Annual Meeting of the SAS

As is the SAS custom, during the years that the International Archaeometry Meeting convenes in the Western Hemisphere, the SAS will hold only a business meeting. The tenth annual SAS business meeting will take place on Thursday April 28 at 5:00 PM in the Pima Room of the Sheraton Phoenix Hotel in Phoenix, Arizona. The annual Executive Board meeting is set for the Pima Room at 12:00 noon the same day.

Items on the agenda for both meetings include a request from the Society of Professional Archaeologists for SAS representation on their Board, a report of the work of the Coalition for Applied Preservation Technology (CAPT) toward the establishment of a National Center for Preservation Technology, and a report on work to develop a new publication series in Archaeometry and Archaeological Sciences to be undertaken by a major American publisher with the SAS as the sponsoring professional organization. Other matters of interest include the appointment of chairs to head standing committees, the beginning of a membership drive, and an announcement of the results of the 1988 election.

R. E. Taylor, SAS General Secretary

Workshops

Taos Workshops on Archaeobotany and Zooarchaeology

Southern Methodist University announces a one-week workshop in Archaeobotany to be held at its Fort Burgwin Research Center near Taos, New Mexico, from June 5-11, 1988. The course may be taken for two hours credit, or as a non-credit course.

The workshop will focus upon honing participants' skills and perceptions of those aspects of the archaeo- logical plant record that ultimately reflect in interpretations. Participants will be directly involved in processing modern seeds and in the floating, sorting, classifying, and interpretation of archaeological plant remains. The workshop will develop understanding of the potential movement of plant material within a culture until it becomes incorporated into an archaeological site. Insights into post-depositional factors destined to affect interpretations will be developed, including rodent disturbance and differential preservation. Participants will be involved in recognizing methodological biases in retrieving plant material.

Dr. Vorsila Bohrer will conduct the workshop. Dr. Bohrer is a widely-recognized scholar with years of experience in the Southwest. She is particularly knowledgeable about the archaeobotany of the Anasazi and Hohokam areas, and has conducted research at Salmon Ruin, Snaketown, and La Ciudad. She is currently Director of Southwest Ethnobotanical Enterprises.

The archaeobotany workshop is limited to fifteen participants. It is open to graduate and undergraduate students, faculty, and post-doctoral staff.

There will also be a one-week workshop on zooarchaeology to be held at its Fort Burgwin Research Center near Taos, New Mexico from July 31-August 6. It may be taken for two hours credit, or as a non-credit course.

The course will provide intensive instruction in modern techniques of faunal analysis. Participants will receive lectures on zooarchaeological method and theory, key osteological characteristics for identifying vertebrate remains in North America (particularly fragmentary remains), and interpreting ecological conditions present in the past on the basis of faunal remains. Laboratory sessions will provide information on methods for careful recovery of fauna, and techniques for preparing comparative modern specimens.

Professor Stanley Olsen will conduct the workshop. Professor Olsen is an internationally-recognized expert in zooarchaeology and a Professor of Anthropology at the University of Arizona. He has worked extensively in the Southwestern United States, China, and in the Soviet Union.

The zooarchaeology workshop is limited to fifteen participants. It is open to graduate and undergraduate students, faculty, and post-doctoral staff.

Tuition/fees: $300.00
Room and board $224.0
For more information and application materials:
Dr. Patricia Crown
Department of Anthropology, Southern Methodist University
Dallas, TX 75275
(214)692-3236
The Amber Research Laboratory (ARL) at Vassar College is the only archaeometric installation in an undergraduate liberal arts college, and the only such laboratory devoted exclusively to organic archaeometry. It was established in 1963 around the research interests of its organizer and director, Dr. Curt W. Beck, Professor of Chemistry on the Matthew Vassar Jr. Chair. Since then, work done by 68 students (all but 4 of them undergraduates) on fossil resins ("amber"), and on more geologically recent resins from archaeological contexts, has been reported in 78 publications. About half of the projects are generated within the ARL, with a principal focus on the systematic study and provenience analysis of the archaeological amber artifacts of prehistoric Europe. The other half is service work, dealing with fossil resins and an increasingly wide variety of other organic remains that are sent to the ARL by archaeologists from around the world. A typical example is the fragment of a ring bead from the excavation of ninth century B.C. strata at Tepe Marlik (Iran), sent to the ARL by Japanese archaeomicroscopist Teruko Muroga, identified there as Baltic amber from northern Europe, and published by Beck and Muroga in Japan.

