



SAS Bulletin



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Editor's Note

I've been editor of the *SAS Bulletin* since the first issue of volume 14, 1991, a total of 18 issues. With the next issue, I turn over the reins to Chris Nagle of the Arctic Studies Center, Department of Anthropology, Smithsonian Institution. This is now my last issue as editor of the *SAS Bulletin*. I write that with somewhat mixed feelings. Being editor has consumed more time than I ever imagined. Publication was almost always behind schedule, and as this issue proves, I have not been improving over the course of my tenure. Life is a zero-sum game, and time spent on the *Bulletin* was time taken away from something else, usually working in the archaeomagnetism lab. There was sometimes the question of how much editorial discretion I could or should take—should I risk offending that book reviewer by suggesting an outrageous comment be modified, or should I risk offending the book author by printing it (I inevitably risked offending the author).

Having said all that, there was much I really liked about this job. I learned how to do (rudimentary) desktop publishing. I was forced to read much more widely about archaeological science than I might otherwise have done. I had the chance to meet many scientists who were more interested in my work on the *Bulletin* than they might have been in my own research in archaeomagnetism. I got to work with many fine associate editors and members of the SAS Executive Board. In particular, Pat Martin, my predecessor, got me off to a good start with words of caution, as well as *Pagemaker* templates. Here at home, I especially enjoyed working with my assistant of the past couple of years, Jody Dalton. My wife Susanne and sons Max and Sam were a reliable (and inexpensive) crew for assembling the bulk mailing—if only all employees would do their jobs for a few packs of baseball cards. The Dean's office at Franklin & Marshall College has been supportive of this endeavor, including funds to pay my assistant. Anita Focht, F&M Publications, helped me much with technical advice and layout suggestions when I was just a novice with *Pagemaker*, and continued to help me with the odd graphic, as well as dealing with the printer. The College post office, especially Michael Joyce and Kathleen Milasus, have handled those quarterly bundles of mail, and were tolerant of my requests for receipts for everything.

Geosciences secretaries Carol Lau and Janet Mann keyboarded many a contribution from those of you out there who still don't submit via diskette or e-mail.

I print my most recent report submitted to the SAS Executive Board for the 1995 annual meeting as my elegy or eulogy, as you judge it:

The *SAS Bulletin* staff did not change from 1993 to 1994. The quarterly *SAS Bulletin* included 84 pages in 1994, the same as in the previous two years. Over this three-year period, there have been trends in the types of pieces published in the *Bulletin*. Conference reports have increased from four in 1992 to twelve in 1994. Other feature articles increased from only three in 1992 to six during each of the past two years. Book reviews remain the leading type of contribution (by number of contributions), at 15 in 1994. The *Bulletin* has also seen the compilation and publication of the cumulative index (in vol. 16, 1993) and subsequent annual indexes, as well as the display of the new logo (1994) and the publication of the membership list (1992). The *Bulletin* is getting a greater number of contributed announcements about positions and fellowships, meetings, internet resources, and available products. We have continued to exchange publications with the SAA (Society for American Archaeology), SHA (Society for Historical Archaeology), CBA (Council for British Archaeology), SBAC (Science-Based Archaeology Committee), and SAC (Scandinavian Archaeometry Center). The *Bulletin* occasionally serves as a resource for other publications, including the *SAC-News*. In the editor's opinion, the *Bulletin's* major shortcoming has been its failure to regularly come out on schedule (his fault!). □

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University of Bradford, Department of Archaeological Sciences

ACADEMIC STAFF AND THEIR RESEARCH INTERESTS

Faculty

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Part-Time Faculty

Arnold Aspinall DSc (Sheffield 1992) Visiting Senior Lecturer - Geophysics, magnetic analysis, neutron activation analysis

Jean Brown Photographer

Geoffrey D Gaunt PhD (Leeds 1976) Honorary Research Fellow - Geoarchaeology, lithology and sourcing of stone artifacts and building stones

Keith Manchester MBBS (London 1962) Honorary Visiting Lecturer - History and palaeopathology of mycobacterial disease worldwide

Research Faculty

Anthea E Boylston MSc (Bradford 1991) Research Assistant - Osteology, palaeopathology, history of medicine

Julie M Bond PhD (Bradford 1995) Research Assistant - Palaeoeconomy, cremated animal bone; Orkney and Shetland

Vicki I Carolan PhD (UMIST 1992) Research Fellow - Archaeological chemistry, age at death determination by chemical analysis

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Rona McGill PhD (Glasgow 1994) Research Technician - Isotope geochemistry

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Peter Rush PhD (Bradford 1993) Research Assistant - Roman pottery, Roman economics; Britain and Portugal

Abigail Tebbs Dip Law (London 1992) Research Assistant - Forensic archaeology

Francis Thornton MPhil (Bradford 1990) Honorary Research Assistant - Palaeopathology, dental disease

Assumpta Vizcaino Licenciada (Barcelona 1993) Research Fellow - Archaeological iron alloys, metallurgy; Europe

Adjunct Faculty:

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Howell G M Edwards DPhil (Oxford) Chair Department of Chemistry, University of Bradford - Palaeodental studies, museum artifacts, cave paintings, environmental biodeterioration of Renaissance frescoes, biopolymers

Christopher Gaffney PhD (Bradford 1990) Honorary Visiting Research Fellow - Archaeological and geophysical prospection

Michael Gardiner PhD Reader Dept of Biomedical Sciences - Protein biochemistry

John Gater BTech (Bradford 1979) Honorary Visiting Research Fellow - Archaeological and geophysical prospection

Alistair J Marshall PhD (Wales 1975) Honorary Research Fellow - Applications of remote sensing to archaeology; European prehistory

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Chair: Professor Mark Pollard

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Departmental Secretary: Richander Birkinshaw BMus

Co-ordinator of Continuing and Professional Education: John McIlwaine MA (Lancaster 1985) Co-ordinator of Continuing and Professional Education - Project management and excavation, landscape archaeology; Yorkshire Dales (j.j.mcilwaine@bradford.ac.uk)

This is the only Department of Archaeological Sciences in the United Kingdom, and is probably unique in the

world in the blend of archaeological and scientific expertise found together in the same department. It is also one of the largest archaeological departments in the UK with 18 full-time faculty, eight Research Assistants and a strong technical support staff. It is one of the best-equipped departments with many advanced analytical instruments found within the recently refurbished laboratories and for use in archaeological field research. As such, the Department is regarded as one of the best research facilities in the country and a foremost centre in the world for the application of the physical and natural sciences to archaeology. Research is generally organized within groups or laboratories and these fall within a few broad research themes.

SOCIAL AND TECHNOLOGICAL DIMENSIONS OF MATERIAL CULTURE

Archaeological materials science, a traditional strength of the Department, is combined with approaches to social interpretation to provide an integrated view of the development and role of material culture in past societies. Among active research areas within this theme are studies investigating the procurement, production and exchange of objects across a wide variety of materials. This, for example, has recently led to major reinterpretations of Bronze metal exchange in the Aegean (see discussion of the interpretation of Pb isotope data in the journals *Archaeometry* and *Journal of Mediterranean Archaeology*). Other technologies examined are ceramics, lithics, glass, textiles and natural products. Another fundamental area of investigation includes the study of the function, aesthetics and symbolism of materials. Active research programs include use of lithic and ceramic artifacts and the symbolism associated with metalwork such as the Gundestrup Cauldron.

