RIP RAPP

JUDY HOLZ

## FROM THE EDITORS

This issue of the SAS Newsletter will be the last one under our editorship. With the fall 1986 issue, Pat Martin, Michigan Technological University, will take over as editor. We wish Pat good luck and hope that you, the readers, will aid him by sending Research Reports, conference reports, and suggestions for Profiles for publication as well as meeting announcements, publication notices, and requests for cooperation. Thanks to those of you who have contributed items over the last two years. A special thanks to Martha Goodway, who faithfully and consistently reported News of Archaeometallurgy.

Rip Rapp — RIP RAPP

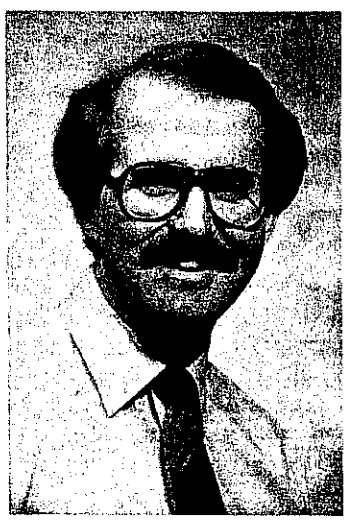
Judy Holz — JUDY HOLZ


# SAS NEWSLETTER

SOCIETY FOR ARCHAEOLOGICAL SCIENCES

VOL. 9 NO. 4

SUMMER 1986

PAT MARTIN

## FROM THE NEW EDITOR

Though I was not trained as an archaeometrist (after all, who is?) I have a longstanding interest in hard-science applications to archaeological problems, and have maintained my contact with this work through SAS for the past several years. I look forward to serving the Society and the archaeometric community through the Newsletter editorship. You will hear echoes of Rip's constant call for contributions, for the success and utility of this publication is largely dependent on your input. I trust that we will be able to continue the positive tradition established by Rip and his staff, and perhaps even improve in some areas. I will welcome both contributions and suggestions at my mailing address (P.E. Martin, Department of Social Sciences, Michigan Technological University, Houghton MI 49931) or by phone (906-487-2070). By the time this issue reaches you, it should also be possible to communicate via BITNET's electronic mail utility, for those of you with educational mainframe access. More on that later.

Pat Martin
Patrick E. Martin

SAS

# MEETING ANNOUNCEMENT

## 8TH SYMPOSIUM ON ARCHAEOLOGICAL CHEMISTRY

The Eighth Symposium on Archaeological Chemistry will be held in Denver CO, during the American Chemical Society National Meeting, 5-10 April 1987. For further information, please contact Prof. Ralph Allen, Department of Chemistry, University of Virginia, Charlottesville VA 22901.

# CURRENT RESEARCH

From Henry P. Schwarcz, Dept. of Geology, McMaster University, Hamilton, ON L8S 4M1, Canada

1. U-series dating of prehistoric archaeological sites in the Old World: I am completing a study of stalagmitic layers that enclosed bones (including a Neanderthal skull) at the site of Monte Circeo, Italy. Preliminary results give a date of 50,000 years.

2. ESR dating: Rainer Grün and I are using ESR (electron spin resonance) to date tooth enamel from several Old World sites including La Micoque, Hoxne, Omo, Sterkfontein, Bilzingsleben, and Isernia. Tooth enamel seems to be the best material for ESR, especially if the enamel layers are sufficiently thick.

3. Isotope paleodiet studies: With Anne Katzenberg and Jerry Melbye, we are completing a study of the arrival of maize into Ontario from analysis of fossil human bone collagen. Other sites under study include Lamanai, Belize (a Maya site) with C. White, Trent University, and several prehistoric sites in coastal Portugal with D. Lubell, U. of Alberta. With the help of the local wildlife people we are also attempting to "calibrate" the trophic level effect with local deer and wolf populations.

**SAS Newsletter** **Volume 9** **Number 4** **Summer 1986**

Published quarterly by the Society for Archaeological Sciences. Distributed to members of the Society with membership, $7.50 per year, $5.00 per year for students, $10.00 institutional membership, $150.00 life membership. ISSN 0739-0637. Editor: George Rapp, Jr.; Associate Editor: Judith D. Holz; Layout and Production: Violet Wangensteen; Word Processing: Avis Hedin. Address: 108 Mathematics-Geology Building, University of Minnesota, Duluth, MN 55812 U.S.A. Telephone (218) 726-7201.