Because of its setting in an undergraduate institution, the ARL is structured as a teaching as well as a research laboratory. It is physically and organizationally integrated with the Department of Chemistry. Its identifiable facilities, an office, a laboratory, and an instrument room, are located in Vassar's Mudd Chemistry Building. As such, it draws on the full range of resources offered by this state-of-the-art 7.1 million dollar, 32,000 square foot structure, constructed in large part through the contributions of the Seeley G. Mudd Fund. The operation of the ARL depends heavily on Vassar College, which provides not only space and utilities, but also clerical support, library facilities, computer access, routine laboratory supplies, small grants for special equipment and travel, and, above all, student assistants. External support has been provided by research grants awarded by public and private foundations. Recent support by the National Science Foundation has been notable, but funding has also been forthcoming from the governments of the Federal Republic of Germany and of Hungary. Over the years, 17 such grants have made it possible to adhere to the ARL policy of carrying out service analyses without charge. Except for the director, all of the ARL staff are Vassar students. Some of these have written their Bachelor's theses (or, in a few cases, Master's theses) on ARL projects. Others work for academic credit in Undergraduate Research or Advanced Laboratory courses. Still others have been salaried student assistants paid either by the college or from ARL research grants.

The workhorse of the ARL research program has been the infrared spectrophotometer. Early dispersion instruments, both prism and diffraction type, were provided by gifts from the DuPont Company and by Vassar College. The current Perkin-Elmer Model 1750 Fourier-Transform Infrared (FTIR) spectrophotometer and its associated Perkin-Elmer Model 7300 Laboratory Computer was acquired with the help of a RUI (Research in Undergraduate Institutions) Equipment Grant from the NSF Division of Anthropology in 1984. Among major instruments in the Department of Chemistry used in ARL work are gas chromatography, including a gas chromatography/mass spectrometry system, and 1H and 13C nuclear magnetic resonance spectrometer. The ARL also relies heavily on departmental and college computer facilities.

As the name still indicates, the initial impetus of the ARL was the search for a valid provenience analysis for archaeological amber artifacts. The problem was one of long standing: in 1875, when Heinrich Schillemann found thousands of amber beads in the shaft graves of Mycenae, he knew that amber-like fossil resins occur in virtually every European country and wrote, with quite uncharacteristic pessimism, "It will, of course, forever remain a secret to us whether this amber is derived from the coast of the Baltic Sea or from Italy". That is the sort of secret to intrigue scientists. An early attempt to unravel it was based on the quantitative determination of succinic acid released from amber by pyrolysis or hydrolysis. That work remains an important chapter in the history of archaeological chemistry, but it failed to solve the problem: amber from Italy, Portugal, France, and Rumania have been found to contain just as much succinic acid as does the Baltic amber or succinite of northern Europe. In addition, the analysis destroyed as much as a gram of material, a loss quite properly unacceptable to archaeologists.

The ARL there-
fore sought to find a method of provenience analysis that is as non-destructive as possible. Infrared spectroscopy, with a sample requirement of about a milligram, was found to meet that need. To avoid the fallacy of the excluded middle that is so troublesome in many archaeometric studies, fossil resins from all over the world were obtained from the mineralogical departments of major museums. Samples were obtained from the Smithsonian Institution, the American Museum of Natural History, the British Museum, the Musée National d’Histoire Naturelle in Paris, the Hofmuseum in Vienna, the National Museum in Budapest, the Muzeum Zieml in Warsaw, and from many smaller municipal or university collections. As a result of these friendly raids, the ARL now has the world’s most extensive collection of fossil resins. The roughly 2,500 infrared spectra of these reference samples constitute the database against which the spectra of archaeological artifacts are matched, since 1970 by means of a computer program based on pattern recognition. This comprehensive approach showed that all of the hundreds of known varieties of European fossil resins, Baltic amber, and only Baltic amber, has a highly characteristic absorption pattern in the carbon-oxygen single-bond region. This spectral feature identifies even extensively deteriorated (weathered) finds of Baltic amber with certainty.