BIOCULTURAL ANTHROPOLOGY

Biological Anthropology is integrated with archaeological research in the Calvin Wells Laboratory. Current areas of research encompass the fields of palaeodemography, palaeopathology, forensic anthropology and hominid evolution. These include the effects of morbidity on mortality, studies of urban versus rural health status, the impact of infectious disease on past communities, gender differences in health status, and the biomechanical alteration of the human skeleton as an activity-related adaptation. Recent projects have included comparisons of maxillary sinusitis in urban and rural economic subpopulations, osseous response of the appendages to locomotor deficit, activity-specific bone lesions, refinement of diagnostic criteria for and prevalence of non-specific infectious disease, leprosy, tuberculosis, including DNA study of tuberculosis in skeletal remains, and treponemal diseases in protohistoric and historic populations, the palaeodemography of a Plague cemetery, the application

of Bayesian statistics to indicators of skeletal age at death, and prevalence of osteoporosis and otosclerosis in past populations. *The Archaeology of Disease*, 2nd edition (1995), has recently been written by Roberts and Manchester, and published by Alan Sutton/Cornell University Press. The laboratory has an active contract research group that has recently completed reports on Neolithic, Bronze Age, Iron Age, Roman, Anglo-Saxon, and Medieval period populations. Research in Mortuary behavior includes study of taphonomic processes and their influence on the recovery of human skeletal remains and the identification of ritual specialists from archaeological contexts. A new book by members of the Department, *Studies in Crime: An Introduction to Forensic Archaeology*, by Hunter et al., will be published soon by Batsford.

FORENSIC ARCHAEOLOGY & ANTHROPOLOGY

Forensic studies within the Calvin Wells Laboratory enhances the strength of the Department's reputation in the growing subdiscipline of Forensic Archaeology. Research involves development of techniques for the location, recovery, recording, and anthropological analysis of human remains and associated evidence, as well as research into decay processes both for human and associated death-scene materials. The Department has pioneered the discipline in this country and is well-established in the field, and maintains strong links with the Home Office, police forces and the forensic science service.

ENVIRONMENTAL ARCHAEOLOGY

Environmental archaeology encompasses a wide range of research activities in the Department with special emphases on the study of faunal remains from urban sites, taphonomic processes, study of archaeological sediments, and analysis of botanical remains from southeast Asia, Pompeii and northern Europe. Landscape archaeology, a fundamental form of archaeological investigation in the Department, integrates environmental, economic and technological data to the study of prehistoric and historic land use by high-latitude island communities, and of Mesolithic mobility strategies in the Yorkshire Dales.

ARCHAEOLOGICAL CHEMISTRY & PHYSICS

This theme includes investigation of the fundamental geochemical, biochemical and physical processes which must be understood if we are to successfully apply scientific methods to archaeology. Major areas of investigation within the Department include isotope geochemistry of metalliferous ore deposits (especially lead) and the effects of anthropogenic processing of isotope systems such as tin; the biochemistry of archaeological proteins including protein identification and survival; study of age at death

from dental protein; and the examination of light stable isotopes in biological systems. Another area of basic research is the chemistry of molecular transformation which includes study of the degradation and preservation of biomolecules identified in archaeological contexts. Two members of the Department (Pollard and Heron) have just completed a book on *Archaeological Chemistry* to be published by the Royal Society of Chemistry in February 1996. Bradford has long been known as the center of geophysics, geochemistry and archaeological prospection. The Department continues this tradition including fundamental studies of soil geophysics and geochemistry to aid the development of archaeological prospection techniques, and the development of novel instrumentation and interpretative software. The Department is very active in the application of these developments with projects throughout Europe, Asia, and in South America.

FACILITIES AND RESOURCES

Although most resources and facilities are associated with specific laboratories or research groups, access is made available to faculty or research students upon request. Among the laboratories: the Calvin Wells Laboratory (laboratories) are literary, photographic x-ray and skeletal collections of over 1000 individuals; the Archaeometallurgy Research Laboratory contains metallographic sample preparation and analysis equipment, reference collections of metalworking slags and metallographic sections of ferrous and copper alloy artifacts; Conservation Laboratory; Geophysics Laboratory; Environmental Archaeology Laboratory with faunal and botanical reference collections; Northern Isles Research Laboratory; Roman Archaeology Research Laboratory; Computing Laboratory; Microscopy Laboratory; Experimental Smelting Laboratory; Chemistry Research Laboratory; Analytical Chemistry Laboratory; Chromatography Laboratory; Radiography; and Photography. Analytical facilities include a Cambridge Instruments Stereoscan S150 analytical scanning electron microscope, X-ray fluorescence spectrometer, neutron activation analysis, inductively-coupled plasma emission spectroscopy, liquid chromatography, gas chromatography/mass spectrometry, gel electrophoresis, Scopeman video microscope, Nikon Optiphot reflected-light and transmitted-light microscopes with full color, high resolution, Digital Image Analysis facilities, two Faxitron radiography machines, dark rooms with a Durst enlarger and a copystand.

TRAINING

The Department offers undergraduate BS degree courses in Archaeological Science and in Archaeology. It also offers a number of highly specialized one-year Master Degree programs (MSc) in Archaeological Prospection, Archaeological Materials Science, and Osteology,

Palaeopathology and Funerary Archaeology in cooperation with the University of Sheffield. In addition it offers an MA in Scientific Methods in Archaeology for non-science background students. The Department offers both MPhil and PhD research degrees.

Contributed by Mark Pollard, University of Bradford, Department of Archaeological Sciences, Bradford BD7 1DP, UK; e-mail: a.m.pollard@bradford.ac.uk □

Announcements

Positions

Director, The Wiener Laboratory of the American School of Classical Studies at Athens

Applications are invited for the position of director of The Wiener Laboratory of the American School of Classical Studies at Athens, Greece. Applicants should have an area of expertise in one of the primary areas of the Lab's research programs (geoarchaeology, human skeletal analysis, zooarchaeology) with an established publication record and demonstrated administrative and fund raising abilities. A strong background in natural science, experience in collaborating with archeological and Classical scholars, and a commitment to Aegean archaeology is desired. Under the supervision of the Director of the School, the Director of the Lab is responsible for developing and administering the research and workshop programs, collections, and facilities of the Lab as well as maintaining and enlarging established networks with other laboratories and institutions. He/she chairs the local administrative committee and an international science advisory committee. Salary (\$30,000-\$40,000) commensurate with rank and experience; housing allowance; qualified for TIAA/CREF after two years if not previously enrolled. Term 1 July 1996 to 30 June 1999, eligibility for renewal. Deadline for applications is 15 November 1995. Applicants must include a letter concerning his/her views on the future direction of the Wiener Laboratory, a curriculum vitae, and the names of three references that may be contacted. Application materials should be sent to the search committee chair: Professor George Rapp, Jr., Director, Archaeometry Laboratory, University of Minnesota, Duluth, MN 55812, USA; phone (218) 726-7629; fax (218) 726-6979.

The Getty Conservation Institute Deputy Director, Documentation Program

The Documentation Program of the Getty Conservation Institute comprises the Institute's comprehensive library, *Art and Archaeology Technical Abstracts*, and the Research

and Applications Section (R&A). The work of the Library is to make a broad range of information in all media available to conservation scientists, conservators, and other professionals and students in the allied fields; AATA publishes about 3,000 abstracts annually on the technical examination, investigation, analysis, restoration, preservation, and documentation of works of historic and artistic value; R&A undertakes research in and application of innovative applications of technology, information management, effective approaches to condition reporting, systematic strategies for tracking the progress of field intervention, models for planning documentation campaigns. The Program seeks one highly qualified individual to manage the R&A Section, and to act as Deputy Director over all three sections of the Program.

Duties: The successful candidate will work under the general supervision of the Program Director, and with other senior staff; will supervise two Program Coordinators, two Research Coordinators, occasional Fellows, and support staff to set policies and priorities for the "Research and Applications" section of the Program; will develop, design, and implement documentation activities related to cultural heritage conservation; and will work with the Program Director on budgeting, management, and advocacy for the Program overall. Responsibilities may also include research, teaching, writing for publication, organization of conferences, and oversight of international conservation activity.

Qualifications: Qualifications include a graduate degree in conservation, archaeology, or architecture; training in documentation as described above, with particular emphasis on field recording planning and implementation; international project management experience; and 5 to 7 years field and management experience at the highest level of competence. Reading, speaking, and writing skills in at least one foreign language required. Excellent verbal, administrative, interpersonal, and English writing skills are required to work and negotiate effectively with diverse staff, outside institutions, and external professional colleagues. Must be free to travel frequently to meetings, conferences, and cultural sites throughout the world. Salary is commensurate with experience and qualifications. Excellent benefits. Position is available immediately.

