not even speak the same language (or jargon). The three volumes of transactions of our meetings bear eloquent testimony to the success of our goal.

Membership has grown from under 50 at Il Ciocco in 1988 to 215, representing 29 countries. Each meeting has exceeded the attendance of the preceding one, so the scheduled fifth meeting—our tenth anniversary—which will take place in Boston in the spring, 1998, promises to break all attendance records once again.

The transactions for each meeting have been published. Now, those for the third meeting hosted by the Greek National Center for Scientific Research "Demokritos" (NCRS), have been published by Archetype Press, London, as "The Study of Marble and Other Stones Used in Antiquity: ASMOSIA III—Athens, 1993", edited by Yannis Maniatis, Norman Herz, and Yannis Basiakos. The book contains 36 papers, a total of 302 pages. Unfortunately, due to a printer's glitch, it is being recalled and reprinted, correcting a defective greek font, and will be ready for international distribution in February. The University of Pennsylvania Press will be the distributor for North America while Archetype will distribute the book in Europe. Another distributor in Japan will handle demands in Asia so that an efficient world-wide distribution network will be assured.

It is interesting to note how the themes of papers presented at each of the ASMOSIA conferences have changed. In each of the first three, half of the papers were mostly archaeological—quarry techniques and descriptions, and trade and usage, and half were more archaeometric. In the first meeting, all but 2 papers were about classical marble, dealing with granite, but in ASMOSIA III, seven papers were given on New World stones, flint, sandstone, and obsidian as well as granite. A new analytical method, cathodoluminescence, appeared at ASMOSIA II and III and an old one, atomic absorption spectroscopy, represented by 4 papers at ASMOSIA I disappeared in II and III.

ASMOSIA IV took place at the Maison de l'Archéologie, Université de Bordeaux 3, hosted by the Centre de Recherche en Physique Appliquée à l'Archéologie, October 9-13, 1995 with field trips to the famous paleolithic caves of Perigord. This meeting continued the tradition of geometric growth for ASMOSIA with 79 papers presented orally or by poster, about double the number presented at ASMOSIA III. A host of primarily archaeological papers dealing with sites and museum collections were presented, again about equal to those on methods. Discussed were museum and archaeological site collections in both the old and new worlds. Ten papers on the effects of weathering on our stone heritage indicated the increased attention to the destructive effects of the environment.

At the meeting, the following officers were elected or re-elected: president—Norman Herz, Athens, Georgia, executive council—Susan Kane, Oberlin; Lorenzo Lazzarini, Venice; Yannis Maniatis, Athens; D. S. Peacock, Southhampton; and Max Schwoerer, Bordeaux.

From ASMOSIA headquarters, we wish you a healthy and prosperous 1996.

Norman Herz

Editorial

WHITHER ASMOSIA?

Comments on ASMOSIA IV by David Peacock, Executive Council member

The dust has hardly settled on the ASMOSIA IV conference and it may seem premature, if not invidious, to start critically evaluating the direction in which our organisation is moving. However, let it be said at the outset that the Bordeaux conference was a brilliant success. As Norman Herz said in his vote of thanks, the best attended and the best yet. Congratulations to the organisers for a splendid occasion in which we did not even notice a national public-sector strike taking place around us.

I was unable to get to ASMOSIA II and III and thus it is interesting to compare Bordeaux with the first conference at Il Ciocco in 1988. There is no doubt that both share many points in common: the happy mix of scientists, art historians, field-workers, museum staff and so on. No doubt the proceedings, when published, will again reflect the broad base of our organisation. So what, if anything, is wrong?

