

Phyllis P. Katz, Ed.
"Archaeology"

Deagon
1807

Ben - 2618

Jerry - 207

Steve - 411

Program and Abstracts

SOCIETY FOR
AMERICAN ARCHAEOLOGY

FORTY-FIRST ANNUAL MEETING

Academy Press Cocktail
5:30 - 4:02

St. Louis, Missouri

6, 7, 8 May 1976

Forty-First Annual Meeting
SOCIETY FOR AMERICAN ARCHAEOLOGY

Program Chairman: Frank Rackerby

Program Committee: Ronald L. Richey, Kathleen M. ... David L.

**The James A. Ford
Library of Anthropology**



**Florida Museum of Natural History,
Anthropology Division**



Gift of: Dr. Kathleen A. Deagan

Secretary: Richard E. W. Adams

Secretary-elect: Alfred E. Johnson

Treasurer: Fred Wendorf

Editor: Frank Hole

Executive Committee Members: Richard I. Ford and Patty Jo Watson (to 1976),
Hester Davis and W. James Judge (to 1977)

GENERAL INFORMATION

Abstracts Abstracts of papers presented at this meeting are included in the Program. Additional copies are available for \$1.50 per copy at the Membership Services Desk in the East Assembly, or may be ordered prepaid from the Society, 1703 New Hampshire Avenue, NW, Washington, DC 20009.

Advance Registration Members who pre-registered by April 15 should claim their badges and Programs at the ADVANCE REGISTRATION DESK in the East Assembly.

Business Meeting The Society's annual business meeting will be held at 5:30 p.m. on Friday in the Mississippi Room.

Convention Office Members of the Program Committee will be available in the Hickok Room. Any problems or special requests during the meeting should be reported to the committee office.

Dinner in Honor of Professor James B. Griffin Tickets for the dinner on Thursday at 7 p.m. in the Mississippi Room may be purchased until noon on Thursday at the Advance Registration Desk.

Exhibits Publishers' exhibits will be on display in the Frontier Room from 4 p.m. to 9 p.m. Wednesday, 9 a.m. to 5 p.m. Thursday and Friday, and 9 a.m. to noon on Saturday.

General Membership Session A general membership session entitled "Report to the Membership from the Interim Committee on Registration, and Announcement of the Formation of the Society for Professional Archaeologists" is scheduled for 12:15 p.m. on Thursday in the Mississippi Room.

Membership Services and Publications A desk will be maintained in the East Assembly from 4 p.m. to 9 p.m. on Wednesday, 8 a.m. to 4 p.m. Thursday and Friday, and 8 a.m. to noon on Saturday for those who wish to purchase publications or enroll in the Society.

Message Center A self-service message center will be located in the East Assembly. This center should NOT be used for messages pertaining to the placement service.

New Member Reception A reception for new members and for those attending their first meeting, hosted by officers of the Society, will take place on Friday at 7:30 p.m. in the Spirit of St. Louis Room.

Open House An open reception (cash bar) to which everyone is invited will be held on Thursday at 5 p.m. in the East Assembly.

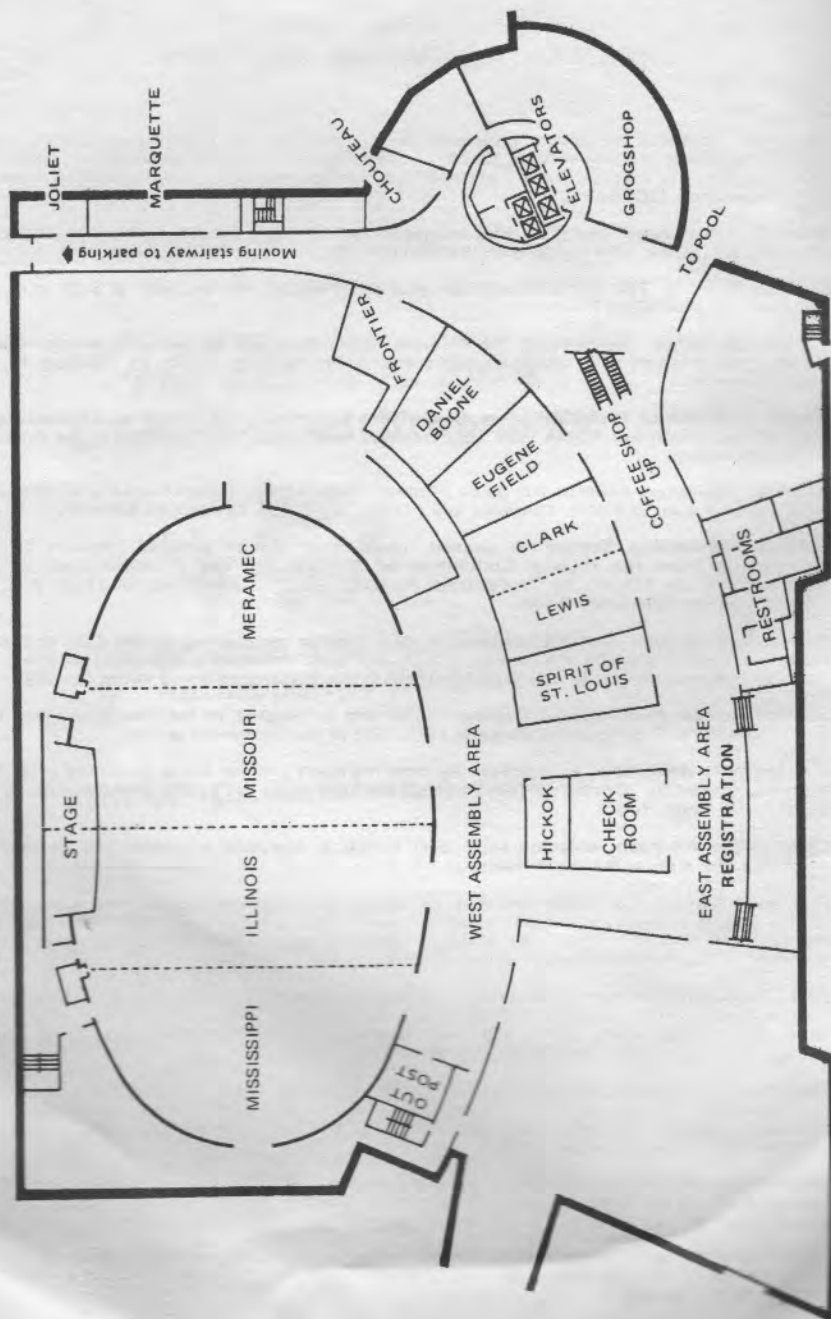
Placement Service For those who wish to register positions open or wanted, a placement service will be conducted in the Marquette Room from 4 p.m. to 9 p.m. on Wednesday, and from 10 a.m. to 5 p.m. Thursday. Message forms will be provided and box numbers will be assigned for use in the placement service message center.