Please send your cover letter and résumé to (or contact for more information): Yvonne Bradshaw, Human Resources [DDD], J. Paul Getty Trust, 401 Wilshire Boulevard, Suite 900, Santa Monica, California, USA 90401; telephone 310-395-0388.

1995 SAA Award Recipients

The following awards were presented on May 5, 1995, at the society's annual business meeting, Minneapolis Hilton and Towers, Minneapolis, Minnesota:

Fryxell Award

Robert J. Braidwood

For his pioneering work in the initial development of the interdisciplinary approach to the study of agricultural origins.

In the late 1940s, Robert J. Braidwood and his wife, Linda S. Braidwood, set out to recover and interpret empirical evidence for the most important transition in human history—the shift from a hunting and gathering way of life to one that depended on agriculture. In order to study this transition, research at Jarmo and other sites within the hilly flanks of the Fertile Crescent drew together scientists of many different disciplines, including zoologists, geologists and botanists. This landmark program, which continued into the 1950s, not only established the origins of agriculture as a broad and important new field of archaeological inquiry, but also provided an impressive example of how interdisciplinary research could be structured and implemented. Braidwood's contributions continue to provide the framework for interdisciplinary research.

Award for Excellence in Ceramic Studies

Prudence Rice

In recognition of her significant contribution to virtually all areas of ceramic research, especially her insightful research of specialized pottery production, and the leadership role she plays among ceramic researchers.

Beginning in the mid-1970s, Prudence Rice's publications reflect her persistent focus on important issues of pottery change, provenance, specialized production, technology, and style. Her methodological and theoretical contributions—based primarily in Mesoamerica—have widely influenced ceramic studies, and her book, *Pottery Analysis*, is a crucial sourcebook and constant companion to archaeologists interested in pottery. Rice's edited and often reprinted volume, *Pots and Potters*, was designed as an outgrowth of the innovative book, *Ceramics and Man*, by Frederick Matson, also a recipient of this award.

Frederick Matson

In recognition of a distinguished career in which he pioneered new approaches to understanding the past through the analysis of ceramic ecology.

Throughout a long and distinguished career, Frederick Matson has played a key role in expanding the scope of the study of ceramics by demonstrating how much can be learned by placing ceramics within an ecological context and by examining the influence of culture and environment on ceramic variation. His pioneering work, *Ceramics and Man*, laid the foundation for a new era of research. His own studies of pottery from a wide geographical area—Michigan to Syria—have provided excellent models for others.

From the Society of American Archaeology Bulletin home page, at <http://www.sscf.ucsb.edu:80/SAABulletin/>

Product Announcement

Geometrics—New High-Speed Magnetometer

A new-generation portable magnetometer, the MagMapper™ G-858, is now available from Geometrics, Inc. This magnetometer is 10 times faster and five times more sensitive than prior instruments, and is exceptionally easy to use. The MagMapper uses cesium-vapor sensor technology combined with a ruggedized belt-mounted computer and proprietary data-mapping software. The user can go at a fast walk, taking five data points per meter. A high-resolution graphical interface shows a map of the area covered, with five lines of data displayed for comparison and edit.

The new Geometrics magnetometer can measure magnetic-field perturbations as small as 0.05 nT, allowing it to sense a 1 kg object buried 3 meters deep. The instrument stores 240,000 data points, with RS-232 readout for further analysis. The MagMapper™ can also be used as a base station, or as a gradiometer with an optional second detector. Applications include the detection of underground pipelines, buried drums, and unexploded ordinance, as well as the characterization of archeological sites, mineral deposits and geological structures.

Geometrics Inc. has designed and manufactured geophysical instruments since 1969. Offices are in California, England and China.

For more information, contact: Ross Johnson, Geometrics Inc., 395 Java Drive, PO Box 3497, Sunnyvale, CA 94089, USA; tel. (408) 734-4616; fax (408) 745-6131.



Book Reviews

Science-based Dating in Archaeology.
M.J. Aitken. Longman, London and New York, 1990. xix + 274 pp. \$12.99 (paper).

*Reviewed by R.E. Taylor, Radiocarbon Laboratory,
Department of Anthropology, University of
California, Riverside*

This volume provides a well-organized, comprehensive review of the major Quaternary dating methods based in the physical sciences. As Professor Aitken states in his preface, the principal aim of the author is to provide an entrée to dating methods for "archaeologists, general scientific readers and specialists interested in techniques not their own." Because of his long and distinguished career, including his association with the Oxford University Research Laboratory for Archaeology and the History of Art, the author is highly qualified and uniquely situated to provide an overview of physical dating methods in archaeology particularly with regard to the various types of luminescence and magnetic dating methods where he has been a leading researcher.

*"This book is the best and most comprehensive
overview of physical dating methods
applicable to archaeology currently available."*

The book contains nine chapters—two introductory chapters and seven chapters reviewing specific techniques—along with an appendix dealing with technical data involving radioactivity and a detailed index. In the body of each chapter, the various aspects of each technique are summarized using generally non-technical and, with few exceptions, non-mathematical treatments while chapter end-notes provide greater technical detail. Every chapter concludes with a list of references cited in the text.

Chapter 1 ("Generalities") sets out a succinct context for the use of physical-science-based dating methods emphasizing that the various methods are typically expensive in terms of both instrumentation and personal time and effort of investigators. In light of this, it is stressed that careful attention should be given to the archaeological questions being addressed with technical data. The author also considers the degree of reliability of a given technique applied to a specific type of sample. The chapter concludes with a section on dating terminology especially noting the difference between "radiocarbon years" and calendar years along with the various terminological fallout from this difference, e.g., cal AD, cal BC and cal BP for calibrated

radiocarbon dates, BP for "[radiocarbon] years before present" where present is AD 1950, and the convention of the journal *Antiquity* in using ad, bc, and bp for uncalibrated dates and AD, BC, and BP for calibrated dates.

Chapter 2 ("Climatic clocks and frameworks") provides an overview of the largely non-instrument-based means of constructing Quaternary geochronological frameworks typically associated with archaeological sequences. The frameworks discussed include climate-based chronological units (e.g., glacials and interglacials), the oxygen-isotope time-scale, Milankovitch insolation curves, palynology-based climatic units or chronozones, varve chronology, and dendrochronology. The complexity of the interrelationships between these approaches are emphasized.

Chapters 3 and 4, about 40% of the text, are devoted primarily to a discussion of the radiocarbon (^{14}C) method: chapter 3 to the elements of the method and the physical or chemical basis of anomalies and complications, and chapter 4 to major issues such as calibration and problems in its application in specific archaeological contexts. In chapter 3, a review of the basis of the method is undertaken in terms of the production, distribution and decay of ^{14}C which includes discussions of reservoir and fractionation effects. The chapter also considers problems of interpreting ^{14}C dates in light of 19th and 20th century human-caused effects produced from the combustion of fossil fuels and detonation in the atmosphere of nuclear weapons. The chapter concludes with a brief comment on other cosmogenic isotopes (e.g., ^{41}Ca) which have been suggested as possible dating isotopes that might be applicable to the very recent geologic past, i.e., the last few million years.

Chapter 4 considers issues relating to obtaining and critically interpreting ^{14}C age estimates including the basis and process of calibrating ^{14}C values and other factors that influence accuracy and precision. In terms of ^{14}C measurement, both conventional beta decay and direct or ion counting using accelerator mass spectrometry (AMS) are considered. The impact of AMS technology on the ability to give access to a new range of sample materials and new approaches to sample chemical pretreatment and preparation due to the order-of-magnitude reduction in sample size (grams to milligrams of carbon) is emphasized. With respect of the interpretation of ^{14}C values, a brief review of the history of ^{14}C calibration efforts notes the series of efforts to develop consensus calibration data sets and the variety of procedures and strategies used, including examples of the use of the probability distributions. The end-notes of chapter 4 briefly consider technical issues including the definitions of quantitative expressions of ^{14}C activity and various formal statistical approaches to determine quantitatively the degree of difference or similarity between suites of ^{14}C values.