Infrared analysis has since been applied to about 4,000 archaeological amber objects that were excavated outside the area where Baltic amber occurs naturally. The majority of them have been identified as Baltic amber, and the mapping of these reliably sourced finds now makes it possible to reconstruct the pathways (amber routes) and the mechanisms of exchange (amber trade) by which this highly valued material found its way to the farthest corners of Europe. But the exceptions are as significant as the rule. Non-Baltic amber has been identified in Mycenaean Greece in the Vayenas tholos at Pylos, showing that local resin deposits were exploited at the same time that Baltic amber was imported from the north. Amber finds from the aeneolithic necropolis at Laterza in southeastern Italy are also of local origin, and more work needs to be done to pinpoint the terminus post quem of the importation of Baltic amber to the Italian peninsula. Paleolithic finds from the cave at Aurensan in the French Pyrenees that had been thought to be of Baltic amber since their excavation in 1913 have also been proven to be local, although Baltic amber has been identified at a Paleolithic hunters’ station on the Moosbuhl mountain in Switzerland. An ‘amber’ find from Eshnunna (Tell Asmar) in Iraq is in fact East African copal.

The provenience analysis of amber has proved to be useful in elucidating the commercial and the cultural contacts in prehistoric Europe. In recognition of that significance, in 1978 the Union Internationale des Sciences Préhistoriques et Protohistoriques established a new “Committee on the Study of Amber” under Beck’s direction. The committee, with members from Denmark, Sweden, England, Holland, Switzerland, Italy, Hungary, Czechoslovakia, and Poland, is charged with the task of producing a comprehensive inventory and analysis of prehistoric amber artifacts. The work is complete for Britain, Greece, and Hungary and is well under way for Italy, Czechoslovakia, Yugoslavia, Germany, Switzerland, Holland, and France. Most of the spectroscopic analyses have been done at the ARL, but the infrared provenience analysis developed there is applied to amber artifacts in archaeometric laboratories in Germany, Italy, Poland, Yugoslavia, Greece, and the Soviet Union.

While the focus of amber research at the ARL is on archaeology, the results have benefited other disciplines, as well. It soon became apparent that infrared spectra are useful in elucidating the botanical origin of fossil resins. The infrared spectra of Baltic amber showed as early as 1965 that the extinct and thus hypothetical Pinus succinifera, posited by palaeobotanists since the 1830’s as the source of Baltic amber in the Early Tertiary, has no structural affinities with modern European pines. The chemical structure of Baltic amber cannot have been derived from abietic acid, the principal resin acids of living pines, but is instead based on the labdane skeleton characteristic of pine-related genera like Araucariaceae which survive today in Southeast Asia. Subsequent work by John S. Mills and coworkers at the National Gallery in London has confirmed that view by demonstrating a close correspondence between the chemistry of Baltic amber and of kauri resin.

Infrared spectroscopy has also opened new avenues to the mineralogical classification of fossil resins which are not usefully distinguished by the criteria appropriate to inorganic materials, such as elemental composition, hardness, density, or refractive index. The fossil resin beckerite has been identified as an impure variety of succinite, pigotite from Cornwall as an amorphous mellite.
Cretaceous amber from New Jersey as a variety of sigburgite from the Rhinelanf. The archaeological, palaeobotanical, and mineralogical results of 25 years of amber research have been summarized in a review paper (C. W. Beck, "Spectroscopic Studies of Amber", Applied Spectroscopy Reviews 22:55-110, 1988).

Amber is not the only resinous material of interest to archaeologists. Plant resins and pitches prepared from them are widely found as the contents or as a lining of ceramic vessels, particularly in transport amphorae. Other uses of resins and resin-derived products include adhesives for hafting tools, caulks for baskets, barrels, and vats, and protective coatings on structural wood, especially in shipbuilding. An increasing portion of ARL work has been devoted to these geologically recent resins. Among recent studies have been the examination of resins on sherds from North Africa (Quseir al-qadim and Carthage) collected by Oriental Institute of the University of Chicago and in transport vessels from Mediterranean sunken ships (the Kyrenia and Kas wrecks) explored by the Institute of Nautical Archaeology at Texas A&M University. Unlike amber, these resins are not polymeric. They are soluble in organic solvents and, after volatilization by conversion to the methyl esters, their constituent resin acids can be separated by gas chromatography and identified by mass spectrometry. GC/MS analysis of samples recovered from the Hellenistic Kyrenia wreck shows striking differences in the composition of the pine pitches used for amphora lineings from those used for the preservation of the ship's hull. Since all samples have the same depositional history, more than two millennia in the anaerobic environment of the Mediterranean bottomland off Cyprus, these differences must reflect different techniques used in the manufacture of pitches for different purposes, and perhaps also differences in the species of pine from which the pitches were made. Current work at the ARL explores the relationship between composition and manufacturing techniques (i.e. differences in temperature and access of air in pitch-making) for a number of pine species known to have been available in the Eastern Mediterranean in antiquity.

