

# SAS

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## NEWSLETTER

**SOCIETY FOR ARCHAEOLOGICAL SCIENCES**

Archaeological Research Unit, Radiocarbon Laboratory, Department of Anthropology  
University of California, Riverside – Riverside, California 92512

### CURRENT RESEARCH

#### **TOWARD A CONSENSUS RADIOCARBON CALIBRATION FRAMEWORK: THE TUCSON WORKSHOP**

During the week of January 28 to February 2, 1979, radiocarbon specialists, dendrochronologists, statisticians, representatives of archaeological, geophysical, and geological users groups and the National Science Foundation met at the University of Arizona at Tucson to review the current data bearing on the calibration of the radiocarbon time scale. The workshop was jointly convened by Paul Damon, Austin Long, and Juan Carlos Lerman (Laboratory of Isotope Geochemistry) and Bryant Bannister (Laboratory of Tree-Ring Research). The Geological Society of America and the Society for American Archaeology were represented by Margaret Davis and Jeffrey Dean, respectively. Representing the SAS at the meeting was R.E. Taylor (UCR Radiocarbon Laboratory), SAS Acting Secretary. Support for the meeting came from NSF.

The principal stimulus for the workshop was the recognition that there was a critical need to generate a consensus radiocarbon calibration framework to replace the various calibration charts, tables, and curves now current in the literature. Three radiocarbon research facilities have been responsible for producing most of the radiocarbon data on dendrochronologically-dated bristlecone pines. These include the Arizona (Damon, Long, and Lerman), the La Jolla (represented at the conference by Hans Suess) and the Pennsylvania (represented by Henry Michael) radiocarbon laboratories. Also present were Minze Stuiver, director of the University of Washington laboratory and senior editor of *Radiocarbon*, and Douglas Donahue, who is co-principal investigator of the accelerator facility now in construction at the University of Arizona for the analysis of radiocarbon and trace elements.

Other C-14 laboratory personnel present included Jeffrey Klein (Pennsylvania), Robert Burk (Washington), and Timothy Linick and Albrecht Neftel (La Jolla). In addition to Bannister, personnel from the Laboratory of Tree-Ring Research attending the workshop included Wesley Ferguson, who has provided all of the well-dated bristlecone pine wood to the C-14 labs, Jeffrey Dean, Donald Graybill, and V. La Marche. Statisticians present included Malcolm Clark, Monash University, Australia, and John Tukey of the Bell Laboratories and Princeton University. John Yellen, Program Director for Anthropology, National Science Foundation, also attended.

The goals of the workshop of interest to archaeologists included (1) the formulation of a calibration table for users who have single radiocarbon determinations of varying statistical precision, (2) the formulation of a series of graphs describing the high frequency components ("wiggles") of the calibration curve, and (3) publication of revised radiocarbon determinations on bristlecone pine samples in the same format by all laboratories. An upcoming issue of *Radiocarbon* will carry the graphs and tables presenting such data with detailed instructions for their use. A

proposal to establish an international calibration commission will be made to the Tenth International Radiocarbon Conference to be held in August 1979 at Berne and Heidelberg.

The significance of the workshop is that, for the first time, those principally involved in the issues surrounding the calibration of the radiocarbon time scale have agreed to a single calibration scheme utilizing a coherent set of data expressed with respect to the same set of standards. For almost a decade, all laboratories working on the calibration problem have been in essential agreement about the nature of the long term variations and the existence of "wiggles"—the short term, or high frequency variations in C-14 activity—however, they have not, as yet, concurred on the validity of all of the "wiggles" reported by Hans Suess of the La Jolla laboratory, who had been especially insistent that such "wiggles" were important components of the radiocarbon time scale. As a result of the workshop, there is considerable agreement as to the frequency and magnitude of these short term variations during the last few millenia.

As soon as the new data are published in *Radiocarbon*, archaeologists and other users will have available a single consensus radiocarbon calibration scheme that will replace those currently available. It is very important, however, that the detailed cautionary notes that will appear with the tables and graphs in the publication be studied with great attention as these will express the views of those best able to decide as to the most accurate method of calibrating radiocarbon determinations.

*Editor's Note:* We wish to express our appreciation to Paul Damon for his assistance in the preparation of this report.