SAS

# REPORT

## ANDOVER FOUNDATION CURRENT RESEARCH

### THE FIRST HYBRID CORN OF THE UNITED STATES--3000 YEARS AGO

On the basis of ancient corn cobs from archaeological excavations in rock shelters near Las Cruces, New Mexico, the Andover Foundation for Archaeological Research (AFAR) has uncovered evidence of the first development of corn hybrids in the United States 2000-3000 years ago. The 1985-86 research was a joint endeavor by Dr. R.S. MacNeish, AFAR, and Dr. Steadman Upham, New Mexico State University. Dr. Walton Galinat of the Waltham Field Station, Massachusetts Department of Agriculture, analyzed the corn. Dating was done by Dr. Chris Stevenson of New Mexico State University, using a new technique involving obsidian hydration.

Two groups excavated in two locations. The 1984-85 excavations in seven small rock shelters in the Organ Mountains just north of El Paso, Texas, were dug mainly by students in a class on archaeological methods. In 1986 the AFAR group joined forces with New Mexico State University and continued its studies in nearby Todsen Cave, near Picacho Peak in Las Cruces. The cave has 21 stratified layers going back to times of early hunters (at least Folsom) and progressing through collectors (Archaic) to the first agriculturists ca. 2,000 years ago. A 1987 excavation is planned during the warm winter and early spring in southern New Mexico to explore the earliest levels and even richer caves on White Sands.

Although data have not yet been analyzed completely, some conclusions about hybrid corn may be made. Basically, the study of more than 200 ancient desiccated corn cobs revealed that an ancient race of corn from Mexico, called Chapalote, came into use by Indians in the Southwest between 1500 and 800 B.C. Because this corn was poorly adapted to the arid and unpredictable climatic conditions of the Southwest, the researchers believe the Indians began to select for drought resistant eight-rowed corn (Proto Maís de Ocho) that had early-flowering large kernels (rather than hard small popcorn kernels) in order to get maximum food value with limited rain (less than 90 days of moisture). By the beginning of the common era, the Southwestern Indians had evidently developed a type of corn called Maís de Ocho. This strain not only was the ancestor of most Southwest Indian corn, but also spread into the eastern United States to become involved in the ancestry of Dent corn, whose recent hybrids now feed the world.

Thanks to the foresightedness of a philanthropic Boston donor, AFAR's research into the ancestry of corn continues. Headquartered in a large ranch in Las Cruces, the AFAR group plans to dig in 1987 in the productive early layers of Todsen Cave. Information about participation in the project may be obtained by writing AFAR, Box 83, Andover, MA 01810.

## PAT MARTIN--THE NEW EDITOR

Dr. Patrick E. Martin, Assistant Professor of Archaeology at Michigan Technological University, will assume the editorial duties of the SAS Newsletter with the Fall issue. Working primarily in historical and industrial archaeology, Martin earned degrees in anthropology from Miami University (B.A.), the University of Arkansas (M.A.), and Michigan State University (Ph.D.). Recent publications include a monograph entitled The Mill Creek Site and Pattern Recognition in Historical Archaeology, published by the Mackinac Island State Park Commission in 1985, and a co-authored article on a historic Ottawa Indian cemetery to appear in Arctic Anthropology. Martin has been teaching archaeology and anthropology in an engineering and science-oriented university for the past nine years, and has conducted a wide range of environmental impact and cultural resource management studies within the Upper Great Lakes Region.

Martin's primary research project in progress is a five-year study of the historic and prehistoric occupations of Isle Royale in Lake Superior. Funded by the National Park Service, this project will pay particular attention to the well-known but poorly understood aboriginal copper mining "industry" on the island, an undertaking that will surely employ archaeometric analyses.

## NSF ARCHAEOMETRY ANNOUNCEMENT

The NSF Directorate for Biological, Behavioral, and Social Sciences, Division of Behavioral and Neural Sciences, Anthropology Program will consider proposals for anthropologically-oriented archaeometric projects within the single framework of the Archaeometry Competition. Proposals are reviewed by archaeologists to determine potential anthropological contribution and by physical scientists to assess technical feasibility.

The Program recognizes three broad classes of archaeometric proposals: (1) proposals to support laboratories that provide archaeometric services; (2) proposals to develop and refine archaeometric techniques; (3) proposals to apply existing analytic techniques to specific bodies of archaeological materials. "Laboratory support" and "techniques development" projects will be included within the Archaeometry competition. "Technique application" projects are best evaluated in a more strictly archaeological context and therefore will be considered in the general research competition.