Looking back to the halcyon days of Il Ciocco, I think I can detect a distinct shift of emphasis and the beginning of a rift between the scientific and art historical wings. After my first experience I had always thought of ASMOSIA as a rare example of true collaboration between the two sides and said so in a recent review (*Journal of Roman Archaeology*, 7 (1994) 361). Marc Waelkens gently upbraided me in Newsletter 8.1 and I begin to think that he was right to do so. I found the scientific contributions interesting and informative, but then it is an open secret that although I now teach archaeology I trained as a geologist and have consequently always seen myself as a bridge builder. There is no doubt that those with a background in other disciplines may have found the going considerably harder. No names! No pack drill! - but surely ASMOSIA is not the place to debate the details of method

development. The result can only be a divided Society, with the development of "in-groups" who talk only to one another. This is not to say that there is no place for announcing new approaches or for progress reports, but surely such papers or posters should be framed in general terms, with a clear statement of what they might (or might not) do for archaeology. If Archaeological Science is not archaeology, it is nothing. All too often, like politics, Archaeological Science is the art of the possible, and shining white hopes for the future fall apart with further evaluation or are never systematically applied.

My great fear is that what seemed in 1988 to be a wonderfully fruitful collaboration, is going the way of the ARCHAEOMETRY meetings. I am not saying that the latter are not useful, but simply that they have changed radically from their original ideal. They were started by the Oxford Lab. as a way of explaining new approaches to archaeologists, but gradually their emphasis changed and they are now essentially a forum for specialised debate amongst scientists. Attendance has blossomed, but alas there few archaeologists who still make a point of going. There are even those who think that 'archaeometry' has lost track with the main stream of archaeological thinking, a view eloquently expressed by Julian Thomas (*Archaeological Review from Cambridge* 10 (1991), 27). It is just such a split between archaeology and science that I think I can see beginning in ASMOSIA. Surely we do not need a lithic archaeometry meeting, but on the other hand I believe an understanding of material to be fundamental in archaeological evaluation of lithic artifacts.

For me the whole spirit of ASMOSIA was summed up in the poster presented by Patrizio Pensabene and his collaborators (Lazzarini, Semaro, Soligo and Turi). He had made a study of an area of Ostia, thought to be a marble importer's stockyard. It was generally presumed that the columns were Proconnesian, but stable isotope analysis revealed two groups, one Proconnesian, the other Thasian. Returning to the archaeology, it was apparent that the scientifically established groups corresponded with

different heaps of columns providing confirmation of the validity of the scientific findings. There were one or two isotopic anomalies suggesting that a third, as yet unidentified source might be involved. It is possible that the missing quarries could be the rather similar rock discovered by Hans Goette's careful mapping of the tracks on the Pentelic mountain, also reported at the meeting. My point is that the different facets of our study should feed off one another and this is something we are in grave danger of losing.

So, I think we are at a turning point. What are we to do?

Co-Editor's Report

Thank you all for sending notices of your articles and publications to us for inclusion in this newsletter. As you can see, our members have been active this year. Many of you expressed interest in having an updated membership list with e-mail addresses. Mine is listed on page 2—please send me yours so that I can include them on the membership list to go out in the next newsletter.

Also, please look at ASMOSIA's fledgling www site at the following URL:

<http://www.oberlin.edu/~scarrier/ASMOSIA/Intro.html>

Cross-references to your laboratory or personal home-pages are welcome. Please send me materials suitable for inclusion on the www site.

Special News

Professor Norman Herz of the Department of Geology, University of Georgia, was presented the fifteenth annual Pomerance Award for Scientific Contributions To Archaeology of the Archaeological Institute of America for his work in light stable isotopes. The award was given during the Awards Ceremony at



Norman Herz accepting the Pomerance Award.

the Archaeological Institute's 97th Annual Meeting at the San Diego Marriott and Marina, San Diego, California, on December 29, 1995. The award is given annually and recognizes the interdisciplinary assistance of scientists to the advancement of archaeological research. The Archaeological Institute's First Vice-President, Professor Nancy Wilkie of Carleton College, presented the award. The citation reads as follows:

Norman Herz has made a great contribution to archaeological science through his studies of the ratios of light stable isotopes (particularly those of carbon and oxygen) in marble and limestone quarries of the Mediterranean. This technique has proven to be an invaluable aid to studies of the authenticity and provenance of classical statuary and architecture carved from these rocks. Herz's generosity and activism have brought together scholars from many disciplines and so enriched their research and all archaeology.