## RESEARCH NOTES

### MAGNETIC SURVEYING OF ARCHAEOLOGICAL SITES

An extensive program in magnetic surveying of archaeological sites has been conducted for the last four or five years by personnel from the Physics Department, University of Nebraska-Lincoln (UNL) and the Midwest Archaeological Center, National Park Service (MWAC). This continuing project is under the direction of Robert Nickel (MWAC) and is funded by the MWAC. A microcomputer-magnetic tape data logger connected to two proton magnetometers was developed by Ken Burgess (UNL and MWAC). The data are analyzed by means of a package of computer programs for processing, filtering and mapping, developed by John Weymouth, who directs this aspect of the program.

The MWAC-UNL program has now surveyed about 280 hectares, including sites in North Dakota, Kansas, Illinois, Minnesota, South Carolina, Arizona, and Colorado. The sites are both prehistoric and historic. The surveys in North Dakota have provided valuable information on the distribution of Mandan and Hidatsa earth lodge sites in the Knife River Indian Villages National Historic Site. The work in South Carolina involves the evaluation of the archaeology of two colonial village sites in the Ninety Six National Historic site.

In addition, John Weymouth has surveyed early Jomon sites in Japan and a group of mounds in Missouri while working with the Anthropology Department at UNL. Robert Huggins of UNL is carrying out field work and analysis on prehistoric sites in south-west Colorado in conjunction with the University of Colorado. Proton magnetometers of 1/4 gamma sensitivity have proved very successful on these low contrast sites.

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SAS

# NEWS OF THE PROFESSION

## FACILITIES FOR SCIENTIFIC ANALYSIS OF ARCHAEOLOGICAL MATERIALS AT THE UNIVERSITY OF MISSOURI-COLUMBIA

The American Archaeology Division, Department of Anthropology, UMC, has a number of analytical tools and facilities available for archaeological research, either under the direct aegis of the Division/Department, or available through the cooperation of other academic and research units of the University. These include: 1) complete spectrographic facilities at the Environmental Trace Substance Center; 2) an SEM at the University Hospital complex; 3) a state-of-the-art Archaeology TL Laboratory under the direction of Dr. Ralph Rowlett, Department of Anthropology; 4) an electron microprobe at the Department of Geology; and 5) a Laboratory for Nuclear Archaeology (LNA) staffed by Division/Department researchers and located at the Research Reactor Facility of the University. This latter facility has access both to cobalt-60 sources and the 10 megawatt reactor, the largest outside of government sponsorship. The facilities are available on a time/space available basis to all legitimate University researchers.

## PACT

As mentioned in an earlier issue of the *SAS Newsletter*, PACT is a European interdisciplinary association of specialists interested in the application of physical, chemical, and mathematical techniques in archaeology. Professor Tony Hackens (Louvain University), treasurer of the group and co-editor of their Journal, has remarked on the similarities of goals and ideals between the SAS and PACT. He has prepared the following description of the organization.

In order to promote cooperation in Europe among scientists from universities, research institutions and governmental agencies, the parliamentary assembly of the Council of Europe has set up a number of groups of experts in interdisciplinary fields whose issues have a bearing on political decisions and responsibility. The goal of PACT is cooperation between natural sciences and history or archaeology, the broader objectives being a contribution to responsibility in the field of cultural heritage in Europe.

The group is headed by Prof. J. Soustelle. Members were first appointed on the basis of a ratio between population per country and an equilibrated proportion of archaeologists and scientists of different fields in each discipline. There are several subcommittees: C-14, thermoluminescence, prospection techniques, analysis, authenticity, and the number may increase since there has been a demand for an educational group.

The subgroups prepare symposia, formulate issues, and eventually will hold summer seminars; they define the fields where cooperation is especially needed. For example, this is the case for analytical standards. The use of international standards for analyzing artifacts will be discussed in London on Tuesday, March 27th at 2 P.M., prior to the Archaeometry congress. It is a follow-up of a first meeting held in Bonn, last March. All those interested are welcome to participate, and may also ask for the questionnaire previously prepared by Dr. Lahanier (Louvre) and distributed by the Council of Europe (write to Dr. J.P. Massue, Commission for Science and Technology, Council of Europe, F 67006 STRASBOURG).