Curt W. Beck, Director
Amber Research Laboratory
Vassar College
Poughkeepsie, NY 12601

Fig. 3. Beck and Hartnett at the ARL's Fourier-Transform Infrared Spectrophotometer. (Photo: Jonathan Murdock)

Miscellaneous Announcements

Soils Laboratory Services

Despite the tragic death of Professor Robert Eldt, the University of Wisconsin-Milwaukee State Soils Laboratory will continue its research-oriented activities focused on geoarchaeological topics. The Laboratory has analyzed anthrosols from all parts of North America, as well as Columbia, Argentina, the Bahamas, Bolivia, Peru, Germany, Spain, Iraq, Egypt, the Yemen Arab Republic, Israel, South Africa, India, and Japan. These investigations have facilitated the development of a large data bank for comparison of results, allowing a more complete interpretation. A wide range of analyses are available, including cation exchange capacity, water soluble nitrate, total carbonate, % organic matter, atomic absorption analysis for several elements, phosphate fractionation, and others.

For a current price list, contact Robert Brinkman, Laboratory Manager, UWM Geography Department Soils Laboratory, University of Wisconsin-Milwaukee, P.O. Box 413, Milwaukee, WI 53201.

Archaeomaterials

The new journal Archaeomaterials, reviewed in Volume 10, Number 2 of the SAS Newsletter, is entering its second year of publication. Edited by Tamara Stech, it is dedicated to the publication of studies on a broad range of preindustrial materials and processes. Topics include all ancient materials altered by human action—lithics, metals, plant and animal products, clay, etc.—and the ways in which they were manipulated.

Manuscripts are invited by the editor in the American Antiquity style. Submissions are refereed. Subscription rates are: $35/year for individuals, $45/year for institutions. The two issues of Volume I are still available at $50.

Contact: Tamara Stech, Department of Materials Science and Engineering, University of Pennsylvania, Philadelphia, PA 19104.
The *Journal of Metals* has begun publishing a monthly series on archaeometallurgy. It is coordinated by Dr. Vincent C. Pigott of MASCA, who is also author of the first feature, "The Thalland Archaeometallurgy Project", in the January 1988 issue. Dr. Tamara Steeh reports on the archaeometallurgy meeting in Heidelberg in the February issue, and Martha Goodway summarizes her paper on gongs (see Figure 1) in March. The *Journal of Metals* is published by the Metals Society of the A.I.M.E., 420 Commonwealth Drive, Warrendale PA 15086.

Professor James Mulhy of the University of Pennsylvania is spending this academic year in Cyprus examining 6000 trays of tuyeres, crucibles, slags, and other metallurgical materials in the Nicostia Museum.

The 2nd International Conference on Nondestructive Testing: Microanalytical Methods and Environmental Evaluation for Study and Conservation of Works of Art is scheduled for April 17-20 in Perugia, Italy. The working languages are English, French and Italian, and the registration fee is 180.00 Italian lire. For more information write Giuseppe Nardoni, Associazione Italiana Prove Non Distruttive, via Foresti 5, 25126 Brescia, Italy.


The Ironbridge Institute is sponsoring the Ironbridge Training Excavation in Industrial Archaeology September 19-30 at a site in the Ironbridge Gorge, as part of its program of short courses. For a course brochure or a list of the short courses, write the Ironbridge Institute, Ironbridge Gorge Museum, Ironbridge, Telford, Shropshire TF8 7AW England.