The ratios of the oxygen and carbon isotopes are fixed in limestone at formation. Isotopic ratios are less variable across a quarry field than is chemical composition, and hence are a more reliable indicator of source. Intensive sampling of quarries by Herz and others has shown some overlap of isotope ratios, so other techniques such as optical petrography and cathodoluminescence must often be employed to distinguish reliably between sources. But stable isotope ratio analysis remains the technique of first resort because it is inexpensive and causes the least damage to art objects. When Norm

resort because it is inexpensive and causes the least damage to art objects. When Norm Herz first began these studies, he needed a sample equal to a pencil lead; now he needs only a volume equivalent to the pencil point.

Isotopic analysis has resolved some knotty archaeological problems. One puzzle has been how the sloping galleries on Paros could have produced all the sculpture putatively identified as Parian around the Mediterranean. Recently, other large opencast quarries with a distinct isotopic signature ("Paros-2") have been correlated with many of these samples, as for example the marble blocks at Ostia inscribed with mid-second century dates. Paros-2 is evidently the source for much of the Parian marble used in the High Empire: problem solved.

Norm Herz has carried out many analyses for field projects and museums. He proved the Antonia Minor portrait in the Fogg Art Museum to be a pastiche of unrelated Parian and Carrara statues. A Livia head in the Ny Carlsberg Glyptotek had an original Parian head but skullcap of Ephesian marble; capless, Livia became Agrippina the Elder. The unique Jonah statuettes in the Cleveland Museum of Art are of Dokimeion white marble, which gives an archaeological basis for the observed stylistic kinship with Dokimeion sarcophagi. Recently Norm has studied the Getty kouros, with results well known to many here.

Herz's interest in archaeology began early in his career. One paper, coauthored with the young Colin Renfrew, attacked visual identification of Aegean marbles and drew a heated response from Bernard Ashmole. In the early 1970s Norm began work on stable isotopes, and in 1984 he established the Center for Archaeological Sciences at the University of Georgia. Norm's data base of quarry samples is the largest compiled, but its influence outpaces its size because he shares it freely.

In 1988 Norm organized a conference that attracted geologists, chemists and physicists, museum curators and conservators, historians, art historians, and archaeologists. Here was born ASMOSIA (Association for the Study of Marble and

Other Stones in Antiquity), with subsequent meetings held at Louvain (Belgium) in 1990, Athens (1993), and Bordeaux (1995). The publications are now central to marble studies, and between meetings Norm keeps the information flowing with a witty newsletter. Thus, Norm's influence extends far beyond his own research. For this record of individual accomplishment, service, and inspiration to others, the AIA is proud to confer the Pomerance Award for Scientific Contributions to Archaeology upon Norman Herz.

Laboratory Report

Extracted from the British Museum Department of Scientific Research, Activities 1993-94, covering July '93 to Dec '94 under Stones, Gems, Minerals: A number of projects have been carried out on the characterization of mineral and stone materials using microscopical and XRD, including: Museum's collection of 2500 Mesopotamian cylinder seals (now completed); Islamic Seals; Mexican turquoise mosaics; Oriental and Mexican jades; Mexican sculptural pigments; Medieval gritstones from the Isle of Man; Iron Age beads from Central Europe, tentatively identified as the mineral evansite. In addition, a program of analysis of Mesopotamian lapidary techniques has been initiated using the SEM. Stable isotope analysis has been applied to Roman marble sarcophagi to determine the source of the marble.

New Publications

Books

Marcello Barbanera, 1995, *Il guerriero di Agrigento*, *Studia Archaeologica* 77, Bretschneider, 128 pp., Lit 150,000.

Giorgio Blanco, 1994, *Pavimentazioni in Pietra*, *Opus Libri*, Firenze, 199 pp., Lit. 72,000.