Post-Meeting Gathering at the Mounds A gathering sponsored by the Illinois Archaeological Survey will be held at Cahokia Mounds State Park from 5:30 p.m. to 9 p.m. on Saturday. Beverage will be provided by the IAS. To obtain additional information or to sign up, please stop by the information desk in the East Assembly.

Registration A registration desk will be located in the East Assembly from 4 p.m. to 9 p.m. on Wednesday, 8 a.m. to 4 p.m. on Thursday and Friday, and from 8 a.m. to noon on Saturday. Registration, which includes a copy of the PROGRAM AND ABSTRACTS, is required for attendance at all sessions.

Restaurants and Lounges Coffee Grove: breakfast, lunch, dinner, 6 a.m. to 11 p.m. Grog Shop: lunch, 11:30 a.m. to 2 p.m. Top of the Riverfront: lunch, 11:30 a.m. to 2 p.m.; dinner, 5:30 p.m. to 11 p.m. All are located in Stouffer's Riverfront Towers.

Symposia and Session Chairpersons Please maintain the established schedule scrupulously. Note the use of the blackboard for listing speakers; do not collapse sessions if a scheduled speaker fails to appear.



PROGRAM

THURSDAY MORNING, MAY 6

- 8:00- AMERICAN SOCIETY FOR CONSERVATION ARCHAEOLOGY
 10:00 Chouteau Room
 Steering Committee Breakfast Meeting
- (1) Symposium: THE ARCHAEOLOGICAL CONSERVATION ACT: RETROSPECT AND PROSPECT
 Mississippi Room
 Organizer and Chairperson: S. Alan Skinner
 Participants:
 9:00 S. Alan Skinner, Introduction
 9:15 Larry Banks, The Archaeological Conservation Act—Co-Ordinated
 9:45 Hester Davis, Reauthorization of PL93-291
 10:15 Thomas F. King, Moss-Bennett, The National Register, and Archaeological Administration Musings and Misgivings
 10:45 Albert C. Goodyear, Current and Future Developments in Archaeological Theory Building within the Contract Framework
 11:15 Donald E. Weaver, The Impact of the Archaeological Conservation Act on Universities in the Western United States
- (2) Symposium: ARCHAEOLOGY AND PALEOECOLOGY AT MEADOWCROFT ROCKSHELTER: AN INTERIM STATEMENT
 Spirit of St. Louis Room
 Organizer and Chairperson: James M. Adovasio
 Participants:
 9:00 D. T. Clark, The Meadowcroft Archaeological Project: An Introduction
 9:25 J. Donahue, Geological Framework of Meadowcroft Rockshelter
 9:50 D. H. Krinsley, Application of Sand Grain Surface-Textural Analysis to Archaeology
 10:15 J. D. Gunn and R. Stuckenrath, Archaeology and Chronology at Meadowcroft Rockshelter
 10:40 D. Faignaert and K. Lord, Faunal Remains from Meadowcroft Rockshelter
 11:05 E. Skirboll and J. Applegarth, Faunal Remains from Meadowcroft Rockshelter
 11:30 James M. Adovasio and J. D. Gunn, Meadowcroft Rockshelter: Retrospect 1975
- (3) Symposium: THE ARCHAEOLOGY OF RESIDENCE: SOME EXAMPLES FROM PRE-COLUMBIAN MESOAMERICA
 Lewis Room
 Organizer and Chairperson: Dan M. Healey
 Participants:
 8:30 Robert Santley, Form and Function of Preclassic Residential Groups: Loma Torremote as a Test Case
 8:50 Prentice M. Thomas, The Production of Utilitarian Implements at Becan, Campeche
 9:10 Gair Tourtellot, Patterns of Domestic Architecture in a Maya Garden City: Seibal
 9:30 Edward B. Kurjack, Pre-Columbian Politics and Communities in Northwest Yucatan
 9:50 Marcus C. Winter and Margarita Gaxiola, Classic Period Households in the Valley of Oaxaca and the Mixteca Alta
 10:10 Jaime Litvak King, Intra-Site Variations in Classic Morelos Residence Patterns
 10:30 Dan M. Healan, Patterns of Residence in a Postclassic City: Tula, Hildago
 10:50 Edward B. Sisson, The Archaeology of Residence: Coxcatlan, Puebla
 11:15 Discussants: R. Fernea, W. Sanders, J. King
- (4) General Session: SOUTHWESTERN ARCHAEOLOGY I
 Clark Room
 Chairperson: Jonathan E. Reyman
 Participants:
 9:00 Jonathan E. Reyman, Two Possible Solstice Alignments at Pueblo Bonito, Chaco Canyon
 9:20 Gordon Borrinsky, Prehistoric Banking in the Southwest
 9:35 E. Charles Adams, Walpi: The Archaeology of an Historic and Living Community
 9:50 Victoria Dirst and Richard A. Pailes, Economic Networks: Mesoamerica and the American Southwest
 10:05 David E. Doyel, Changing Patterns of Organization among the Classic Period Hohokam of the Escalante Ruin Group, Gila Basin, Southern Arizona
 10:30 Pamela C. Magers, Navajo Settlement in Canyon del Muerto
 10:45 Charlotte L. Benson, Assessing the Adequacy of a Regional Sampling Design: Cedar Mesa, Utah

- 11:10 Richard Ciolek-Torrello and Stephanie M. Whittlesey, A Model of Refuse Types
 11:25 William E. Reynolds, Defining Residence Patterns in Prehistoric Pueblo Sites
 11:50 Stephanie M. Whittlesey, Prehistoric Pueblo Plazas: Interpretations of Community Organization