Another issue is education. At the request of the Italian ministry (Signora Falcucci, Sub-Secretary of State for Education), a committee has set up a framework for interdisciplinary education for the personnel responsible for cultural heritage (with emphasis on archaeology, art history and folklore). This project will be continued this year in cooperation with ICOM and other institutions. In the same context, members of PACT have functioned as promoters of the first European summer school in the field. Its theme will be the characterization of ancient metals, and it will be held at Urbino and Rome from April 9th to 26th (a program is available free from Dr. Massue, Strasbourg). The texts will be published as a teaching module for those who could not participate and for international use and critique. The teaching staff and student body have been selected from several European countries and a wide interest has been expressed in the project.

For international communication, PACT has created a newsletter called PACT NEWS which is distributed free of charge (available from Dr. Massue) and where announcements, news, and short

reports are published free. Individuals may announce books, new research projects, symposia and meetings, sabbatical years in Europe, vacancies of jobs, need for samples or documentation and so forth. English and French editions (simple translation) are available. The next newsletter will have the many reports presented at the authenticity session at Klingenthal (Strasbourg) in November 1978.

More definitive texts of major symposia are published in the *Journal PACT*. Number 1, 1977 has already been announced in the *SAS Newsletter*. PACT 2 (1978) and 3 (1979) are comprised of 58 papers and 10 abstracts from the specialist seminar on thermoluminescence held at Oxford in July 1978. These volumes (edited by M.J. Aitken and Vagn Medjahl) will be ready for distribution at the London conference on Archaeometry. The papers give an up-to-date and world-wide survey of the techniques of thermoluminescence dating. Review papers describe the basic problems and the development of the different procedures; research papers both outline the most recent progress in the techniques and discuss the application to archaeology and geochronology. The topics include: basic procedures; instrumentation; dose-rate determination; fine-grain, quartz inclusion, zircon, pre-dose and radiation transfer techniques; authenticity testing; dating of pottery, burnt stone and flint; dating of ocean sediments and lava flows.

The next volumes scheduled are:

\**A Professional Directory of European Laboratories Serving Archaeology* (partially or totally), with full addresses, staff qualifications, programs, equipment, projects and selected bibliography (about 500 pages, edited by T. Hackens and J. Claus). It is scheduled for 1979. The directory summarizes the responses to a European questionnaire prepared by members of the group PACT.

\**The Characterization of Ancient Metals*. Teaching module from the European Summer School to be held at Urbino and Rome, April 1979. It will be edited by T. Hackens and St. Warren.

\**The Use of Statistics in Numismatics*. It will include papers from a symposium to be held at Paris, September 1979, and will be prepared by J. Guey, T. Hackens, D.M. Metcalf and J. Muller. (Information is available from Mme. Carcassonne, Ecole des Hautes Etudes, 54, Boulevard Raspail, F 75006 - PARIS).

The *Journal PACT* is available from the managing editor, Prof. T. Hackens (Louvain University), Avenue Leopold no28a, B-1330-RIXENSART, Belgium. The subscription rate for volume 1, 1977, is 1200 Belgian francs (= \$40 US); volumes 2 and 3, 1978/79 are 1600 Belgian francs each (= \$54 US). Checks in US dollars are accepted without charge, but rates are tied to the day's rates of exchange.

## NEW LOW PERSONAL SUBSCRIPTION RATE FOR JAS

*The Journal of Archaeological Science* publishes research papers in the methodology and application of scientific techniques in archaeology. It provides a high-quality medium of publication for contemporary work in geo-archaeology, zoo-archaeology, palynology and archaeobotany, as well as metallurgy and archaeometry. Previously, papers in these subfields have been scattered in a range of specialized journals not often seen by archaeologists. The *JAS* aims in part to provide a convenient forum for the exchange of information and ideas among a diversified group of contributing scientists.

At the same time it will also provide an essential reference for all archaeologists. The *JAS* aims to stimulate dialogue between "digging" archaeologists and specialists whose techniques derive mainly from the earth, biological and physical sciences. Guest editorials as well as interdisciplinary articles by archaeologists will be welcomed. In this way the *JAS* hopes to promote the more effective interdisciplinary collaboration in all phases of archaeological work: research design, field execution, data analysis and interpretation, and publication.