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- Charlotte Beck, ed., 1994, *Dating in Exposed and Surface Contexts*, University of New Mexico Press, Albuquerque, NM, 239 pp.
- J. Cabanot, R. Sablayrolles & J.-L. Schenck, eds., *Les Marbres Blancs des Pyrénées*, 1995, *Entretiens d'Archéologie et d'Histoire*, Saint-Bertrand-de-Comminges 2, Actes de la table ronde qui s'est tenue à St.-Bertrand-de-Comminges, 14-16 octobre 1993, Musée Archéologique Départemental, 31510 Saint-Bertrand-de-Comminges, 320 pp., 250FF
- Oliver Dickenson, 1994, *The Aegean Bronze Age*, Cambridge University Press, 342 pp., \$64.95.
- Peter M. Fischer, ed., 1993, *Archaeology and Natural Science*, Proceedings Symposium "Modern Tools in Archaeometry", May 23-25, 1991, Göteborg, Sweden, Paul Åströms Forlag, Göteborg.
- M. A. V. Hernandez, E. M. Ballesteros and V. R. Arnau, eds., 1993, *Alteracion de Granitos y Rocas Afines, Empleados como Materiales de Construcción*, Proceedings Workshop, Avila, 1991. Opus Libri, Firenze.
- W. E. Krumbein, P. Brimblecombe, D. E. Cosgrove and S. Staniforth, eds., 1994, *Durability and Change: The Science, Responsibility and cost of Sustaining Cultural Heritage*, Report of the Dahlem Workshop, Dec. 6-11, 1992, Berlin. John Wiley, New York, 307 pp.
- Roberta Belli Pasqua, 1995, *Sculture di età romana in basalto*, Xenia Antiqua - Monografie 2, Bretschneider, 166 pp., Lit200,000.
- Vincenzo Tusa, (1957) 1995, *Sarcofagi romani in Sicilia*, Bibliotheca Archaeologica 14, Bretschneider, 120 pp., Lit 275,000 (new edition).
- Articles**
- Jean-Claude Bessac, 1993, *Pierres taillées à Ampurias: technologie, typologie, chronologie*. Documents d'Archéologie Méridionale 16, pp. 295-315.
- Study of materials and technologies in a Greco-Iberian habitate, 6 C.BC to early Roman empire.
- Jean-Claude Bessac, 1995, *Questions esthétiques, économiques et techniques dans les constructions hellénistiques de Gaule méditerranéenne*, in *Sur les pas des Grecs en Occident*, Collection Etudes Massaliètes 4, 393-401.
- S. Bruni, F. Cariati, C. L. Bianchi, E. Zanardini and C. Sorlini, 1995, *A pilot study of red stains affecting the Carrara marble façade of the Certosa of Pavia*, *Archaeometry* 37, 249-255. An inorganic pigment, Pb_3O_4 is responsible, not bacteria.
- V. Contardi, E. Franceschi, D. Palazzi and E. Pedemonte, 1994, *Studies on Environmental deterioration in slate manufactured articles of the old historical centre of Genoa. Some investigations on polymeric materials shielding*, *Science & Technology for Cultural Heritage* 3, 149-154.
- R. U. Cooke, R. J. Inkpen and G. F. S. Wiggs, 1995, *Using gravestones to assess changing rates of weathering in the U. K.*, *Earth Surface Processes and Landforms* 20, 531-546.
- M. C. Dalbissin, Y. Yokoyama and J. C. Massot, 1994, *Effect of experimental deformation on ESR-spectrum of Carrara marble - application to tectonized marbles*, *C. R. Academie des Sciences, Serie II*, v. 318, 405-410 (in French).
- Massimiliano David, 1994, *"Lapis viridis comensis": la pietra del bacino di Chiavenna*, in *Ceramica Romana e archaeometria: lo stato degli studi*, Gloria Olcese ed, Edizione all'insegna del Giglio, Firenze, pp. 175-178.
- Massimiliano David, 1995, *Mille genera marmorum*, in *L'antica via Regina*, Società Archaeologica Comense, Como Italy, pp. 321-341.
- M. Franzini, 1995, *Stones in Monuments - natural and anthropogenic deterioration of*

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marble artifacts, *European Journal of Mineralogy* 7, 735-743.