(5) Symposium: THE RECONSTRUCTION OF DIET FROM ARCHAEOLOGICAL EVIDENCE

- Eugene Field Room
 Organizers and Chairpersons: Antoinette B. Brown and Elizabeth S. Wing
 Participants:
 8:00 Greg C. Burtchard and Dorothy J. Cattle, Population Patterning: An Archaeological Consideration of Nutritional Factors
 8:20 Thomas Mulinski, The Use of Fetal Material as a Measurement of Stress at Grasshopper Pueblo
 8:40 Bruce D. Smith, Determining the Selectivity of Utilization of Animal Species by Prehistoric Human Populations
 9:00 Joanne Bowen, Zooarchaeology and Military Foodways: An Example from Fort Pelham
 9:20 Stephen L. Cumbaa, The Historic (Re) Past: Eighteenth Century Dietary Reconstruction
 9:40 Elizabeth S. Wing, Ways of Getting from a Sliver of Bone to a Calorie
 10:00 C. Earle Smith, Jr., Prehistoric Changes in Dietary Plants in the Southeastern U.S. and Mexico: A Comparison
 10:20 Antoinette B. Brown, Bone Strontium and the Reconstruction of Human Diet
 10:40 Robert I. Gilbert, Jr., Paleonutritional Insights Derived from Skeletal Trace Element Patterning
 11:00 Norman J. Sauer, The Possible Effects of European Contact upon the Health of a Group of Native Americans
 11:20 Vaughn M. Bryant, Jr., Food Preparation Techniques
 11:40 Michael Kliks, Paleodietetic Studies on Great Basin Coprolites: Estimation of Dietary Fiber Intake and Evaluation of the Ingestion of Anthelmintic Plant Substances
 12:00 Gary F. Fry, Ecological Determinants of Prehistoric Diets Revealed via Paleofecal Analysis

(6) Symposium: THE STUDY OF PREHISTORY: A BIO-ARCHAEOLOGICAL PERSPECTIVE

- Daniel Boone Room
 Organizers and Chairpersons: Jane E. Buikstra and Della C. Cook
 Participants:
 8:30 Thomas Glen Cook, Multidimensional Models of Bio-Social Change
 8:45 James A. Brown, Archaeology of Disposal of the Dead Patterns in the Lower Illinois Valley
 9:00 Lynne Goldstein, Cemeteries and Corporate Groups: Social Structure in Rural Mississippian Society
 9:15 Douglas K. Charles, The Importance of Complete Mortuary Site Survey in Regional Demographic Analysis
 9:30 Carol R. Cottom, Paleodemographic Analysis of Illinois River Valley Populations
 9:45 Gail Houart, Micro-Style Analysis of Ceramics and the Identification of Social Groups for Middle Woodland Communities in the Illinois Valley
 10:00 Jane E. Buikstra, Epigenetic Variability: Biocultural Models
 10:15 Judith G. Drossler, Change and Continuity: Biocultural Interaction at the Late Woodland-Mississippian Interface
 10:30 Brian A. Fields, Temporal and Regional Differentiation of the Dentition
 10:45 Bonnie L. Whatley, Subsistence Practices in the Woodland Period
 11:00 Della C. Cook, Human Growth: A Perspective on Subsistence Base Change
 11:15 Sam D. Stout, Histomorphometric Determination of Bone Formation Rates in Archaeological Series
 11:30 Barbara Heminger O'Connell, Adaptive Efficiency in the Lower Illinois Valley: Fluctuating Asymmetry as a Measure of Developmental Homeostasis
 11:45 Discussant: Stuart Struvever

THURSDAY AFTERNOON, MAY 6

- 12:15- General Membership Session: INTERIM COMMITTEE ON REGISTRATION
 1:45 Mississippi Room
 Moderator: Edward Jank
 Report to the membership, and announcement of the formation of the Society of Professional Archaeologists

(7) Symposium: VARIETIES OF NON-AGRICULTURAL SETTLEMENT AND SOCIAL ORGANIZATION: A VIEW FROM PREHISTORIC NORTH AMERICA

- Mississippi Room
 Organizer and Chairperson: Thomas F. King
 Participants:
 2:00 Thomas F. King, Social and Settlement Organization on the West Coast of North America

- 2:30 Robert L. Bettinger, Alternative Settlement-Subsistence Strategies in the Great Basin
 3:00 Ellis McDowell-Louden, Degrees of Sedentism: The Eastern Woodlands Example
 3:30 Lawrence E. Aten, Adaptive Diversity Among Hunters Gatherers of the Northwest Gulf Coast

(8) Symposium: TEACHING AND TRAINING OF ARCHAEOLOGISTS

- Spirit of St. Louis Room
 Organizer and Chairperson: Howard P. Goldfried
 Participants:
 2:00 William D. Lipe, Training Archaeologists in Relation to Cultural Resource Management Programs
 2:30 Stuart Struvever, Clinical Training in Archaeology as the Discipline Grows More Complex
 3:00 Raymond H. Thompson and Stephanie M. Whittlesey, The Compleat Archaeologist: A Comprehensive or Integrated Approach to Archaeological Training
 3:45 Dean R. Snow, The Lake George Project
 4:15 Ray T. Matheny, The Problems of Training in a University that Only Offers a Master's Degree
 Discussants: R. E. W. Adams, Frank Hole, Fred Plog

(9) Symposium: MIDDLE-LATE WOODLAND CONTINUITY IN NORTHEASTERN NORTH AMERICA

- Lewis Room
 Organizer and Chairperson: Michael Gregg
 Participants:
 2:00 Guy Gibbon and Christy Caine, Middle-Late Woodland Transition in Eastern Minnesota
 2:30 Michael L. Gregg, Continuity and Change in Terminal Middle-Early Late Woodland Material Culture and Subsistence as seen from the Albany Site in Northwestern Illinois
 3:00 Carl Kuttruff, Late Woodland Settlement and Subsistence Systems in the Lower Kaskaskia River Valley, Illinois
 3:30 Robert L. Hall, Soul Release as an Hypothesis for Explaining Perforated Long Bones and Crania in Great Lakes Area Prehistory
 4:00 Patrick J. Munson, Changes in and Relationships of Subsistence, Settlement, and Population in the Central Illinois River Valley
 4:30 Discussants: Robert Alex, Duane Anderson, David Benn, David Braun, Gene Gray, William Green, William Hurley, Bonnie Whatley