Formal proposals should be prepared in accordance with relevant instructions in Grants for Scientific and Engineering Research (NSF 83-57). Twenty copies are required and the descriptive portion of the proposals should not exceed 15 single spaced pages. Proposals should be submitted by October 31 of each year for anticipated awards in the late spring of the following year.

For further details contact the Program Director: Dr. John E. Yellen, Anthropology Program, National Science Foundation, Washington D.C. 20550, (202) 357-7804.

SAS

# NEW OFFICERS
# 1986 - 1987

## PRESIDENT

JOSEPH LAMBERT

Joseph B. Lambert is Professor of Chemistry and chairperson of the department at Northwestern University, Evanston, Illinois. He was born in Fort Sheridan, Illinois, and grew up in San Antonio, Texas. Lambert received his undergraduate education at Yale University (B.S., 1962) and his doctorate at the California Institute of Technology (1965). In 1965, he returned to Illinois to begin his work at Northwestern. Although all his early work was in organic chemistry, in 1973 he spent a sabbatical at the Research Laboratory of the British Museum, learning applications of analytical chemistry to archaeology. His research in archaeological chemistry since then has been on the nuclear magnetic resonance analysis of fossil resins and ancient lacquers, the inorganic analysis of human bone as a means to determine ancient diet, and use of other spectroscopic methods such as X-ray photoelectron spectroscopy to analyze artifacts.

Lambert has been an Alfred P. Sloan Fellow, a Guggenheim Fellow, a Fellow of the Japan Society for the Promotion of Science, a Fellow of AAAS, and an Interacademy Exchange Fellow to Poland. He received the National Fresenius Award in 1976. He has been the author or editor of four books, including Archaeological Chemistry III and has published more than 200 papers in scientific journals. He has served on the editorial boards of Arts and Sciences, International X-Ray Fluorescence Spectrometry, Organic Magnetic Resonance, and Magnetic Resonance in Chemistry. Lambert is the immediate past chairman of the ACS Subdivision of Archaeological Chemistry.

## VICE PRESIDENT/PRESIDENT ELECT

NO PICTURE AVAILABLE

JEFFREY DEAN

Jeffrey S. Dean is Professor of Dendrochronology at The University of Arizona, Tucson. He attended The University of Arizona, receiving his B.A. in anthropology (minor in geology) in 1961 and his Ph.D. (anthropology) in 1967. His dissertation was on chronological analysis of Tsegi Phase sites in northeastern Arizona. He has worked in the Laboratory of Tree-Ring Research at The University of Arizona since 1961 in capacities ranging from student assistant to professor. In 1985-86, Dean served as Senior Scientist, Center for Archaeological Investigations, Black Mesa Archaeological Project and as Adjunct Professor of Anthropology at Southern Illinois University, Carbondale.

Dean has worked extensively on southwestern paleoclimate and as co-investigator of the Long House Valley Archaeological Project. He has been author or co-author of numerous monographs and articles in scientific journals. Since 1980 he has served as contributing editor on the Southwest U.S. for The Quarterly Review of Archaeology.

**SAS Newsletter** **Volume 9** **Number 4** **Summer 1986**

Published quarterly by the Society for Archaeological Sciences. Distributed to members of the Society with membership, $7.50 per year, $5.00 per year for students, $10.00 institutional membership, $150.00 life membership. ISSN 0739-0637. Editor: George Rapp, Jr.; Associate Editor: Judith D. Holz, 108 Mathematics-Geology Building, University of Minnesota, Duluth, MN 55812 U.S.A.

## SECRETARY/TREASURER

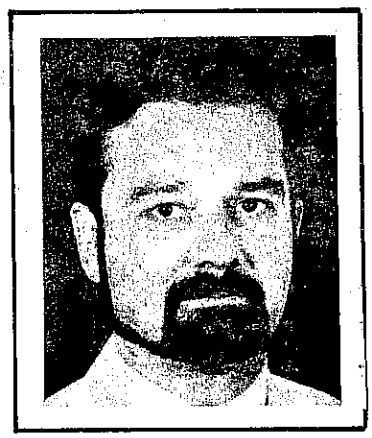
PRUDENCE RICE

Prudence M. Rice received her Ph.D. degree in anthropology from Pennsylvania State University in 1976; her dissertation was on technological and physicochemical analysis of ceramics and resources from Kaminaljuyu, in the highlands of Guatemala. In 1976 she joined the faculty of the University of Florida, Gainesville, where she is currently Associate Professor of Anthropology and Associate Curator in Archaeology at the Florida State Museum.