An International Colloquium on Archaeometallurgy will be held October 18-21 in Bologna, at the University and the Castle of Dozza Imolese, as part of the University's Ninth Centenary celebration. Session chairmen include Professor Ronald Tylecote, Dr. Gehard Sperl, Professor Robert Maddin, and W. Andrew Oddy. Several excursions are planned. Registration forms can be obtained from the Segreteria "International Colloquium on Archaeometallurgy", Centro per lo Studio e la Conservazione di Manufatti di Interesse Archeologico e Artistico, Facolta di Chimica Industriale, Viale Risorgimento 4, I-40136 Bologna BO, Italy.

The Department of Conservation of the British Museum is planning a conference on Former Methods of Conservation and Restoration in November, 1988, with a publication to follow. Address inquiries to Mrs. H. Lane, Department of Conservation, British Museum, Great Russell Street, London WC1B 3DG England.

A beautifully illustrated book on the traditional Swedish iron industry, *Forsmark och Vallonjarriet*, was published in 1987 in Swedish by Forsmark Kraftgrupp AB, with contributions by Artur Attman, K.C. Barraclough, Bo Molland.

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**Fig. 1. Microstructure at 500x of the massive transformation in 2.3% tin bronze gong sample collected by Professor Harold C. Conklin of Yale as part of his study of the Ifugao. See Goodway and Conklin, "Quenched High-tin bronzes in the Philippines," Archeomaterials 2, (1987) 1-27, for first publication of the occurrence of the massive transformation in tin bronze.**


ogy such as early mines, furnaces and casting techniques introduce other sections on corrosion, examination and documentation, conservation and replication.

The results of the Smithsonian's harpsichord wire project have appeared as the second volume of The Historical Harpsichord, a monograph series in honor of Frank Hubbard, and several subsequent papers. The book, The Metallurgy of 17th and 18th Century Music Wire by Martha Goodway and Jay Scott Odell was published in 1987 by Pendragon Press (RR#1, Box 159, Stuyvesant NY 12173-9720, ISBN 0-918728-54-1, $32.00). The papers include "Phosphorus in Antique Iron Wire" published in Science May 22, 1987, and "Phosphorus in low-carbon iron: its beneficial properties", to be published in the next issue of Historical Metallurgy.

If you have any archaeometallurgical news to contribute, please call Martha Goodway at (202) 287-3733, or write her at CAL MSC, Smithsonian Institution, Washington DC 20560.

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**Position Available**

**Thermoluminescence Dating Laboratory**

The UNIVERSITY OF WASHINGTON seeks a research associate for a 2-3 year appointment in its thermoluminescence dating facility, operated jointly by the Departments of Materials Science and Engineering and Anthropology. Duties of this research associate will include conducting research in TL dating techniques, managing the overall operation of the laboratory, and supervising graduate students, along with occasional teaching. Principal research objectives include technique development in signal characterization and discrimination, autoregressive zircon inclusion dating, bone and shell dating and optically stimulated luminescence. The starting date for this appointment has not yet been determined but is expected to be between July 1988 and January 1989. The appointment is contingent upon renewal of current National Science Foundation funding; the appointee is expected to develop additional outside funding by the second year of appointment. Candidates should have a Ph.D. and a minimum of 2 years' experience in TL dating. Interested parties should address a current resume and statement of interest to: Drs. R. C. Dunnell and T. G. Stoebe, FB-10, University of Washington, Seattle, WA 98195.

An affirmative action/equal opportunity employer.

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**International Congress**

**Sixth Meeting, Working Group 1, "Unspecialized Bone Industries"**

and

**International Congress: "Early Man in Island Environments"**

**Sardina, Italy**

**September 25-October 2, 1988**

Topics to be discussed at the meeting:

1) The recognition, within a collection of archaeological materials, of tools made from bone which has been little elaborated: analytical and experimental approaches.
2) Modifications of bone surfaces due to non-human agents, as distinguished from those of anthropogenic origin.
3) The establishment of a common detailed description of bone tools showing little elaboration.
4) The establishment of a map showing the geographical distribution in Eurasia of bone tools showing little elaboration from Lower and Middle Palaeolithic sites.
5) The establishment of a multilingual index.

Potential participants should make contact as soon as possible with:

Dr. Marylene Patou
Institut de Paleontologie Humaine
1 rue Rene Panhard
75013 Paris, FRANCE
Telephone: 1/43-31-62-9

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**Meetings Calendar**


York, NY 10017 (212-661-9404).