(10) Symposium: SPANISH COLONIAL ARCHAEOLOGY IN TEXAS AND NORTHEASTERN MEXICO

- Clark Room
 Organizer and Chairperson: Tom R. Hester
 Participants:
 2:00 Kathleen K. Gilmore, Archaeological Investigations at Mission Rosario, Southern Texas
 2:30 Dee Ann Story, The Preservation of Seabed Antiquities
 3:00 Richard E. W. Adams, The Guerrero Project: Archaeological and Ethnohistorical Studies of Eighteenth Century Spanish Missions in Northern Coahuila
 3:30 Jack D. Eaton, Architectural Remains at Missions San Bernardo and San Juan Bautista, Northern Coahuila
 4:00 Thomas R. Hester, The Lithic Technology of Mission Indians in Texas and Northeastern Mexico
 4:30 Anne A. Fox, The Ceramics of Mission San Bernardo, Northern Coahuila

(11) Symposium: CURRENT INVESTIGATIONS INTO PREHISTORIC CERAMIC TECHNOLOGY

- Eugene Field Room
 Organizers: F. J. Findlow, J. E. Ericson, and S. P. De Atley
 Chairpersons: J. E. Ericson and F. J. Findlow
 Participants:
 1:30 Dean Arnold, Neutron Activation Analysis of Contemporary Ceramic Materials: A Test of Assumptions
 1:50 Frank J. Findlow, Suzanne P. De Atley and C. Rainer Berger, Recent Developments in the Direct Application of C-14 Dating to Prehistoric Ceramic Materials
 2:10 Christopher E. Drover, R. E. Taylor, Thomas Cairns and Jonathan E. Ericson, A Fourth Millennium B.C. Ceramic Complex in Southern California: The Chronometric Evidence
 2:30 Jonathan E. Ericson, Ceramic Firing-Temperature Determination
 2:50 Suzanne P. De Atley and Frank Findlow, Ceramic Assemblages from Hidalgo County, New Mexico
 3:10 James W. Porter, Thin Section Analysis of Cahokia Area Ceramics
 3:30 Victoria C. Bennett and Frank J. Findlow, Microprobe Analysis and the Identification of Trade Ceramics
 3:50 Evelyn Rattray, Garmon Harbottle, and E. V. Sayre, Cultural Interaction Between Teotihuacan and the Valley of Oaxaca Indicated by Ceramic Paste Analysis

- 4:10 Terrence D'Altroy, Spatial Distribution of Moche Flaring Bowls
 4:30 Glen D. DeGarmo, Systematics of Prehistoric Pottery Analysis
 4:50 David P. Braun, Rim Form and Ceramic Vessel Use: Results of an Experiment with a Central Arizona Archaeological Collection
 Discussants: Frederick Matson

(12) General Session: MAYAN AREA ARCHAEOLOGY AND ETHNOHISTORY

- Daniel Boone Room
 Chairperson: Ronald L. Bishop
 Participants:
 1:30 Teresita Majewski, Ethnohistoric Demographic Data and Its Archaeological Application: A Guatemalan Example
 1:40 John W. Fox, Late Postclassic Highland Maya Urbanism
 1:50 Prudence M. Rice, Ceramic Continuity in the Valley of Guatemala: An Example of Resource Utilization
 2:00 Kenneth L. Brown, A New Appraisal of Politics and Economics During the Middle Classic in the Valley of Guatemala
 2:20 Duncan Pring and Norman Hammond, Excavations in Northern Belize, 1975-76
 2:30 John M. Andresen, The Maya Chert Industry of Northern Belize
 2:40 Norman Hammond, The Early Preclassic in the Maya Lowlands
 2:50 Elizabeth A. Graham, Archaeological Research in the Stann Creek District of Belize
 3:10 Jay K. Johnson, Site Hierarchy in the Western Maya Periphery: A Correlation of Lithic, Epigraphic, Architectural, and Ceramic Data
 3:30 Robert E. Fry, Frontiers and Refuge Zones in the Maya Lowlands
 3:50 Douglas Holmes and Phil C. Weigand, Mayan and Aztec Interdependence in the Late Post-Classic
 4:10 Fred M. Wiseman, The Maximal Habitat Model of Mayan Agriculture
 4:30 Don S. Rice, Middle Preclassic Maya Occupation of the Yaxha and Sacnab Lake Basins, El Peten, Guatemala
 4:40 Leslie Lavine-Lischka, Duality in Ancient Mayan Economics
 3:00- Film: "RIO GRANDE'S PUEBLO PAST"
 4:30 Outpost Room
 D. W. Swartz

THURSDAY EVENING, MAY 6

- 5:00- ASSOCIATION OF FIELD ARCHAEOLOGY
 6:00 Outpost Room
 Business Meeting
 Ross Holloway, President
 5:00- OPEN HOUSE
 6:30 East Assembly
 5:30- AMERICAN SOCIETY FOR CONSERVATION ARCHAEOLOGY
 6:30 Clark Room
 Business Meeting
 7:00- DINNER IN HONOR OF PROFESSOR JAMES B. GRIFFIN
 10:00 Mississippi Room

FRIDAY MORNING, MAY 7

- (13) Symposium: COMPETITIVE CONTRACT ARCHAEOLOGY: NEW DEVELOPMENTS IN THE INTERAGENCY ARCHAEOLOGICAL SERVICES DIVISION PROGRAM, DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE
 Mississippi Room
 Organizers and Chairpersons: Rex L. Wilson and Frank W. Eddy
 Participants:
 8:30 Rex L. Wilson, Contract Proposal Competition: Adverse Reaction Versus Positive Benefits
 8:50 Roy W. Reeves III, Competition in the Role of Contract Award
 9:10 John R. Little, Federal Procurement Regulations: Advertised Bid Versus Negotiated Procurement
 9:30 Frank W. Eddy, The Role of Scope-of-Work in the Negotiation Process
 9:50 Victor Carbone and John Lange, Trustbusting, Territoriality, and Unionism: A Case for an Open Research Market
 10:10 Lawrence E. Aten, Interdependence and Reciprocity for Sound Cultural Resources Management
 10:30 Discussants: Fred Wendorf, James J. Hester, David B. Madsen, Lorraine Williams
 (14) Symposium: MIDDLE AMERICAN COASTAL ECOSYSTEMS
 Spirit of St. Louis Room
 Organizers and Chairpersons: Barbara Voorhies and Barbara L. Stark
 Participants:

- 8:30 Elizabeth S. Wing, Intensive Use of Dogs for Food as an Adaptation to the Coastal Environment
 8:50 Anthony J. Ranere, A Reappraisal of the Monagrillo Shellmidden, An Early Ceramic Site on the Pacific Coast of Panama
 9:10 R. W. Magnus, The Pre- and Post-Conquest Cultural Ecology of the Atlantic Coast of Nicaragua: A Contrast
 9:30 Frederick W. Lange, Prehistoric Adaptations: Coastal Guanacaste, Costa Rica
 9:50 Barbara L. Stark, Economic and Settlement Pattern Models for Southern Veracruz: The Ethnohistory and Core-Buffer Alternatives
 10:10 Dave D. Davis, Middle Formative Coastal Adaptations and Inter-Regional Contacts in Southern Mesoamerica
 10:30 R. N. Zeitlin, Precolumbian Procurement and Use of Obsidian on the Southern Isthmus of Tehuantepec, Mexico
 10:50 J. F. Zeitlin, Community Distribution and Local Economy on the South Isthmus of Tehuantepec, Mexico
 11:10 L. H. Feldman and S. Gehlert, Coastal Decline and Highland Survival: Change and Stability in Two Colonial Guatemalan Populations
 11:30 Barbara Voorhies, Human Adaptation to Coastal Resources: The View from Middle America
 11:50 Discussion

(15) Roundtable: THE IDENTIFICATION AND INTERPRETATION OF EVIDENCE FOR NATIVE AND INTRODUCED HORTICULTURE IN THE EASTERN UNITED STATES

- Lewis Room
 Organizer and Chairperson: R. I. Ford
 Participants:
 8:00- Nancy B. Asch, Leonard Blake, Vaughn M. Bryant, Jefferson Chapman, Wesley
 12:00 Cowan, Hugh Cutler, Richard I. Ford, Volney H. Jones, James Schoenwetter, C. Earle Smith, Nikolaas J. van der Merwe and Hugh Wilson

(16) Symposium: CORDS, FABRICS, AND BASKETS FROM SITES AND CERAMICS IN NORTH AMERICA

- Clark Room
 Organizer and Chairperson: W. M. Hurley
 Participants:
 8:00 David Benn, Notes on Late Woodland Fabric Impressed Pottery: A View from Northeast Iowa
 8:20 Mary Elizabeth King, The Archaeological Textiles of North America: An Overview
 8:40 R. Carlisle, J. M. Adovasio, and R. Andrews, The Evolution of Anasazi Basketry: A View from Antelope House
 9:00 William M. Hurley, A Stylistic Analysis of Cords and Fabrics Applied to Late Woodland Ceramics in Wisconsin
 9:20 Discussant: James Stoltman

(17) Symposium: THE HINDS CAVE PROJECT: AN ARCHAEOLOGICAL AND BOTANICAL STUDY OF A LARGE DRY ROCKSHELTER IN SOUTHWEST TEXAS

- Clark Room
 Organizers: Harry J. Shafer and Vaughn M. Bryant
 Chairperson: Harry J. Shafer
 Participants:
 10:30 Harry J. Shafer, The Archaeology of Hinds Cave: A Preliminary Report
 11:00 Vaughn M. Bryant, An Overview of the Paleoenvironmental and Botanical Research at Hinds Cave
 11:30 Phil Dering, Plant Macrofossils Recovered from Hinds Cave
 12:00 Glenna Williams-Dean, Preliminary Analysis of an Early Archaic Latrine, Hinds Cave, Texas

(18) Symposium: DEVELOPMENT OF ECONOMIC AND POLITICAL SYSTEMS IN PREHISPANIC ANDES

- Eugene Field Room
 Organizer and Chairperson: David L. Browman
 Participants:
 8:30 Bernardo Dougherty, An Early Pottery Complex in the Western Forest Region, Northwest Argentina
 8:50 David L. Browman, The Temple of Chiripa and the Economic Development of the Titicaca Basin
 9:10 William H. Isbel and Katharina J. Schrieber, The Wari Empire: State and City?
 9:30 Sheila Pozorski, Late Prehistoric Llama Remains from the Moche Valley, Peru
 9:50 Tom D. Dillehay, Storage Function at Huancayo Alto
 10:10 James Vreeland, Patterns of Textile Development and Function at Huancayo Alto
 10:20 Break
 10:40 Tom Pozorski, Chronology and Society at Caballo Muerto, Peru
 11:00 Alexandra M. Uliana Klymyshyn, The Inhabitants of the Intermediate Units at Chan Chan, Peru
 11:20 Patricia J. Netherly, Chimor Conquered: The Inca Occupation of the Chimú Kingdom

11:40 Jonathan Haas, Huaca Excavations at Pampa Grande, Lambayeque
11:50 Deborah M. Pearsall, Preliminary Report of the Botanical Analysis of Real Alto, Ecuador
12:00 Harold B. Haley and Ronald A. Grennes, "Spindle Whorls" from Costal Ecuador
12:10 Discussants: D. W. Lathrap, R. P. Shaedel

(19, 20) Symposium: PHOTOGRAMMETRIC MAPPING AND COMPUTER GRAPHICS—PART I

Daniel Boone Room
Organizer and Chairperson: Richard W. Effland, Jr.
Participants:
9:00 Frank T. Aldrich, Computerized Surficial Display and Classification Experiments for Liencres Artifacts, North Coastal Spain
9:20 Don P. Morris, The Computer in Management and Research: Canyon Del Muerto Survey
9:40 George Gumerman and Carol S. Weed, Archaeology and Ultra-High Altitude Imagery
10:00 Charles McNett, Computer Graphics in the Analysis of an Eastern paleo-Indian Site
10:20 J. Barto Arnold III, Archaeological Applications of Computer Drawn Contour and Three-Dimensional Perspective Plots
10:40 Jerry V. Jermann and Robert C. Dunnell, Computer-Aided Mapping in Archaeology: The Case for SYMAP
11:00 Lambert T. Dolphin and Roger S. Vickers, Application of Ground-Penetrating Radars for Archaeological Site Surveying
11:20 Dee F. Green and Michael J. Lunt, Locating Archaeological Sites Using Infrared Line Scanner
11:40 Discussants: Thomas R. Lyons, Robert Nunley