Rice's research interests focus on ceramic analysis. She has excavated in Kansas, North Dakota, and Florida, but most of her work has been in the lowland Maya area. Between 1973 and 1983 she co-directed the archaeological portion of the Central Peten Historical Ecology Project, a combined paleoecological and archaeological study of Maya settlement, land use, and environmental change around six lake basins in northern Guatemala. In 1985 she began a survey of the Colonial period wineries in the Moquegua valley of far southern Peru and the ceramic industry that developed there in service to winemaking and shipping.

Her major publications include Pots and Potters: Current Approaches in Ceramic Archaeology (ed., UCLA, 1984); The Lowland Maya Postclassic (co-ed. with Chase, Texas Press, 1985); Ceramic Analysis: A Sourcebook (U. Chicago, in press); and Ceramic Notes: Occasional Publications of the Ceramic Technology Laboratory, Florida State Museum (general editor).

## SECRETARY/TREASURER ELECT



IRWIN ROVNER

Irwin Rovner received his B.A. from Brandeis University and his M.A. and Ph.D. degrees from the University of Wisconsin, Madison. His M.A. thesis dealt with "Potential of Opal Phytoliths for Use in Paleoecological Reconstruction"; his dissertation was "Lithic Sequences from the Maya Lowlands." Now Associate Professor in the Department of Sociology and Anthropology at North Carolina State University, Rovner specializes in analysis of lithic industries and in opal phytolith analysis. His archaeometric research interests include uses of scanning electron and scanning acoustic microscopy and computer assisted image analysis. His long-term projects include: phytolith taxonomy of maize and its wild relatives; a collaborative project with several Mexican universities on the origins of agriculture in west Mexico; development of a visiting scholars program in environmental archaeology for several Mexican universities; and organization of a joint U.S.-Japan International Conference on Plant Silica Research.

Rovner received a Ford Foundation Fellowship in 1971 for research in Maya archaeology. He won the 1979 North Carolina State University Faculty Research Award for study of opal phytoliths in archaeology. In 1976-77 Rovner was Visiting Scholar in Anthropology at Northwestern University, Evanston, and in 1985 was Visiting Research Scholar on a Fulbright Research Fellowship at the Instituto de Investigaciones Antropologicas, Universidad Nacional Autonoma de Mexico. He is the author of many scientific articles and the originator and editor of The Phytolitharien Newsletter.

# DIRECTORY OF GRADUATE RESEARCH

## FROM JOSEPH LAMBERT, SAS PRESIDENT

The Society for Archaeological Sciences would like to publish an annual Directory of Graduate Research in the Archaeological Sciences. Currently, Rip Rapp is circulating a directory for archaeological geology and Joseph Lambert for archaeological chemistry. I am soliciting volunteers who would be willing to compile the appropriate data in the life sciences, physics, metallurgy and materials science, and mathematics. In addition, a person is needed to survey archaeological/anthropological departments. The process would involve sending a form to each university with a graduate program (MS or PhD) in your field. I can supply the form used for chemistry. If you are interested in performing this service for one of the fields listed above, please contact Joseph B. Lambert, Department of Chemistry, Northwestern University, 2145 Sheridan Road, Evanston, IL 60201.

## MORE ON GRADUATE STUDIES FROM RIP RAPP

In addition to the information for the Directory of Graduate Programs in Archaeological Chemistry, Dave Browman has suggested that someone or some organization (SAS?) publish a combined directory encompassing all of archaeometry and archaeological science (e.g., sections on archaeobotany, zooarchaeology, geoarchaeology, archaeoastronomy, archaeological chemistry, etc. and perhaps even sections for specialties like phytolith analysis). What are the perceived needs for such a publication? I suggest you send your comments to SAS president Joe Lambert.

On a related matter I will soon be compiling the Fourth Edition of the Directory of Graduate Programs in Archaeological Geology and Geoarchaeology. Relevant information on any program not listed in the Third Edition (November 1985) should be sent to me by 10 October 1986 (College of Science and Engineering, University of Minnesota, Duluth, Duluth MN 55812).