F. Guidobaldi and A. M. Mecchi, 1993, Corrosion of ancient marble monuments by rain: evaluation of pre-industrial recession rates by laboratory simulations. *Atmospheric Environment* 27B, 339-351.

J. A. Harrell and T. M. Brown, 1995, An Old Kingdom Basalt Quarry at Widan el-Faras and the Quarry Road to Lake Moeris. *Journal of the American Research Center in Egypt*, 23, 71-91.

S. C. Hess, 1996, Chert provenance analysis at the Mack Canyon Site, Sherman County, Oregon: an evaluative study. *Geoarchaeology* 11, 51-81.

L. Lazzarini, 1995, Il Marmo Chio detto di Portasanta, *in* *Restauro in Piazza: La Fontana di Piazza Colonna*, Roma, 75-81.

S. Lorenzoni and E. Z. Lorenzoni, 1994, A geo-archaeological study of the buddhist Gandharan remains in the Lower Swat Valley (NW Frontier Province-Pakistan), *Science & Technology for Cultural Heritage* 3, 35-48.

A. Mandelis, K. McAllister, C. Christofides and C. Xenohontos, 1995, A pilot study in non-contact laser photothermal archaeometry of ancient statuary pedestal stones from Cyprus, *Archaeometry* 37, 257-270.

M. Mayer, 1992, Los programas decorativos lapideos de algunas ciudades del Africa Romana y la circulacion de algunos materiales africanos, *in* *L'Africa Romana*, X convegno di studio Oristano, 11-13 Dec 1992.

Vincenzo di Michele and Adrea Zelioli, 1995, Le Cave di Olgiasca, *in* *L'antica via Regina*, Società Archaeologica Comense, Como Italy, pp. 342-346.

Theodore Skoulikidis, 1995, The application and the limits of the intensification of the conditions by artificial weathering of stones, *in* *Methods of Evaluating Products for the Conservation of Porous Building Materials in Monuments*, ICCROM, Rome, 461-473.

M. Realini, R. Negrotti, L. Appollonia and D. Vaudan, 1995, Deposition of particulate matter on stone surfaces - an experimental verification of its effects on Carrara marble, *Science of the Total Environment* 167, 67-72.

J. S. Soles, S. R. Taylor, C. J. Vitaliano, 1995, Tephra samples from Mochlos and their chronological implications for neopalatial Crete, *Archaeometry* 55, 385-393.

Stefano Tagliabue, 1995, Le Cave mi Musso, *in* *L'antica via Regina*, Società Archaeologica Comense, Como Italy, pp. 347-361.

K. Ulens, L. Moens, R. Dam and P. Depaepe, 1994, Study of the patina of ancient marble sculptures by stable isotope analysis, *Science of the Total Environment* 158, 63-69.

K. Ulens, L. Moens, R. Dam, S. Vanwinckel and L. Vandeveld, 1994, Study of element distributions in weathered marble crusts using laser ablation inductively coupled plasma mass spectrometry, *Journal of Analytical Atomic Spectrometry* 11, 1243-1248.

O. Williams-Thorpe, 1995, Obsidian in the Mediteranean and the Near East: a provenancing success story, *Archaeometry* 37, 217-248.

B. M. Winsborough, S. C. Caran, F. R. Sorensen & S. Valastron, Jr., 1996, Calcified microbial mates date prehistoric canals - radiocarbon assay of organic extracts from travertine, *Geoarchaeology* 11, 37-50.

Communications

The Society for Geology Applied to Mineral Deposits, Society for Luminescence Microscopy & Spectroscopy, Société Française de Mineralogie et de Cristallographie in cooperation with the Institut Lorrain des Geosciences announce an International Conference on Cathodoluminescence and Related Techniques in Geosciences and Geomaterials to take place in Nancy, France, 2-4

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September, 1996. The meeting will focus on the imaging and spectrometric aspects of cathodoluminescence and its applications. Participants are invited to compare their instrumentation and results and to express their efforts to promote this science. Invited lectures include applications of CL to geosciences, archaeology and ceramics. Registration for non members of the sponsoring societies 1000FF, members 800FF. Deadlines are: a two page abstract 30 April, Final registration 15 June. Correspondance addressed to : International Conference on Cathodoluminescence, Dr. Maurice Pagel, CREGU, BP 23, 54501 Vandoeuvre lès Nancy Cedex France. Tel. 33 83 44 1900, fax 44 0029, e-mail pagel@cregu.cnrs-nancy.fr.