Symposium: PHOTOGRAMMETRIC MAPPING AND COMPUTER GRAPHICS—PART II

Daniel Boone Room
Organizer and Chairperson: Richard W. Effland, Jr.
Participants:
2:00 Richard W. Effland, Statistical Distribution Cartography and Computer Graphics
2:20 Richard W. Loose and Thomas R. Lyons, The Chetro Kettle Field: Applied Photogrammetry in Chaco Canyon National Monument
2:40 Thomas Lyons, Photogrammetric Mapping and Digitizing of Prehistoric Puebloan Architecture in Chaco Canyon National Monument, New Mexico
3:00 Dwight L. Drager, Anasazi Population Estimates with Aid of Photogrammetric Data
3:20 Randall F. Schalk and Thomas R. Lyons, The Use of Orbital Imagery in Archaeological Research
3:40 Martin H. Wobst, An Integrated Set of Computer Programs for Stratigraphic and Contextual Analysis
4:00 Barbara A. Domeier, Experiments in 3-Dimensional Perspectives and Artifactual Graphic Plotting
4:20 Discussants: Thomas R. Lyons, Robert Nunley

(21) Symposium: EXPERIMENTAL REPLICATION

Outpost Room
Organizer and Chairperson: Nelson A. Reed
Participants:
9:00 Steven Sayadar, Quantitative Experiments in Archaeology: New Approaches to the Study of Prehistoric Human Adaptations
9:30 Errett Callahan, Living Archaeology: Resurrecting the Past
10:00 Hans Ole Hansen, A Review of the Lejere Experiment
10:30 Dennis E. Pulsseton, Experimenting with the Ecology of a Complex Prehistoric Agricultural System
11:00 Nelson Reed, Verification and Strategies in Experimental Replication
11:30 Peter Reynolds, The Butser Ancient Farm Research Project

FRIDAY AFTERNOON, MAY 7

(22) Symposium: REGIONAL CENTERS IN ARCHAEOLOGY: PROSPECTS AND PROBLEMS

Mississippi Room
Organizers: William H. Marquardt and Stuart Struever
Chairperson: William H. Marquardt
Participants:
1:30 William H. Marquardt, Introduction
1:35 Hester A. Davis, Regional Planning and State Archaeological Programs
1:45 James J. Hester, Specialized and Generalized Models of Regional Centers
1:55 William H. Marquardt, Prospects for Regional Computer-Assisted Archaeological Information Retrieval
2:05 Kenneth B. Farnsworth and Stuart Struever, Ideas on Archaeological Curation and its Role in Regional Centers

2:15 Carl H. Chapman, Regional Centers: Physical Facilities and Management Funding
2:25 William W. Fitzhugh, A View from the Smithsonian
2:35 James W. Stoutamire, A Report on Florida State University's Curatorial Maintenance of the National Park Service's Southeast Archaeological Center's Collections
2:45 Douglas H. Scoville, Regional Centers: Opportunities for Federal-Industrial Partnership in Cultural Resources Management
2:55 Break
3:15 Discussants: Charles McGimsey, Richard Ford, Stephen Williams, Ray Thompson
4:00 Ray Thompson, Summation
4:15 Open Discussion
5:00 William H. Marquardt, Closing Remarks

(23) General Session: MESOAMERICAN ARCHAEOLOGY

Spirit of St. Louis Room
Chairperson: Kenneth Hirth
Participants:
1:00 Kenneth Hirth, The Evolution of a Gateway Community: Central Mexican Symbiosis Along the "Olmec" Trade Route
1:25 Lorraine M. Otero, Ophidian Characteristics as a Clue to Understanding Olmec Iconography
1:45 David C. Grove, Chalcatzingo: The Rise of a Major Formative Center
2:10 David E. Buge, Climate or Land Modification?: Palynology at Chalcatzingo
2:35 Ann Cyphers, Formative Ceramic Horizon Styles: Definition and Significance
3:00 Melvin L. Fowler, The Puebla Preclassic Project: Site Survey Methodology and Some Preliminary Results
3:20 Michael E. Whalen, Social Dimensions of an Early Formative Cemetery from Oaxaca, Mexico
3:40 Gordon Whittaker, On the Decipherment of Early Monte Alban Inscriptions
4:00 Charles W. Markman, Survey of Settlement Patterns in the Miahuatlan Valley, Oaxaca, Mexico
4:20 Donald E. McVicker, Approaches to the Mural Art of Teotihuacan: A Critical Essay
4:40 Raymond Sidrys, Standardization of Mesoamerican Field Data

(24) General Session: EASTERN U.S. PREHISTORY I

Lewis Room
Chairperson: David S. Brose
Participants:
1:00 John E. Kelly, Formative Developments at Cahokia: A Merrell Tract Perspective
1:25 James Schoenwetter, Archaeological Pollen Analysis of Cahokia and Environs
1:50 Ken Williams The FAI-255 Project: A Methodological Assessment of Some Traditional and Experimental Site Survey Techniques
2:15 Landon D. Smith and Dee F. Green, Predicting Ceramic Form from Sherd Weight in Mississippian Ceramics: A Statistical Model
2:40 James B. Stoltman, A New Temporal Model for Eastern North America Prehistory
3:05 Charles E. Cleland, The Development of a Prehistoric Fishery in the Upper Great Lakes Region
3:30 C. Dean Higginbotham, Early Woodland Sites in the Lower Wabash River Valley
3:45 Mark Seeman, Stylistic Variation in Middle Woodland Pipe Styles: The Chronological Implications
4:00 Gary W. Hennen, "A Paleo-Ecological Locational Analysis of the Lower Scioto Region of Ohio"—Part 1: Demographic Analysis
4:25 David S. Brose, Squaw Rock Shelter: An Early Archaic Campsite in Northeast Ohio
4:40 Nan Rothchild, "Stranger in a Strange Land": A Consideration of Sampling and Testing