Chapter 5 considers three dating methods which, until the last decade, have been principally applied in geological contexts. The potassium-argon, uranium series and fission track methods are still primarily oriented towards geology and geomorphology but, as a result of several important technical advances, have been increasingly applied to the archaeological and paleoanthropological time scale by providing chronometric age estimates for enclosing geological contexts for hominid fossils and their associated artifact materials. All three of these techniques—but particularly the potassium-argon—have been employed to establish the time scale for the oxygen-isotope stages and magnetic reversal stratigraphy.

Chapter 6 ("Luminescence dating") considers both thermoluminescence (TL) and optically stimulated luminescence (OSL). TL was developed for use with baked clays and especially ceramics. However, over the last decade, it has been applied as well to heated flints. OSL is primarily applicable to sediments. Like the fission track approach, TL involves the use of calibrated radiation damage effects to provide temporal indices. The most recent strategies to reduce or eliminate the effects of all non-radiation-induced forms of TL and means of calculating effective radiation doses under various environmental conditions are reviewed with great attention to detail. There is also a clear discussion of the basis on which error limits are determined and the manner in which TL dates are to be appropriately cited. The application of TL dating to burnt flint is illustrated by several examples including a figure (6.13) reviewing the burnt flint TL dates for Kebara and Qafzeh Caves in Israel. An average TL value of 92,000-5000 BP from a series of burnt flints recovered from Layers XVII-XXIII at Qafzeh is associated with skeletal remains of "proto-Cro-Magnons." These antedate the 60,000 year burned flint dates from Unit VIII-XII at Kebara. Unit XII at Kebara contained a skeleton of an adult Neanderthal skeleton. These data suggest that anatomically modern humans were present in this area of southwestern Asia some thirty millennia prior to Neanderthal occupation of the region.

Chapter 7 considers the use of electron spin resonance (ESR), a radiation damage method closely allied to luminescence dating. ESR has been applied to the dating of unburned materials from cave deposits (stalagmitic calcite or speleothems) and travertine along with tooth enamel and bone. Various issues in the application of the technique include inconsistency introduced by variations in uranium uptake and thus the degree to which the dosing regime is an open or closed system. The most frequent application of ESR has been the dating of Pleistocene cave deposits associated with hominid skeletal remains. Important results of such application have included a 400,000 year age assignment on enamel from rhinoceros teeth associated with cranial fragments of a *Homo erectus* exhibiting attributes of an archaic *Homo sapiens*. ESR-based age estimates on teeth of large mammals from Qafzeh Cave

range from 96,000 to 115,000 years depending on assumptions about a closed or open uranium regime. These values compare with the 92,000-5000 BP TL value on burnt flints previously noted.

Chapter 8 ("Amino acid racemization; obsidian hydration; other chemical methods") considers methods that have to date experienced somewhat controversial histories. The initial use of amino acid racemization (AAR) to infer ages for bone in a number of important cases was seriously compromised by a failure to consider the effect on apparent AAR rates by factors other than time and temperature, e.g., the chemical state of the amino acids, as well as the use of anomalous ^{14}C values to calibrate racemization rates. By contrast, the more conservative use of amino acid racemization (or epimerization) values in marine shell to define aminozones has been much more successful. Obsidian hydration dating has had difficulty in achieving status as a generally useful chronometric technique due to a series of problems including the existence of source-dependent hydration rates and the determination of effective hydration temperature (EHT) values. The use of the method to achieve relative placement for groups of obsidian artifacts has been much more useful.

Chapter 9 ("Magnetic dating and magnetostratigraphy") considers the current status of various topics in archaeomagnetism including the magnetic polarity time-scale. With regard to the latter, there continues to be an uncertainty concerning the status of proposed world-wide polarity excursions during the Brunhes normal polarity chron (0-730,000 years ago). The only accepted subchron noted (Table 9.1) is the Blake event dated at 104,000-117,000 years ago. A discussion concerning the precision obtainable using archaeomagnetic data emphasizes that this is highly dependent on the century and region, and it is prudent to examine in detail the reference curve employed to infer the age.

In the view of the reviewer, this book is the best and most comprehensive overview of physical dating methods applicable to archaeology currently available. The significance of this volume is that it probably will be one of the last to deal with the full range of Quaternary physical dating methods for which any one scientist will be able to control the literature sufficiently to provide a critical evaluation of all relevant techniques. □

Disease and Demography in the Americas. John W. Verano & Douglas H. Ubelaker (eds.). Smithsonian Institution Press, Washington, DC, 1992. x + 294 pp. \$62.00 (cloth).

Reviewed by Joseph A. Ezzo, Statistical Research, Tucson, Arizona

The volume grew out of the symposium "Disease and Demography in the Americas, Changing Patterns Before and After 1492," held in November, 1989, at the Smithsonian Institution. It is part of a larger series of symposia sponsored by the American Museum of Natural History as part of the commemoration of the Columbus Quincentenary. The 27 papers in the volume are divided into two parts, the first dealing with disease before and after European contact, the second focusing on population size before and after contact. Despite the title, there are major geographical gaps in the overall representation. There are no papers dealing with Mesoamerica, one on northern Mexico, one on the Amazon Basin, one on the Caribbean, two on Canada, and two on Andean South America. The remaining 15 papers (excluding introductions and summaries) focus on the continental United States. Some of the papers, such as the piece by Buikstra, are panregional in scope, while others, such as the contribution by Boyd, focus on specific historical events (in this case two smallpox epidemics on the Northwest Coast).

"As the volume stands, it provides an excellent overview of not only the health and population size of Native American cultures prior to and after European contact, but also the current state of paleopathology and paleodemography in Americanist archaeology."

Many of the papers are quite brief, outlining the breadth of previous research in a particular region; indeed, for this volume to have provided detailed papers on all of the topics included, it would had to have been several times longer. Because scholars tend to be so geographically focused in their research, in general the papers of this volume discuss the range of diseases and infections present in a relatively small area. A nice balance to this would have been a couple of papers focusing on a specific disease or pathology and documenting its known incidence across the Americas.

Many of the databases are derived from skeletal studies, although a number of the demography papers employ ethnohistorical sources. In each instance, of course, the robustness of the database determines in large part the analytical strength of the arguments presented. With regard to ethnohistorical sources, Euroamerican sources allow Trimble considerable resolution in discussing a nineteenth century inoculation program in the Midwest; the more fragmentary sources from the American Southwest render Upham's discussion of population changes after Spanish contact far more speculative. Unfortunately, there appear to be very few regions where both types of data exist; one exception is the California coast, where the data are very nicely presented and analyzed by Walker and Johnson.

In their conclusion, Ubelaker and Verano note the importance of and need for treating the topic of biological impact of Europeans on Native Americans as an interdisciplinary endeavor: "clearly scholars in physical anthropology, demography, history, epidemiology, medicine, archeology, ecology, paleopathology, and related disciplines have a lot to teach one another" (p. 279).

The large format of the volume makes maps and tables easy to read; the double-column text provides welcome relief to the eyes. As the volume stands, it provides an excellent overview of not only the health and population size of Native American cultures prior to and after European contact, but also the current state of paleopathology and paleodemography in Americanist archaeology. Finally, and at the risk of sounding didactic, it might have been helpful to have had the scholars working with skeletal remains include a few sentences (perhaps in their acknowledgments) on the availability of the collections on which they worked and the present state of interactions with Native Americans where such studies are concerned. With the implementation of NAGPRA now an issue facing all of us interested in working with prehistoric human remains in the United States, the need for this level of communication is of primary importance. The loss of many collections due to reburial will, of course, present a new set of challenges to the investigation of the topics presented in this volume. This reality makes the present volume all the more timely and valuable. □

Prehistoric Human Bone: Archaeology at the Molecular Level. Joseph B. Lambert & Gisela Grupe (eds.). Springer-Verlag, 1993. ix + 313 pp. \$136.00 (cloth).