The third Symposium of the Greek Society for Archaeometry (G.S.A.) will take place in Athens, Greece on 6-9 November 1996, under the aegis of the Greek Ministry of Culture. Main topics of the Scientific Program are: Dating of organic and inorganic materials, Artifact provenance studies, Ancient technology, Organic residues studies, Mathematical and statistical models, Prospection and Geoarchaeology. The Symposium schedule will include a specific theme session focused on "Technology and Trade of Lithic Material and Metals in the Eastern Mediterranean during Prehistory." Official languages of the Symposium will be Greek and English. Those interested in attending the Symposium should contact the organisers no later than 15 March 1996. Correspondance addressed to: 3rd Symposium on Archaeometry of the G.S.A., Dr. Eleni Aloupi, THETIS HELLAS Ltd., 41 M. Moussourou str., 116 36 Athens, Greece. Tel: 301-752-3029 Fax: 301-752-3030 e-mail: thetis@netor.gr.

PACT, the European Network for Sciences and Techniques applied to Cultural Heritage and the St. Petersburg State University council "People of Russia: revival and development" held an International Conference 27-30 Nov 1994, on the Application of Natural Science Methods in Archaeology. More than 150 abstracts and the proceedings of the conference will be published in a special issue of the Pact Journal. Contact Dr. Tatyana N. Smekalova,

Physical Institute, St. Petersburg State University, 198904 St. Petersburg, Petrodvorets, Russia. tel 7-812-428-7289, fax -7240; e-mail smek@niif.spb.su

The International Association of Engineering Geology will hold an International Symposium on Engineering Geology and the Environment, 23-27 June, 1997, organized by the Greek National Group of IAEG, Prof. Paul Marinos chairman. Meeting will be followed by excursions to archaeological and historical sites. Themes of the meeting will include protection of historical and architectural heritage. Information from Hellenic Committee of Engineering Geology, Athens 1997 Symposium Secretariat, P.O. Box 19140, GR-117 10 Athens, Greece; fax 30-1-3813900, -9242570; tel. 30-1-3813900, -3804375, -9225835. Circular also available from N. Herz. Video films available from the Comité Départemental de la Culture, 5 rue Raymond Marc, 30000 Nîmes, France, in SECAM, or PAL if needed: Les derniers carriers méditerranéens, 60FF, 13' L'exploitation antique de la pierre, 70FF, 17' + shipping 20FF.

The *Journal of Minerals, Metals, and Materials* has introduced a new section on archaeotechnology, replacing a previous section focusing only on archaeometallurgy. The objective of the Archaeotechnology section is to introduce materials scientists to the scientific analysis of archaeological materials. All articles must provide thorough grounding of the archaeological background of the research and then discuss the materials aspects. JOM has three distinct advantages over other venues. The articles are short (2400-4800 words), distributed to a very large community (circulation of over 3000), and printed in a matter of months. JOM is an excellent venue for the publication of new ideas or approaches to the analysis of archaeological materials. Submissions should be sent to: James J. Robinson, JOM, 420 Commonwealth Drive, Warrendale, PA 15086 U.S.A. Or contact: Robert M. Ehrenreich, National Research Council, 2102 Constitution Avenue NW, Washington, D.C. 20418 e-mail: rehrenre@nas.edu

"Monument and Environment" is a new journal published annually. Two volumes (1993, 1994) have appeared and the third is in preparation. Information from P. Spathis, Asst. Editor, Karakassi 27, GR-54248 Thessaloniki, Greece.