(25) Symposium: ZOOARCHAEOLOGICAL THEORY AND RECONSTRUCTIONS

Clark Room
Organizers and Chairpersons: Eileen Johnson and Fred Hill
Participants:
2:00 Stanley J. Olsen, Domesticated Animals in Prehistoric Southwestern United States with Emphasis on the Origins of the Domestic Dog
2:30 Frederick C. Hill, Archaeological Aquatic Faunal Remains as an Aid to the Reconstruction of the Paleoenvironment
3:00 Paul W. Parmalee, The Avifauna from Prehistoric Arikara Sites in South Dakota
3:30 Thomas J. King, Jr., Late Pleistocene-Early Holocene History of Coniferous Woodlands in the Lucerne Valley Region of the Mohave Desert
4:00 Eileen Johnson, Reconstructing Human Social Behavior Through Faunal Analysis

(26, 27) Symposium: CONFERENCE ON MESOAMERICAN ETHNOHISTORY—PART I

Eugene Field Room
Organizer and Chairperson: Nancy P. Troike
Participants:
1:30 Linda Goff, The Jewel Personal Name in the Mixtec Manuscripts
1:55 James R. Ramsey, Illustrations of Portable Art in the Mixtec Manuscripts
2:20 Maarten E. R. G. N. Jansen, The Heaven of Apoala

- 2:45 Eva Hunt, The Provenience and Contents of the Porfirio Diaz Codex: New Data and Analysis
 3:10 George H. Taack, The Semantic and Linguistic Decipherment of Hieroglyph T114.166.24 in the Maya Hieroglyphic Codices
 3:35 John H. Storer and Mary Prindiville, A Structural Comparison of Sixteenth Century and Contemporary Tzeltal Kinship Terminology
 4:00 Lawrence H. Feldman, Counting People: The Late Colonial Padrones of Central America
 4:25 Frances Karttunen, The Continuation of Nahuatl Writing Traditions: Proceedings Pursuant to a Land Claim, Amecameca, 1746

Symposium: CONFERENCE ON MESOAMERICAN ETHNOHISTORY—PART II

Eugene Field Room

Organizer and Chairperson: Nancy P. Troike

Participants:

- 8:00 Charles R. Wicke, Interpretation of the Precolumbian Aztec Tizoc Stone from Codices
 8:25 Richard Townsend, State and Cosmos in Aztec Sculpture
 8:50 Rosemary Sharp, Pilgrims and Peddlers: Threshold Men in Postclassic Mexican Manuscripts
 9:15 George Kubler, The Perpetual Calendar in Codex Borbonicus on Pages 21-22
 9:40 Betty Ann Brown, Early Colonial Representations of the Mexica Monthly Calendar
 3:00- Film: "RIO GRANDE'S PUEBLO PAST"
 4:30 Outpost Room
 D. W. Swartz

FRIDAY EVENING, MAY 7

- 5:30 SOCIETY FOR AMERICAN ARCHAEOLOGY ANNUAL BUSINESS MEETING
 Mississippi Room
 Stuart Struever, President

- 7:30- RECEPTION FOR NEW MEMBERS
 8:30 Spirit of St. Louis Room
 Present and past officers of the Society greet new members and members attending their first annual meeting

- 8:00- COMMITTEE ON PUBLIC ARCHAEOLOGY
 9:00 Outpost Room
 Open Meeting

(28) General Session: EASTERN U.S. PREHISTORY II

Lewis Room

Chairperson: William McHugh

Participants:

- 8:00 Michael Collins and C. Wesley Cowan, Investigations at 15MS28, an Early Late Woodland Village Site in North Central Kentucky
 8:10 Kenneth Carstens, Recent Investigations in the Central Kentucky Karst: A Preliminary Temporal Ordering of Several Surface Sites in the Mammoth Cave Area, Kentucky
 8:30 David Sanger, Ronald B. Davis, Harold W. Borns, Jr. and Robert C. MacKay, Man and Paleo-Environments in Central Maine
 8:50 J. C. Vogel and Nikolaas J. van der Merwe, Istopic Evidence for Early Maize Cultivation in New York State
 9:10 Chester DePratter, An Archaeological Survey of a Portion of Chatham County, Georgia: Archaeological and Geological Implications
 9:20 David H. Dye, Riverine Adaptations in the Late Archaic of the Savannah River Region
 9:40 Jerald T. Milanich, The Radiocarbon-Dated Aboriginal Culture Sequence from St. Simons Island, Georgia—2240 B.C. to A.D. 1650
 9:50 Richard L. Zurell, Temporal Changes in Occupation Intensity and Settlement Systems on the Georgia Coast: Evidence for the Acquisition of Agriculture and Subsistence Variability
 10:10 Rochelle Marrison, Archaeological Investigations on Cannon's Point: The Late Archaic Aspect
 10:20 Marilyn C. Stewart and Paul Zeph, A Model for Subsistence Change in a Central Florida Shell Mound
 10:30 Karl T. Steinen, Ecological Relationships and Settlement Patterning on the Gulf Coast of Florida: The Pasco Area

(29) General Session: SOUTHWESTERN ARCHAEOLOGY II

Clark Room

Chairperson: Ted Frisbie

Participants:

- 8:00 Elizabeth Skinner, Lithic Analysis and Social Organization in the Cibola Area of New Mexico

- 8:25 Walter K. Wait, Late Archaic Along the Upper Chaco: The Star Lake Project
 8:40 Steven A. LeBlanc, Investigations in the Mimbres Area, New Mexico
 8:55 Robert C. Euler, Archaeological and Paleobiological Studies at Stanton's Cave, Grand Canyon National Park, Arizona—A Progress Report
 9:20 Lonnie C. Pippin, Archaeological and Paleoeological Investigations at Guadalupe Pueblo, Sandoval County, New Mexico
 9:35 Charles H. Mikesiek, Archaeobotanical Investigations from the Black Mesa Project
 9:50 Robert Mitchell and Theodore R. Frisbie, New Perspectives on Pueblo Mineral Utilization
 10:05 Linda Popelish, Styles of Rock Art in Canyon Del Muerto
 10:20 Marilyn Malone, An Analysis of Ceramic Attributes and Their Dendrochronological Dating, Elk Ridge, Southeastern Utah
 10:35 Joseph C. Winter, The Identification of Anasazi Farm Sites at Hovenweep