Reviewed by Joseph A. Ezzo, Statistical Research, Tucson, Arizona

The volume is comprised of some of the papers presented at the Third Advanced Seminar on Paleodiet held in Bad Homburg, Germany, in 1991. As a practitioner of archaeological bone chemistry, I practically felt in need of resigning myself to the analyst's couch after reading it. As an author of fiction (hopefully not to be confused with my bone chemistry publications), I can do naught but mix my metaphors while trying to write this review. Schizophrenia, gnarled trees, and a train ride—what a long, strange trip it has been.

The schizophrenia, not surprisingly, stems from two sources. First, there is the ever-present dichotomy in bone chemistry between stable isotopes on one hand and trace elements on the other. There is effectively no integration

of the two for analytical or anthropological purposes; this field is like a tree with two trunks growing off in such different directions and for so long now that they each bear fruit nothing like the other. Second, there is the mind-set of those who practice one or t'other. The isotope people forge ahead, unconcerned with nagging little demons such as diagenesis, focusing on ancient diets through both case studies and very nicely controlled experiments. The trace element folk have pretty much shelved the idea of dietary analysis for the time being, or have reduced dietary implications to their lowest common denominator. Diagenesis and strange interpretations of experimental data are the rotten apples here. If ever this dichotomy were painfully apparent, it is in this volume.

In the first section, which deals with stable isotopes, Ambrose and Norr present the results of a feeding experiment in which the effects of dietary components (energy and protein) on stable carbon isotopes ratios of bone collagen were investigated. They found that protein sources profoundly affect collagen, and also influence the per mil spacing from dietary $^{13}\text{C}/^{12}\text{C}$ to collagen $^{13}\text{C}/^{12}\text{C}$. Van der Merwe has been on the cutting edge of stable isotope research since day one. His paper with Lee-Thorp and Raymond considers significant dietary sources among the prehistoric inhabitants of Valdivia, Ecuador, once thought to have been the offspring of transoceanic contacts. The study is a nice example of how environmental changes over time can make dietary reconstruction tricky. The obvious food sources—maize and marine resources—do not appear to be as important as once thought; instead, forest resources (now no longer present) appear to have been rather significant. Lee-Thorp et al., Katzenberg, and Tieszen and Fagre present interesting studies that are well worth reading; space prevents a resume of these chapters here.

To the train-ride imagery, then. If the five stable isotope papers are akin (well, almost) to riding a first-class train through breathtaking landscapes of broad, sweeping valleys broken by sudden, spectacular mountain ranges, with a few canyons here and there (all under a brilliant sky—I live in Arizona, after all), the five ensuing papers on trace elements are more like negotiating a rickety set of rails through the South Bronx. These papers range from the innocuous (Ericson, Francalacci et al.) to the curious (Hancock et al.) to the bizarre (Herrmann) to... well, you'll get my drift soon enough (was this trip really necessary? etc., etc.).

Ericson rightly points out that high barium levels in bone from a coastal environment would be indicative of diagenesis (since marine resources have so little barium in them), but fails to consider or even cite those studies where barium has been used quite effectively as a dietary indicator. I surmised two points from the paper by Hancock et al.: 1) there are lots of elements you can measure in bone, and lots you can't; and 2) the concentrations of some elements can change in the postmortem environment. Herrmann's paper is based on a set of assumptions, such

as using microscopic sections of bone and zinc levels to address seasonal variations in diet. He fails to consider that even if his assumptions were correct, mineralization and remineralization of bone does not occur using simply minerals that have just entered the body through digestion and absorption (which would have to be the case to infer seasonality), but rather from most of the available bodily pool of that mineral. The paper by Lambert and Weydert-Homeyer describes a feeding experiment designed to determine—finally!—which elements really work as dietary indicators. The paper is a boiled-down version of their effort in *Archaeometry* (Lambert and Weydert-Homeyer 1993); happily, both publications arrive at the same conclusions. I have criticized the *Archaeometry* paper elsewhere (Ezzo 1994a; 1994b) and lack the intestinal fortitude to take this thing on again. Suffice it to say that the authors' utter lack of concern for the principles of physiology strikes me as being not only sloppy scholarship but intellectually insulting.

The schizophrenia subsides with the last four papers, but the train ride continues. Now the landscape is dark (could be New Jersey, but just as likely Iowa), illuminated by a few stars, a gibbous moon perhaps, the course and destination uncertain, but there is not a lack of confidence or direction or potential. These include studies on lipids in organic residues (Bethell et al.), the latest work by Grupe and her associates on microbial effects on archaeological bone, an ambitious and engaging piece by Tuross discussing methods of analyzing DNA from bone protein and its anthropological potential, and a general treatment of dental abrasion and its relationship to diet by the late Heinrich Newesley (somewhat less molecular than the other papers in the volume).

How does one summarize *Prehistoric Human Bone: Archaeology at the Molecular Level*? On the one hand, it can be stated that, like most edited volumes, the ride is very uneven; papers occasionally seem to have no propinquity to one another. Figure and table presentations are often cluttered. The content of the book does not justify the price. On a more substantive level... I'm sorry, but I'm already late for the therapist. Conductor, please conduct me to the couch. And somebody stop this train!

REFERENCES CITED

- Ezzo, J.A.
 1994a Putting the "chemistry" back into bone chemistry analysis: modeling potential paleodietary indicators. *Journal of Anthropological Archaeology* 13:1-34.
 1994b Zinc as a paleodietary indicator: an issue of theoretical validity in bone-chemistry analysis. *American Antiquity* 59:606-621.
 Lambert, J.L. & J. Weydert-Homeyer
 1993 The fundamental relationship between ancient diet and the inorganic constituents of bone as derived from feeding experiments. *Archaeometry* 35:279-294. □

News of Archaeometallurgy

Meetings

The International Conference on Ancient Mining, Metallurgy and Conservation of Metallic Artifacts that was held in Cairo April 10-12 was heavily attended by Egyptian academics, including the entire Conservation Department of Cairo University and their students, and many archaeologists. Unfortunately the conservation session was held concurrently with the sessions on mining. Among many interesting talks, those by Tim Shaw and Beno Rothenberg stood out for their general applicability. Rothenberg summarized the archaeological approaches he used over the decades he has studied mining at Timna and, with the wisdom of hindsight, outlined how he would approach it now. Chief among the lessons of this is the importance of reconstructing the local landscape before proceeding with extensive excavation and interpretation, and the need to adapt procedures or even create them, as each site at Timna proved unique. We have been awaiting imminent publication of the last two volumes of the Timna excavation reports, but Rothenberg told me that he had decided to reorganize them completely, in line with his remarks on the ancient landscape. Tim Shaw presented a re-reading of tool marks to be found in early mines that alters not only the way we look at them but also the sequence of exploitation that is hypothesized from them. He showed that, contrary to general belief, sinking shafts is easier than cutting horizontally, as in adits. The expected sequence would now be from open cast, to shaft, to adit. He also suggested that the sinking of multiple shafts might indicate prospecting.

An international symposium on early bronze working in Europe will be held in 1996. One session will be held the 4th and 5th of March in Switzerland, at Neuchâtel, and will focus on compositional analysis. The second will be held from March 6th to 9th in France, at Dijon, and will trace bronze from mine to object. The period covered will be the 20th to the 8th centuries BC. Further information will be published as I receive it. In the meantime, write one of the three organizers: V. Rychner, Séminaire de Préhistoire, Université de Neuchâtel, 7 avenue du Peyrou, CH-2000 Neuchâtel, Switzerland; telephone 41-38 25 03 36; fax 41-38 24 28 16; M. Pernot or C. Mordant at UMR 9934, Faculté des Sciences, Université de Bourgogne, 6 boulevard Gabriel, F-21000 Dijon, France; telephone 33-80 39 57 97; fax 33-80 39 57 87.