Calendar

(* = new items or information)

1996

*March 25-27. *24th Annual Meeting of Computer Applications and Quantitative Methods in Archaeology*, Bucharest, Iasi, Romania. Contact: Virgil Mihailescu-Biurliba, Institutul de Arheologie, Str. Lascar Catargiu 18, 6600 Iasi, Romania. fax: 32-211-150 e-mail: vmb@uaic.ro

*April 18-20. *International Conference on the Romanization of Athens*, Lincoln, Nebraska, USA. Program information Prof. Michael C. Hoff, mhoff@unlinfo.unl.edu or Prof. Susan Rotroff, srotroff@artsci.wustl.edu.

*April 22-26. *Materials Research Society*, Spring Meeting, San Francisco. Contact MRS, 9800 McKnight Road, Pittsburgh, PA 15237, fax 412-367-4373, tel. 412-367-3003.

April 25. *Geology & Geochemistry in Archaeology*. Information from Olwen Williams-Thorpe, Dept of Earth Sciences, Open University, Milton Keynes, MK7 5AA, UK; tel 01908-655147, fax 01908-655151; e-mail O.Williams-Thorpe@open.ac.uk

May 20-24. *1996 International Symposium on Archaeometry*, Urbana, Illinois, US. Contact Sarah Wisseman, ATAM Program, University of Illinois, 116 Observatory, 901 S. Mathews, Urbana, IL 61801, USA. tel: 217-333-6629, fax: 217-244-0466, e-mail: wisarc@ux1.cso.uiuc.edu. Information newsletter June '95

May 28-Jun 1. *13th International Bronze Congress*, Cambridge, MA USA. Information at Harvard University Art Museums, 32 Quincy Street, Cambridge, MA 02138 U.S.A.; tel. 617-495-3393, fax -617-495-9936.

June 23-25. *1st European Meeting on Phytoliths Research*. Madrid, Spain. Contact: Jordi Juan-Tresserras, SERP/Universidad de Barcelona, Facultad Geografia e Historia, Baldiri i Reixac s/n, E-08028 Barcelona, Spain. fax: 343-564-0800 e-mail: juan@trivium.gh.ub.es

Aug 4-14. *30th International Geological Congress*, Beijing. Contact Secretariat, 30th International Geological Congress, PO Box 823, Beijing 100037, P.R. China. Tel. 86 1 8327772, fax 86 1 8328928.

Aug 25-30. *International Institute for Conservation of Historic and Artistic Works*, 16th Int. Congress. IIC, Buckingham Street, London, WC2N 6BA, UK. tel. 171 839 5975, fax 171 976 1564.

*Sep. 2-4. *International Conference on Cathodoluminescence and Related Techniques in Geosciences & Geomaterials*. Contact International Conference on Cathodoluminescence, Dr. Maurice Pagel, CREGU, BP 23, 54501 Vandoeuvre lès Nancy Cedex France. Tel. 33 83 44 1900, fax 44 0029, e-mail pagel@cregu.cnrs-nancy.fr. Information in this Newsletter.

Sep 8-14. *XIII Congress International Union of Prehistoric and Protohistoric Sciences*, Forli, Italy. Contact Secretariat of the Congress, Casa Saffi, via S. Marchesi 12, 47100 Forli, Italy. tel. 39 543.35725, fax 39 543.35805.

*Oct. 28-31. *Geological Society of America*, Annual meeting, Denver. Contact Vanessa George, GSA 3300 Penrose Place, Boulder, CO 80301, tel. 303-447-2020, fax -1133.

*Nov 06-09. *Third Symposium on Archaeometry*, Athens, Greece. Contact Eleni Aloupi, 41 M. Moussourou St., 116 36 Athens, Greece. fax: 301-752-3030 e-mail: thetis@netor.gr.

*Dec 27-30. *98th Annual Meeting of the Archaeological Institute of America*, New York City. Abstract deadline 22 March. Contact Shelley Griffin, AIA, 656 Beacon Street, Boston, MA 02215. fax: 617-353-6550 e-mail: aia@bu.edu

1997

*June 23-27. *Engineering Geology and the Environment*, Athens. International Symposium sponsored by the International Association of Engineering Geology. Information in this newsletter.

New Members

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