In addition to papers presenting original data, the *JAS* publishes review articles outlining research progress in particular subfields. The North American editorial office will process papers and book reviews from the USA, Canada, and Mexico. The address is:

Karl W. Butzer, Editor  
5828 S. University Ave.  
Chicago, Ill. 60637

As a major concession from Academic Press (Journal Fulfillment Dept., 111 Fifth Ave., New York, 10003) the journal is now available at a special PERSONAL SUBSCRIPTION rate of only \$20.00.

# NEWS OF THE SOCIETY

## SAS INAUGURAL BUSINESS MEETING

The SAS will hold an inaugural business meeting to announce the results of the election of its founding officers on Wednesday, April 25th, 1979 from 5 to 6 P.M. in the Tweedsmuir Room, Hotel Vancouver, Vancouver, B.C., during the meeting of the SAA. Other items of business will include financial and membership reports and a report from the North American editor of the JAS.

## REGIONAL COORDINATORS

The SAS is pleased to announce the participation of several additional members as regional coordinators. Billee M. Hoornbeek, Archaeologist with the Archaeological and Social Anthropological Research Services at the University of New Hampshire, will serve as our northern New England representative. In the Mid-West, David J. Ives of the Archaeological Survey, University of Missouri at Columbia, and John Weymouth, Professor of Physics at the University of Nebraska at Lincoln, have agreed to cover activities in their subregions. SAS members are encouraged to let their respective representatives know about their research activities, meetings, and concerns for inclusion in the *Newsletter*, or for discussion at the business meeting.

## MEETING NOTES

### SYMPOSIUM ON GEOARCHAEOLOGY AT THE SAA MEETING

Dr. Fekri Hassan has organized and will chair a symposium on geoarchaeology at the SAA meeting in Vancouver. The session is scheduled for Wednesday afternoon, April 25, 1979, just before the SAS business meeting. The participants and their topics are: Lambert Dolphin, Geophysical Prospecting in Archaeology; John C. Kraft, Geological Analysis of Coastal Archaeological Site; Bruce Gladfelter, Geomorphic Contribution to Archaeological Interpretations in a Floodplain Setting; Robert Folk, Geological Archaeology at Tell Yinam; Jack Donahue and James M. Adovasio, Geological Investigations at Meadowcroft Rockshelter; John Gifford and George R. Rapp, Jr., The Archaeological Geology of Troy; Fekri A. Hassan, Geological Analysis and Subsistence-Settlement Studies in Archaeology; Afifa A. Hassan and F.A. Hassan, The Mineralogy and Geochemistry of Archaeological Sediments, Michael Schiffer will be the discussant.

### TENTH INTERNATIONAL RADIOCARBON CONFERENCE

The 10th International Radiocarbon Conference, organized by Professors Hans Oeschger (Berne) and Karl Otto Muennich (Heidelberg), will be held in Berne and Heidelberg from the 19th to the 26th of August, 1979. The scientific program will cover the following topics:

- \*New developments in C-14 measuring techniques;
- \*Production and geophysical behavior of C-14; data and models;
- \*C-14 in the oceans;
- \*C-14 dating in geology (geomorphology, soils, ground water, etc.);
- \*C-14 fluctuations and climate;
- \*Archaeology.

Major emphasis will be given to geophysical applications and new methodological developments inasmuch as there will be a European symposium on C-14 and archaeology in Groningen in 1980. In addition, two working groups are tentatively planned to discuss reporting of C-14 data and calibration of the C-14 time scale. The editors of *Radiocarbon* have offered to publish the proceedings as a special issue.

For more information, write the organizers at the Pre-Conference Office:

Swiss Academy of Sciences  
Laupenstrasse 10, P.O. Box 2535  
CH-3001 Berne/Switzerland

## **THE USE OF STATISTICS IN NUMISMATICS**

This PACT meeting will be held in Paris, September 18-20, 1979. Participation from all countries is welcomed. Organization of the meeting is being coordinated by Ecole des Hautes Etudes (Prof. Guey) in cooperation with Louvain University (Prof. Hackens), Ashmolean Museum (Dr. Metcalf) and Bureau des Poids et Mesures (Dr. Muller).

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