On May 28 to June 1, 1996, the 13th International Bronze Congress will be held in Cambridge, Massachusetts, with a special focus on the influence of classical bronze statuary during the Renaissance as well as sessions on conservation and ancient technology. Abstracts are due by October 1. For information write: Bronze Congress, Amy Brauer, Arthur M. Sackler Museum, Harvard University Art Museum, 32 Quincy Street, Cambridge MA 02138, USA.

In 1997, the 12th International Numismatic Congress will be held September 8-12. The congress, which is held only once every six years, will be hosted by the Humboldt University, located on Unter den Linden in Berlin. For information write Staatliche Museen zu Berlin, Preussischer Kulturbesitz, Münzkabinett, Bodestraße 1-3, D-10178 Berlin, Germany.

Publications

The proceedings of a symposium held in 1991 at the J. Paul Getty Museum have just been published. *Ancient & Historic Metals: Conservation and Scientific Research*, edited by David A. Scott, Jerry Poday, and Brian B. Considine, is beautifully produced and contains 16 papers and more than 80 color plates. Subject matter is diverse in period and alloy, ranging from bronze in Swiss lake sites to the equestrian monument of Marcus Aurelius to 19th century zinc statuary. It can be ordered (ISBN 0-89236-231-6) for US \$50 plus \$3 handling (\$5 overseas, surface) from the Getty Trust Publications Distribution Center, PO Box 2112 - DPT CDN5, Santa Monica CA 90407-2112, USA. Orders charged to Visa or Master Card can be telephoned to 800-223-3431, or from outside the US and Canada to 301-453-5352; fax 301-453-7966.

The proceedings of the meeting held in Besançon in 1993 by the Iron Committee of the International Union of Pre- and Proto-historic Sciences are now available. *La Sidérurgie ancienne de l'Est de la France dans son contexte européen: Archéologie et archéométrie* has been edited by Michel Mangin and includes 46 papers from 73 participants and the discussion of them. Most papers are in French, some are in English or German. All the discussions have been rendered in French. There are many illustrations, some in color, and topics have been indexed by author; the whole runs to more than 400 pages. It is No. 536 in the Annales littéraires de l'Université de Besançon, Série Archéologie 40. For information write to the attention of Mme Rémond at the Annales, Faculté des Lettres, 30 rue Mégevand, 25030 Besançon, France. It can be ordered (ISBN 2.251.60.536 .3) from Diffusion Les Belles Lettres, 85 boulevard Raspail, 75006 Paris, France, for 380 francs.

The Historical Metallurgy Society and the Peak District Mines Historical Society have announced the publication of the proceedings of the Agricola 500th Anniversary Conference held last year at Ambleside. *Mining Before Powder*, edited by Trevor D. Ford and Lynn Willies, contains 26 papers on early, medieval, and post-medieval mining. It can be ordered (ISBN 0 9506254 5 0) only from the Peak District Mining Museum, Matlock Bath, Derbysire DE4 3NR, England; telephone 44-1629-583834. It costs £10 plus £2 postage (by air to the EC, surface mail elsewhere) and must be paid in £ sterling.

America Preserved: A Checklist of Historical Buildings, Structures, and Sites catalogues contents of the Historic American Buildings Survey and the Historic American

Engineering Record, over 29,000 structures and sites, and the documentation, including historic photographs, available from the Prints and Photographs Division of the Library of Congress. This volume can be ordered for US \$74 from the Library of Congress Cataloging Distribution Service, PO Box 75840, Washington DC 20013-5840, USA; telephone 800-255-3666 (US only, toll-free) or 202-707-6100; fax 202-707-1334; TDD 202-707-0012; e-mail: cdsinfo@mail.loc.gov. Visa or MasterCard accepted; include expiration date. The price includes delivery worldwide by surface mail.

The Archaeotechnology column in *JOM*, the *Journal of the Mining, Metals, and Materials Society*, being conducted by Robert Ehrenreich presented "Silver and copper artifacts from ancient Anatolia" by K. Aslihan Yener, Paul Jett and Annemie Adriaens in the May 1995 issue, pages 70-72. They report on three silver objects, including a gilded bracelet from Troy, and two copper ones; dates range from Early to Late Bronze Age.

The Legazpi Valley in the Basque area of Spain has extensive remains of water-powered ironworks active from the 14th to the 19th century. For a very informative and well-illustrated brochure in English on the Valley of Iron write Town Hall Legazpi, 20230 Legazpi, Spain; telephone 34 730800 or 730825; fax 34 730676. Information and guided tours are available from the same source.

Announcements

Professor Mangin retired last year from the University, where he has been professor of archaeology since 1980, but continues his research in ancient mining and metallurgy as part of the cadre of the UPR 0423 of CNRS: Culture and the Paleometallurgy of Iron. He can be reached at the Institut Polytechnique de Sevenans, 90010 Belfort, and also at his home address, 15 rue de la Maladière, 21220 Brochon, France.

One of Tim Shaw's predecessors as Dean of the Royal School of Mines, Peter Pratt, passed away recently. Pratt was known as a leader in broadening the metallurgy course at Imperial College to include all the material sciences, and for his studies in medieval and Tudor armaments, specifically the development of arrows and the English longbow. He and Richard Hardy published a book, *Longbow*, on the subject in 1976; this was reprinted in 1992 with an additional chapter on his research using the longbows from the wreck of the Mary Rose.

Gerhard Sperl was also at the Cairo meeting and told me that he has been asked to examine the Iceman's copper axe. If you have any questions or suggestions about its study, write him at the Erich-Schmid-Institut für Festkörperphysik der Österreichischen Akademie der Wissenschaften, Jahnstrasse 12, A-8700 Leoben, Austria; telephone 43 (38 42) 45 5 12/28.

If you have any archaeometallurgical news to share or can report on the session on the development of metallurgy

in European prehistory held at the European Association of Archaeologists meeting in Santiago de Compostella, or the Metal '95 conference held by ICOM in Semur en Auxois, France, please write or call:

Martha Goodway, Smithsonian Institution MRC 534, Washington DC 20560, USA; tel: 301-238-3700 X164; fax 301-238-3709 □

Archaeometry in Eastern Europe

Special Journal Issue

Archaeologia Polona, Journal of the Institute of Archaeology and Ethnology, Polish Academy of Sciences (in English). Special Theme: Archaeometry; Tomasz Herbich and Zbigniew Kobylinski, eds.; vol. 31, 1993

Contents

Szymanski, J.E. and Tsourlos, P. The resistive tomography technique for archaeology: an introduction and review.

David, A. Some current applications of geophysical survey for the evaluation of archaeological sites in Britain.

Dabas, M., Herbich, T., Hesse, A., Misiewicz, K. and Tabbagh, A. Electromagnetic prospecting at two Polish sites (Slonowice and Milanowek) with the SH3 Slingram device.

Herbich, T. The variations of shaft fills as the basis of the estimation of flint mine extant: a Wierzbica case study.

Smekalova, T., Voss, O. and Abrahamsen, N. Magnetic investigation of iron-smelting centres at Snorup, Denmark.

Misiewicz, K. Resistivity survey in prospection of settlement sites.

Fassbinder, J. and Stanjek, H. Occurrence of bacterial magnetite in soils from archaeological sites.

Kobylinski, Z. and Hensel, Z. Imports or local products? Trace element analysis of copper-alloy artifacts from Hacki, Bialystok Province, Poland.

Kondratiuk, P. and Banaszuk, P. Interpretation of phosphorus concentration in archaeology in the light of soil science research.

Stos-Gale, Z.A. Lead isotope provenance studies—do they work?

Koziorowska, L. Chemical composition of the standard reference copper alloys: a comparison of the Polish and German analytical results.

Hensel, Z. The attestation of analytical laboratory results in archaeology: a pressing need.

Stawiarska, T. Chemical studies of ancient glasses in Poland (with particular reference to the Roman Period).

Stawiarska, T. A study of scientific error: glass from Leg Piekarski.

Zurawski, B. Low altitude aerial photography in archaeological fieldwork: the case of Nubia.