## RECENT PUBLICATIONS

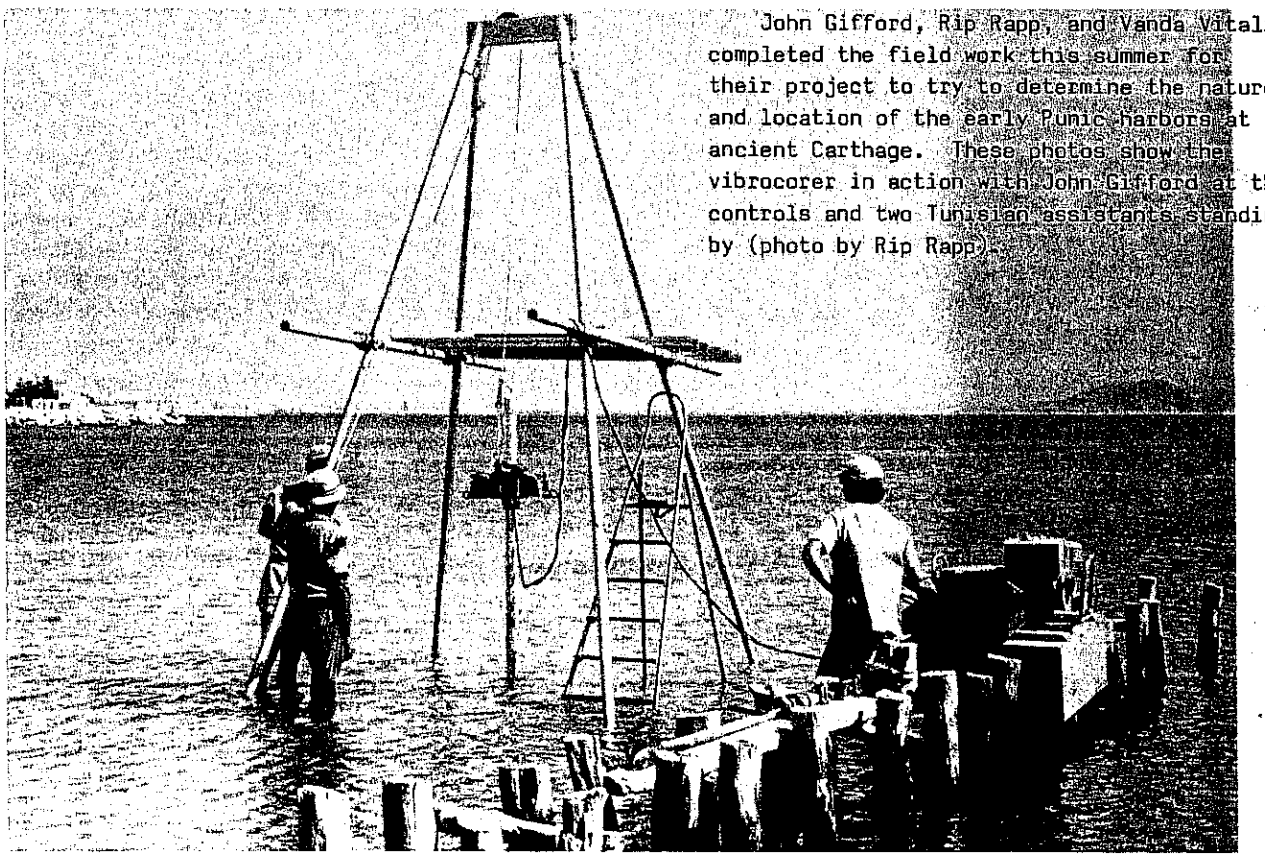
The March 1986 issue of Geophysics (Vol. 51, No. 3) was a Special Issue on Geophysics in Archaeology, edited by J.C. Wynn. The Special Issue grew out of an all-day symposium held in Atlanta in December 1984. It contains eleven archaeology-related papers, with two more appearing in the June 1986 issue, and several additional papers in the review circuit.