April 27-29. Handling of Environmental and Biological Samples in Chromatography. Basel, Switzerland. R. Frei, Department of Analytical Chemistry, De Boelelaan 1083, Vrije Universiteit, 1081 HV Amsterdam, The Netherlands.

April 27-30. Association for Arid Land Studies, Annual Meeting, in conjunction with the 30th Annual Meeting of the Western Social Science Association. Denver. F. Andrew Schoolmaster, AALS Program Chair, Department of Geography/Anthropology, N. Texas State University, Denton, TX 76203.


April 28. Society for Archaeological Sciences Annual Meeting, Sheraton Phoenix, in conjunction with Society for American Archaeology.


May 16-20. 26th Annual Symposium on Archaeometry. Toronto. Professor U.M. Franklin, Department of Metallurgy and Materials Science, University of Toronto, Toronto, Ontario, Canada MSS 1A4 (416-978-3012); BITNET: Vanda@UToronto. One-day session on "Archaeometry has the answers, but what are the questions?" Symposium topics include: dating of organic and inorganic materials, prospecting, provenance studies, technology (metals and non-metals), mathematical and statistical methods. See Meeting Announcement in this issue.


June 5-9. Institute of Electrical and Electronics Engineers Computer Society's Conference on Computer Vision and Pattern Recognition. Ann Arbor. R. Jain, Department of EECS, 3215 EECS Building, University of Michigan, Ann Arbor, MI 48109-2122 (313-763-0387).


June 5-10. 195th American Chemical Society National
Meeting and 3rd Chemical Congress of North America. Toronto, Canada. B. Hodson, 1155 16th St. NW, Washington, DC 20036.

June 6-8. American Quaternary Association, 10th Biennial Meeting, Amherst, Massachusetts. AMQUA Local Program Committee, Department of Geology and Geography, University of Massachusetts, Amherst, MA 01003-0026 (413-545-2288). Theme: Land-sea interactions in the North Atlantic region over 14,000 and 6,000 years ago. Field trips. See Meeting Announcement this issue.


June 17-22. Geology and the Bahamas, 4th Symposium. San Salvador Island, Bahamas. Donald T. Gerace, CCFL Bahamas Field Station, 270 Southwest 34th St., Fort Lauderdale, FL 33325.


June 19-23. American Society of Mammalogists, 68th Annual Meeting. Clemson, SC. Dr. Edward B. Fivour, Department of Biological Sciences, Clemson University, Clemson, SC 29631 (803-656-2328).

June 20-23. 10th Symposium on Thermophysical Properties. Gaithersburg, Maryland. J.V. Sengers, Institute for Physical Science and Technology, University of Maryland, College Park, MD 20742 (301-454-4117).


July 26-30. Symposium on Asian Pacific Mammalogy; sponsored by American Society of Mammalogy and the Mammalogical Society of China. Kunming, Yunnan Province, People's Republic of China. Dr. Andrew T. Smith, Department of Zoology, Arizona State University, Tempe, AZ 85287. Primary focus will be the mammalogy of eastern Asia and the Pacific basin; includes a session on systematics and faunistics of Recent and fossil mammals.


July 31-Aug. 5. Nuclear Magnetic Resonance Symposium. Denver. James Haw, Department of Chemistry, Texas A&M University, College Station, TX 77843.


Aug. 8-12. American Mathematical Society Centennial Conference. Providence. H. Daly, American Mathematical Society, Meetings Department, PO Box 6248, Providence, RI 02940.


opportments Office, University of Western Australia, Nedlands, Western Australia 6009. Australia.


Aug. 21-23. 7th York Quaternary Symposium. Lethbridge, Alberta, Canada. Dr. R. W. Barendregt, Quaternary Symposium, Department of Geography, University of Lethbridge, 4401 University Drive, Lethbridge, Alberta T1K 3M4 Canada.

Aug. 21-26. 9th International Congress on Thermal Analysis; sponsored by International Confederation for Thermal Analysis. Jerusalem. S. Shoval, Everyman's University, PO Box 39353, Tel Aviv 61392, Israel.


Aug. 22-26. 26th International Geographical Congress. Sydney, Australia. Prof. Bruce Thom, Department of Geography, University of Sydney, N.S.W. 2008, Australia.