Price is 25 US dollars, payable by cheque. Request must be sent with a return address to: Instytut Archeologii i Etnologii PAN, Al. Solidarnosci 105, 00-140 Warszawa, Poland. For further information please contact:

Tomasz Herbich, Institute of Archaeology and Ethnology, Polish Academy of Science, Al. Solidarnosci 105, 00-140 Warszawa, fax. (22) 240100, e-mail: herbich@plearn.edu.pl

Other Publications

After decades of isolation from the West, archaeometrists in Eastern Europe are anxious to make connection with their colleagues in the rest of the world. Two publications are directed to this goal.

In Hungary, the Working Group of Archaeometry and the Working Group of Archaeometry and the Working Group of Industrial Archaeology jointly issue an English Supplement to their Hungarian-language "Industrial Archaeology and Archaeometry Newsletter." The English Supplement gives brief accounts of current research and may be obtained (free of charge) from its editor, Katalin T. Biró, Hungarian National Museum, Department of Information, Könyves Kálmán krt. 40, PO Box 124, H-1425 Budapest 9, Hungary.

In Romania, a group of physicists is active in archaeometry. The 2nd Romanian Conference on the Application of Physics Methods in Archaeology was held in Cluj Napoca (Transylvania) in 1989, and the proceedings, entirely in English, were published by the Romanian Physical Society and the Institute of Atomic Physics in 1990. Topics of the 15 papers include archaeoastronomy; statistical methods, including computer applications for clustering, seriation, and dimensional analysis; resistivity prospecting; mineralogical and petrographic analysis of stone tools; and neutron activation analysis of a variety of finds. The book is obtainable from the Institute of Atomic Physics Information and Documentation Office, PO Box MG-6, R-76900 Bucharest; Romania, no price is given.

From the Archaeometric Clearinghouse, by Curt W. Beck, Journal of Field Archaeology, 20, 1993, 358-359

Contributions to future issues of the SAS Bulletin should be sent to the new Editor:

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Internet Sites

International Council on Monuments and Sites

With the recent change of the address of the gopher and web servers operated by the International Council on Monuments and Sites (ICOMOS), this seemed like a good opportunity to remind readers of the Internet guide that we have offered through the ICOMOS servers and the Clearinghouse of Subject-Oriented Internet Resources.

The net publication titled "Internet Resources for Heritage Conservation, Historic Preservation, and Archaeology," now in version 3.08.

The World Wide Web URLs (Uniform Resource Locator) are:

http://hpb1.hwc.ca:10002/Internet_Resource_Guide.html

gopher://una.hh.lib.umich.edu/00/inetdirsstacks/archpres:stott

From the ARCH-L listserve; submitted by Peter H. Stott, Heritage Conservation, US ICOMOS / ICOMOS, Canada; e-mail: pstott@tufts.edu

SAA Bulletin

The newest jam-packed issue of the SAA Bulletin is now available at both our Web and gopher sites:

<http://www.sscf.ucsb.edu/SAABulletin/>

gopher://alishaw.ucsb.edu

John Kantner, Department of Anthropology, University of California-Santa Barbara, Santa Barbara, CA, 93106, USA; e-mail: kantner@sscf.ucsb.edu; http://www.sscf.ucsb.edu/anth/

WEDA

The last issue contained an item on WEDA, The Worldwide E-mail Directory of Anthropologists. Hugh Jarvis, the compiler of WEDA, sent the following correction: "we have mothballed our gopher server and WEDA is also no longer available via email. The easiest way to access WEDA is through the URL's listed below:

<http://wings.buffalo.edu/academic/departments/anthropology/weda/>

<http://wings.buffalo.edu/go?weda>

Internet Resources of Interest to Anthropologists

The Web version of "Internet Resources of Interest to Anthropologists" has a new location; I am now maintaining it myself, and it will be updated regularly. You can reach it through a link from my home page at:

<http://www.nitehawk.com/alleycat/welcome.html>

or access it directly at:

<http://www.nitehawk.com/alleycat/anth-faq.html>

As always, feedback (especially concerning errors/omissions) is greatly appreciated.

Allen Lutins; e-mail: alleycat@SPECTRA.NET

□

Meetings Calendar

Susan Mulholland, Archaeometry Laboratory, University of Minnesota-Duluth, 10 University Drive, Duluth MN 55812, USA; tel: 218-726-7957; fax: 218-726-6181; e-mail: smulholl@ua.d.umn.edu

New listings are marked by a* ; new information for previous listings indicated by a +. More information on some meetings is given in previous bulletins as indicated, e.g., "12(4):13" for volume 12, number 4, page 13.

1995

- Nov. 2-5. American Society for Ethnohistory Annual Meeting. Kalamazoo, Michigan. Donald Fixico, Department of History, Western Michigan University, Kalamazoo, MI 49008, USA; tel: 616-387-4629; fax: 616-387-3999.
- + Nov. 6-9. Geological Society of America, Annual Meeting. New Orleans, Louisiana. Vanessa George, Geological Society of America, 3300 Penrose Place, Boulder, CO 80301, USA; tel: 303-447-2020; fax: 303-447-1133. Symposium on "High-resolution geophysics in cultural resource management;" field trip on "Cultural adaptation to landforms in the Mississippi Delta plain."
- Nov. 8-11. Southeastern Archaeological Conference. Knoxville, Tennessee. SEAC Conference, Department of Anthropology, University of Tennessee, Knoxville, TN 37996-0720, USA; tel: 615-974-4408; fax: 615-974-2686. Abstract deadline: 1 August.
- Nov. 9-12. 28th Annual Chacmool Conference—Archaeology Into the New Millennium: Publish or Perish. Calgary. 1995 Conference Committee, Department of Archaeology, University of Calgary, 2500 University Drive N.W., Calgary, Alberta, Canada T2N 1N4; fax: 403-282-9567; e-mail: 13042@UCDASVM1.Admin.UCalgary.CA. This conference will focus on archaeology in the public realm.
- Nov. 15-19. American Anthropological Association, Annual Meeting.

Washington, DC. American Anthropological Association 4350 North Fairfax Drive, Suite 240, Arlington, VA 22203, USA; tel: 703-528-1902.

Nov. 22-25. International Association of Computing in Archaeology. Rome. Prof. Paolo Moscati, Istituto per l'archeologia etrusco-italica-CNR, Viale di Villa Massimo 29, 00161 Roma, Italy; tel: 39 6 85 30 19 34; fax: 39 6 44 23 93 79. Themes include spatial analysis and field archaeology.

Nov. 27-Dec. 1. Materials Research Society, Fall Meeting. Boston. MRS, 9800 McKnight Road, Pittsburgh, PA 15237, USA; tel: 412-367-3003; fax: 412-367-4373.

* Dec. 18-21. 17th annual TAG conference. Reading, UK. TAG Organising Committee, Department of Archaeology, Faculty of Letters, University of Reading, Whiteknights, Reading RG6 2AA, UK; tel: 01734 318132; fax: 01734 874722.

Dec. 27-30. Archaeological Institute of America, Annual Meeting. San Diego. AIA, 656 Beacon Street, Boston, MA 02215, USA; fax: 617-353-6550. Themes: zooarchaeology, nautical/underwater, Pacific rim, Meso-American and California archaeology.

1996

- * Jan. 2-7, 1996. Society for Historical Archaeology Conference on Historical and Underwater Archaeology. Cincinnati, Ohio. Marcy Gray, Conference Chair, Gray and Pape, 1318 Main Street, Cincinnati, OH 45210, USA; tel: 513-665-6707; e-mail: 76554.3313@compuserve.com. Themes are "Bridging Distances: Recent Approaches to Immigration, Migration, and Ethnic Identity," and "Forging Partnerships in Outreach and Education."
- * Feb. 17-18. Computer Applications in Archaeology 96. York. Dr. Julian Richards, Department of Archaeology, University of York, 88 Micklegate, York YO1 2EP, UK; tel: 01904 636731; e-mail: jdr1@york.ac.uk. Jointly organised by the Department of Archaeology, University of York, and the

Council for British Archaeology.