Titles include:

**Archaeological prospection** - J.C. Wynn
**Archaeological site surveying program at the U. of Nebraska** - J.W. Weymouth
**Magnetic prospection on prehistoric sites in Western Canada** - T.H. Gibson
**Geophysical results in archaeology in Hungary** - M. Pattanyus-A.
**Archaeological applications of resistivity and magnetic methods at Fort Wilkins State Park, Michigan** - C.T. Young and D.R. Droege
**Applications and advantages of the Slingram electromagnetic method for archaeological prospecting** - A. Tabbagh
**New prospects in shallow depth electrical surveying for archaeological and pedological applications** - A. Hesse, A. Jolivet, and A. Tabbagh
**Ground-penetrating radar surveys used in archaeological investigations** - C.J. Vaughan
**Evaluation of archaeological site potential on the Gulf of Mexico continental shelf using high-resolution seismic data** - M.J. Stright
**Display of archaeological magnetic data** - I. Scollar, B. Weidner, and K. Segeth
**The scatter of magnetic directions in archaeomagnetic studies** - D.H. Tarling, N.B. Hammo, and W.S. Downey

# PHOTO ALBUM

## TUNISIA
## SUMMER 1986
## CORE DRILLING



John Gifford, Rip Rapp, and Vanda Vitali completed the field work this summer for their project to try to determine the nature and location of the early Punic harbors at ancient Carthage. These photos show the vibrocorer in action with John Gifford at the controls and two Tunisian assistants standing by (photo by Rip Rapp).

# COMMENT

## EDUCATION IN ARCHAEOMETRY AND ARCHAEOLOGICAL SCIENCE

by

GEORGE (RIP) RAPP, JR.

ARCHAEOMETRY LABORATORY, UNIVERSITY OF MINNESOTA, DULUTH

In his "musings" that accompanied our Profile (SAS Newsletter 8[4] Summer 1985) Robert Maddin raised a question that has been of concern to many of us for the last decade: "What is the best education for the future archaeometrist?" I suggest that three models are available. In one, an aspiring archaeological scientist Ph.D. candidate does his/her work in a traditional department following a mainstream curriculum and doing disciplinary rather than interdisciplinary dissertation research. In this mode the individual must follow his/her archaeological science interests extramurally.

A second model is a variant of the first whereby a traditional department allows a candidate to take courses and do interdisciplinary dissertation research. Many departments in major research universities do not look with favor on this approach. Still, some do. The third model is graduate education in an interdisciplinary program (such as the Center for Ancient Studies at the University of Minnesota) rather than in a traditional department.

One can point to successful products from each of the three modes. And it appears obvious to many scholars that some of the best research areas lie at the boundary between two traditional disciplines. Yet problems remain. Perhaps the most important is finding where the jobs are, where the young archaeological scientist can follow a productive career.

I believe it would be valuable to have a thorough airing of this topic in the pages of the Newsletter. Where are the career opportunities? What is the best education for the opportunities that exist? What are the major hurdles? What can be done by the profession to nurture its young and thereby insure its collective future?

# POSITION ANNOUNCEMENT

**The Massachusetts Institute of Technology**, Anthropology/Archaeology Program and Center for Materials Research in Archaeology and Ethnology invite applications for a joint faculty position in the field of archaeology. The position is at the rank of assistant professor and begins in the academic year 1987-88. We seek an archaeologist with a specialty in the study of ceramics. Applicant's primary research must include the technology of ceramic production. She/he must have extensive experience in the technical laboratory analysis of ceramics and should be capable of directing a materials research facility for study of archaeological ceramics. Teaching responsibilities include a graduate seminar-laboratory course in ceramics as ancient materials, undergraduate electives in archaeology, undergraduate courses on laboratory techniques in archaeology, and general introductory courses in archaeology.

Applicants must have the Ph.D. Women and minority candidates are strongly encouraged. Submit only letter of application, vita, and names of 3 referees to Professor Heather Lechtman, MIT, Room 8-138, Cambridge MA 02139. Equal Opportunity/Affirmative Action Employer.

SAS

## CONTENTS


| | |
|---|---|
| From the Editors | 1 |
| From the New Editor | 1 |
| Meeting Announcement | 2 |
| Current Research | 2 |
| REPORT: Andover Fdn. | 3 |
| Bio on Pat Martin | 4 |
| NSF Archaeometry Announcement | 4 |
| New Officers 86-87 | 5-6 |
| Directory of Grad Research/Lambert | 7 |
| More on Grad Studies/Rapp | 7 |
| Recent Publications | 7 |
| Photo Album | 8 |
| COMMENT: Rip Rapp | 9 |
| Position Announcement | 9 |



SAS University of Minnesota, Duluth
SOCIETY FOR ARCHAEOLOGICAL SCIENCES
College of Science and Engineering, 108 MG
10 University Drive
Duluth, Minnesota 55812-2496


ADDRESS CORRECTION REQUESTED


Nonprofit Org.
U.S. Postage
PAID
Duluth, MN
Permit No. 67