Aug. 28-Sept. 3. Palynological Congress. Brisbane, Australia. John Rigby, 71PC, UniQuest Ltd., University of Queensland, St. Lucia, Queensland, 4067, Australia (61-7-3772737).

Aug. 29-Sept. 1. Australian Archaeometry Conference. Adelaide, Australia. Prof. J.R. Prescott, Secretariat, Third Australian Archaeometry Conference, Physics Department, University of Adelaide, GPO Box 498, Adelaide, S. Australia 5001, Australia. Topics will include technology, chronology, environment, project reports, and analytical techniques.


Sept. 3-7. 8th Annual American-Eastern European Colloquium and Symposium on Liquid Chromatography. Szeged, Hungary. Huba Kalas, Department of Pharmacology, Semmelweis University of Medicine, Budapest, Nagyvarad ter-4, 1069 Hungary.


Sept. 28-30. Avian Paleontology and Evolution. Los Angeles. Kenneth E. Campbell, Natural History Museum,


Oct. 31-Nov. 18. Workshop in Mathematical Ecology. Trieste, Italy. International Centre for Theoretical Physics, PO Box 566, Miramare, Strada Costiera 11, 34100 Trieste, Italy (2240-1).

Nov. 6-13. 7th Latin American Geology Conference; 35th Brazilian Geological Congress [sponsor: Departamento Nacional de Producao Mineral, Belém, Brazil. Carlos Otti Berbert, Organizing Committee, Departamento Nacional de Producao Mineral, SAN Q 01, B1 “E”, 70040 Brasilia DF, Brazil.]


Jan. 11-14. Joint Mathematics Meetings. Phoenix. H. Daly, American Mathematical Society, Meetings Department, PO Box 6248, Providence, RI 02940.

July 9-19. 28th International Geological Congress. Washington, D.C. Dr. Bruce R. Hanshaw, Secretary General, 28th IGC, PO Box 1001, Herndon, VA 22070-1001 (703-648-6053). Symposia include: Geologic phenomena and archaeology; Archaeological geology - geologic controls on human habitation; Global change - impact on the earth, natural hazards, and human activities; Clovis origins and the Bering Land Bridge. Short courses include: Quaternary dating methods; Digital geologic and geographic information systems; Paleoenvironmental interpretation of paleosols. Field trips include: Quaternary geology of the Great Basin; Geology of the Colorado Plateau. Abstract deadline: 10/1/88.

Centre de Recherches Archeologiques du CNRS 1988 Workshop Program

application deadline: 15 November 1987
address: CNRS-CRA (Formation)
250 ave. Antipolis
06565 Valbonne Cedex
France

1) Laboratory Study of Archaeological Ceramics. General ceramics, geochemical methods, petrographic and mineralogic methods. Five days, May/June or Autumn 1988. M. Pichon, M. Ricq-de Bouard.

2) Osteology, Workshop A. Introduction to study of bones and shells; field and lab techniques; exploitation of materials. Two times, 10 days. September to November, 1988. J. Desse and Luc Buchet.


5) Information for Archaeologists - Data and Text. Introduction to word processing and data analysis on microcomputers, including the IBM PC and Macintosh. Five days. October, 1988. H. Ducasse.

6) Introduction to Lithic Technology by Experimentation. Theory; practical experience in the production of lithics; analysis of lithics. Two times, 5 days. P.-J. Texier.

Centro Universitario Europeo Per i Beni Culturali
Activities Program 1988

Prof. Francois Widemann
Villa Rufolo
I-84010
Ravello, Italy
tel.: 39-089-857096
telex: 770029 EURCEN I

3) Landscape and planning. Spring. Round table. P. Barbieri
4) Merchant marines and commerce of the Greeks,
8) Archives of archaeologically interesting images. Round table. September. B. Helly
9) Archaeological sites within the landscape. Workshop. October. M. Guy


Proposed activities for 1989: Palinuro II. Phytoliths, Archaeological dating, Highways and cultural movement, Interaction between Central Europe and the Mediterranean during the neolithic Iron Age, and Ancient ceramics. Write for Information.