- * March 3-8. Pittcon '96—The Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy. Chicago. The Pittsburgh Conference, 300 Penn Center Boulevard, Suite 332, Pittsburgh, PA 15235-5503, USA; tel: 412-825-3220; fax: 412-825-3224.
- * March 25-27. Computer Applications and Quantitative Methods in Archaeology, 24th Annual Meeting. Iasi. Irgil Mihailescu-Birliba, Institutul de Arheologie, Str. Lascar Catargiu 18, 6600 Iasi, Romania; e-mail: vmb@uaic.ro; or Kris Lockyear, c/o Department of Archaeology, Univ. of Southampton, Highfield, Southampton SO17 1BJ, Great Britain; e-mail wom@soton.ac.uk; URL: <http://caa.soton.ac.uk/caa/>
- * April 9-13. Association of American Geographers, Annual Meeting. Charlotte, North Carolina. Association of American Geographers, 1710 16th Street NW, Washington, DC 20009, USA; tel: 202-234-1450.
- April 10-14. Society for American Archaeology, Annual Meeting. New Orleans. SAA, 900 Second Street NE, Suite 12, Washington, DC 20002, USA; tel: 202-789-8200.
- * April 15. History and Prehistory of Ceramic Kilns Symposium; at the annual meeting of the American Ceramic Society; sponsored by the Committee on Ceramic History. Indianapolis, Indiana. Prudence M. Rice, Department of Anthropology, Mailcode 4502, Southern Illinois University, Carbondale, IL 62901, USA. The focus will be on kiln and kiln-firing technologies across a wide cultural area and span of time.
- * April 22-26. Materials Research Society, Spring Meeting. San Francisco, California. Materials Research Society, 9800 McKnight Road, Pittsburgh, PA 15237, USA; tel: 412-367-3003; fax: 412-367-4373.
- April 22-26. 8th International Conference on Luminescence and Electron Spin Resonance Dating. Canberra. LED 96, Mrs. Judy Papps, Quaternary Dating Research Centre, ANH, RSPAS, Australian National University, Canberra, ACT 0200, Australia; tel:

61-6-249-4764; fax: 61-6-249-0315; e-mail: Judy.Papps@anu.edu.au. Topics include dosimetry, equipment technology, Quaternary and archaeological dating applications. Pre-conference field trips to laboratories At Adelaide, Wollongong and Canberra.

- * April 25. Geology and Geochemistry in Archaeology—Spring 1996 Meeting of the Mineralogical Society. Milton Keynes, UK. Olwen Williams-Thorpe, Department of Earth Sciences, The Open University, Milton Keynes MK7 6AA, UK; tel: 01908 655147; fax: 01908 655151; e-mail: O.Williams-Thorpe@open.ac.uk. Recent applications of geology, geochemistry and mineralogy in the study of archaeological stone artefacts; followed by a field excursion on April 26 to a local archaeological site to demonstrate the use of a range of field-portable geochemical and geophysical analysis instruments in characterising archaeological samples.
- * April 28-May 1. Symposium on the Application of Geophysics to Engineering and Environmental Problems—SAGEEP '96. Keystone Resort, Colorado. Linda Hadley, SAGEEP '96 Conference Chair, !Geophysica, 2221 East Street, Golden, CO 80401, USA; tel: 303-278-1488.
- May 20-24. International Symposium on Archaeometry. Urbana-Champaign, Illinois. 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. Abstract deadline: 15 November. 18(1):17.
- June 22-29. Ninth International Palynologic Congress. Houston, Texas, USA. Organized by the International Federation of Palynological Societies and the American Association of Stratigraphic Palynologists. D.J. Nichols, U.S. Geological Survey; fax: 303-236-5690; e-mail: dnichols@greenwood.cr.usgs.gov. 18(1):19
- * July 20-24. British Archaeological Association Annual Conference. Bristol. Helen Caton, BAA Conference, PO Box 31, Bristol BS99 1PW, UK.
- Aug. 4-14. 30th International Geolog-

ical Congress. Beijing. Secretariat Bureau, 30th International Geological Congress, PO Box 823, Beijing 100037, P.R. China; tel: 86-1-8327772; fax: 86-1-8328928. 17(3):23.

- + Aug. 25-30. International Institute for Conservation of Historic and Artistic Works, 16th International Congress. IIC, Buckingham Street, London WC2N 6BA, UK; tel: 0171 839 5975; fax: 0171 976 1564. Under the title Archaeological Conservation and its Consequences, the Congress will offer new perspectives on the conservation of archaeological sites and finds, both on land and underwater.
- Sept. 8-14. 13th Congress of the International Union of Prehistoric and Protohistoric Sciences. Forlì. Alla Segreteria del XII Congresso U.Z.S.P.P., Casa Saffi, Via S. Marchesa 12, I-47100 Forlì, Italy; fax: 39(0)-543-35805.
- * Sept.30-Oct. 3. 6th International Conference on Ground Penetrating Radar. Sendai, Japan. Dr. Motoyuki Sato, GPR '96 Technical chairperson, Department of Resources Engineering, Faculty of Engineering, Tohoku University, Sendai 980-77, Japan; tel: 81 (22) 217-7399; fax: 81 (22) 217-7401; e-mail: gpr96@earth.tohoku.ac.jp; URL: <http://www.earth.tohoku.ac.jp/gpr96.html>. Abstract deadline: 5 April 1996.
- * Oct. 9-11. Association for the Study of Marble and Other Stones Used in Antiquity, Fourth International Congress. Bordeaux, France. Université de Bordeaux III—CNRS, Maison de l'Archeologie, Applied Physics Lab, CRIAA, F-33405, Talence Cedex, France; tel: 33 56 84 51 60; fax: 33 56 84 51 57.
- Oct. 26-29. Eastern States Archaeological Federation, 62nd Annual Meeting. Wilmington, Delaware. Abstracts due June 1. Faye L. Stocum, DESHPO, #15 The Green, Dover, DE 19901, USA; tel: 302-739-5685.
- * Nov. 10-Dec. 13. Pan-American Course on the Conservation and Management of Earthen Architectural and Archaeological Heritage; co-organized by the Instituto Nacional de Cultura del Perú-Dirección Regional La Libertad (INC-DRLL), International Centre for Earth

Construction-School of Architecture of Grenoble (CRA Terre-EAG, Gaia Project), the International Centre for the Study of the Preservation and the Restoration of Cultural Property (ICCROM, Gaia Project), and the Getty Conservation Institute (GCI), with support of the World Heritage Fund of UNESCO. Chan Chan, Trujillo, Peru. Training Program, The Getty Conservation Institute, 4503 Glencoe Avenue, Marina del Rey, CA 90292, USA; tel: 310-822-2299; fax: 310-821-9409. Application due 15 Dec. 1995. The course is geared toward professionals and technicians in anthropology, archaeology, architecture, engineering, conservation, and other disciplines involved with the conservation and management of cultural heritage. The course will be conducted in Spanish.

CRM Courses

The University of Nevada, Reno offers a program of continuing education short courses in cultural resource management, conducted in cooperation with the Advisory Council on Historic Preservation, the Bureau of Land Management, the National Park Service, and the U.S. Forest Service. Upcoming courses include:

Faunal Analysis. Feb. 7-9, 1996, Reno. Registration deadline: 10 Jan. 1996. Fee: \$375.

Global Positioning Systems for Mapping and Data Collection. April 5. Reno. Registration deadline: 7 March. Fee: \$125.

Introduction to Global Positioning Systems. April 9. New Orleans (prior to the Society for American Archaeology conference). Registration deadline: 8 March. Fee: \$125.

Geomorphology in Archaeological Analysis. April 15-19. Reno. Registration deadline: 15 March. Fee: \$625.

Lithic Analysis. May 20-24, 1996, Reno. Registration deadline: 19 April 1996. Fee: \$625.

Leanne Stone, Cultural Resource Management, Division of Continuing Education/048, University of Nevada, Reno, Reno, NV 89557-0024, USA; tel: 702-784-4046; fax: 702-784-4801; e-mail: Leanne@scs.unr.edu □

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