Rob Sternberg, Department of Geology, Franklin and Marshall College, PO Box 3003, Lancaster, PA 17604-3003 (717-291-4134). BITNET: R_STERNBERG@FANDM

Symposia

Quaternary Landscapes

The University of Minnesota cordially invites you to attend a symposium honoring Regent's Professor Herbert E. Wright, Jr., May 6 and 7, 1988. As director of the Limnological Research Center, he initiated research in the fields of glacial geology, paleoecology, paleoclimatology, paleolimnology, archaeology (Old and New World), and peatland and boreal ecology over a career spanning more than 40 years. Featured speakers include Patty Jo Watson (Wash Univ.), James E. Kutzbach (Univ. Of Wis./Mad.), Jan Mangerud (Univ. of Bergen, Nor.), Richard W. Battarbee (Univ. of London, UK), William A. Watts (Trinity Coll., Dublin), James C. Ritchie (Univ. of Toronto, Can.), and Thompson Webb III (Brown Univ.).

Registration should be received by April 29, 1988. Mail to: Registrar, Professional Development and Conference Services, University of Minnesota, 338 Nolte Center, 315 Pillsbury Dr. SE, Minneapolis, MN 55455-0139.

For further information, contact Anne Dickason, Program Director, Professional Development and Conference Services, University of Minnesota, 209 Nolte Center, 315 Pillsbury Dr. SE, Minneapolis MN 55455 (612) 625-7837.

The Changing Roles and Functions of Ceramics in Society

The seminar will focus on the way that society perceives ceramics now and has perceived ceramics in the ancient and more recent past, and how this has influenced ceramic education, manufacture and use.

Accepted speakers include Prudence Rice, University of Florida; Michael Schiffer, University of Arizona; Flora Kaplan, New York University; Elizabeth Hendrickson, Royal Ontario Museum; Robert Hendrickson, Royal Ontario Museum; Gloria London, Hebrew Union College; Tracy Cullen. American Journal of Archaeology; Steve Reber, Massachusetts Institute of Technology; Robert MacMurray, Bloomsburg State College; Regina Blaszczak, National Museum of American History; Donald R. Uhlmann and N. J. Kreidl, University of Arizona; Pamela Vandiver, Smithsonian Institution; W. David Kingery, Massachusetts Institute of Technology; Rustum Roy, Pennsylvania State University; O. J. Whittemore, University of Washington; and Dennis Readey, Ohio State University.
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SAS Newsletter
Society for Archaeological Sciences

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26th International Symposium on Archaeometry
May 16-20, 1988
University of Toronto, Toronto, Ontario, Canada

Accommodation: 1. University Residences
  Single - $35.00 per night including breakfast
  Twin - $23.00 per night including breakfast

  2. Local Hotels - at current rates

Registration Fees: Full fee, before May 19, 1988 $150.00 Cdn
  Full fee, after May 19, 1988 $170.00 Cdn
  Student, without reception or banquet $50.00 Cdn
  Day, without reception or banquet $25.00 Cdn

General Topics (and a sampling of papers):

  Dating of organic and inorganic materials (Thursday AM)
  Geomagnetic intensity as a dating tool
  Prospection (Tuesday PM)
  Prospecting a Roman castrum
  Provenance studies of lithics, ceramics, and other materials (Tuesday AM and Friday PM)
    Minoan clay figurines
    Stone ware from the 3rd millennium BCE
    Numismatics
    Augustan asses
    Chert, ceramics, marble, and jade studies

  Technological studies of metals and non-metals (Metals Monday PM and Friday AM, Non-Metals Wednesday AM)
    Coptic textile chronology
    Ancient solders
    Neutron activation autoradiography
    Trace impurities in ancient glasses
    Roman casting molds
    Ancient carburization of iron
    Applications of mathematical and statistical methods (Tuesday AM)
    Ancient mensuration
    Expert systems
    Organic materials analyses (Friday AM)
    Bone chemistry and dietary reconstruction
    Physical characteristics of amber
    Stable isotope analysis of food residues

The tentative schedule also includes Poster Sessions Tuesday and Thursday afternoons, a session on Archaeometric Techniques on Thursday afternoon, and a visit to the Isotrace Laboratory on Tuesday evening.

Social Events: Civic reception Monday evening
  Tour to Niagara Falls Wednesday afternoon
  Banquet Thursday evening

Contact: Archaeometry 88, c/o Professor U.M. Franklin, Department of Metallurgy and Materials Science, University of Toronto, Toronto, Canada, M5S 1A4