(30) Symposium: THE PREHISTORY OF OZETTE VILLAGE, WASHINGTON

Daniel Boone Room

Organizer and Chairperson: Richard D. Daugherty

Participants:

- 8:00 Richard D. Daugherty, An Introduction to Ozette Prehistory
 8:30 Janet P. Friedman, Ozette Woodworking: Types of Wood Used
 9:00 Paul F. Gleason, Ozette Woodworking Technology
 9:30 Jeffrey E. Mauger, The Prehistoric Houses at Ozette
 10:00 Edward I. Friedman, Makah Camps and Villages
 10:30 Dale R. Croes, Ozette Basketry, Matting, and Cordage

SATURDAY MORNING, MAY 8

(31) Symposium: ASCA: CURRENT ISSUES IN CONSERVATION ARCHAEOLOGY

Clark Room

Organizers: James Hester and Alexander Lindsay

Chairperson: Alexander Lindsay

Participants:

- 8:30 Carla Van West and Cherie Scheick, Professionalism: Registry or Graduate Schools?
 8:40 Cherie Scheick and Carla Van West, A Case of the Boston Tea Party: 1976
 8:50 David Ives, Sturm and Drang: In-the-Field Safety
 9:00 Donald K. Grayson, A Review of Recent Attempts to Prosecute Antiquities Act Violations in Oregon
 9:25 Mark A. Grady and William D. Lipe, Conservation Archaeology, Research, and Environmental Law
 9:50 Lloyd M. Pierson, What's Wrong with Cultural Resource Management in Washington?
 10:15 F. A. Calabrese, Federal Archaeological Legislation and Administration: Intent and Reality
 10:40 James T. Rock, Conservation Archaeology: A Practical Example
 11:05 Michael J. Boynton, Cultural Resource Management and Archaeological Conservation Practices on the Modoc National Forest, U.S. Forest Service, California Region
 11:30 Michael C. Gardner, The Role of Business and the Corporate Archaeologist in Conservation Archaeology
 11:55 Charles J. Spiker, Appropriate Treatment of Archaeological Resources
 12:15 John Cook, Organization of the Alaska Pipeline Survey

(32) Symposium: THE USES AND ABUSES OF VARIOUS SCIENTIFIC AIDS TO ARCHAEOLOGICAL RESEARCH

Mississippi Room

Organizer and Chairman: James B. Griffin

Participants:

- 8:30 Richard I. Ford, The Significance of Ethnobotany to Archaeology
 9:00 Bruce D. Smith, Faunal Analysis: Problems and Potential
 9:30 Jennifer W. Gish and James Schoenwetter, The Application of Palynology to Archaeology: Limitations and Some Practical Suggestions
 10:00 William Z. Farrand, Sedimentology of Archaeological Sites
 10:30 Frederick R. Matson, What is the Question?—Quagmires in Ceramic Technology
 11:00 Robert Stuckenrath, Radiocarbon: Some Dyspeptic Notes from Merlin's Diary
 11:30 Garman Harbottle and Edward V. Sayre, Neutron Activation Analyses in Studies of Archaeological Ceramics: Power and Pitfall
 12:00 Heather Lechtman, The Archaeology of Metallurgy

(33) General Session: STATISTICAL AND QUANTITATIVE METHODS

Spirit of St. Louis Room

Chairperson: D. Bruce Dickson

Participants:

- 8:30 Patricia E. Rubertone, Interaction in a Complex Society: Inferences from Ceramic Attribute Analysis
 8:45 James W. Hatch, "Change" versus "Noise" in Ceramic Frequency Seriation

- 9:00 Jack T. Wynn, The Marquardt Seriation Method Applied to Tairona Ceramics from Colombia
- 9:25 John F. Scarry, Spatial Analysis of the Boston Ledges Rock Shelter B: A Comparison of Methods
- 9:40 D. Bruce Dickson, Induction on the Duck River: An Application of Goodman's Hierarchical Models for Significance Tests in Multivariate Contingency Tables to Archaeological Site Survey Data from Middle Tennessee
- 9:55 Charles L. Redman, Multivariate, Nested Approach to Artifact Analysis
- 10:20 Michael B. Schiffer, Arrangement: A Possible Technique for Establishing Relative Temporal Relationships of Multicomponent Sites
- 10:35 A. E. Rogge, Sampling Skewed Populations: A Common Archaeological Sampling Problem
- 10:50 Ronald D. Anzalone, Quantitative and Qualitative Strategies for Architectural Analysis: A Medieval Moroccan Example
- 11:05 Donald A. Graybill, New Analytical Strategies for Spatial Analysis
- 11:30 Kenneth L. Feder, The Geographic Patterning of Tool Types as Elicited by Trend-Surface Analysis

(34) General Session: ARCHAEOLOGY OF THE GREAT BASIN AND FAR WEST

- Lewis Room
Chairperson: Jerald Jay Johnson
Participants:
- 8:30 Emma Lou Davis, Late Population Shifts from the Great Basin-Great Plains: A Hypothesis
- 9:00 Jerald Jay Johnson, Southern Cascade Mountain Research Project (1966-75)
- 9:30 G. F. Grabert, Central Northwestern Coast Prehistory Revisited: An Appraisal
- 10:00 C. Melvin Aikens and Rick Minor, Assemblage Variation and Activity Loci at Coffee Pot Flat, South Central Oregon

(35) General Session: ARCTIC AREA ARCHAEOLOGY

- Lewis Room
Chairperson: John P. Cook
Participants:
- 10:30 Allen P. McCartney, Increasing Archaeological Awareness in Arctic Canada
- 10:55 Don E. Dumond, Robert Stuckenrath, and Winfield Henn, Archaeology on the Alaska Peninsula
- 11:10 Robson Bonnichsen, Bone Flaking Techniques Applied to Mid-Wisconsin Fauna from the Old Crow Basin, Yukon
- 11:35 Wendy H. Arundale, A Discussion of Some Models of Climate Change for the Eastern Arctic
- 12:00 Bruno Fröhlich and D. Kopjanski, Aleut Site Survey: Adak Island and Attu Island
- 12:15 Robert Gal, Interior Alaskan Prehistory Along the Pipeline
- 12:30 Dale Slaughter, North Slope Prehistory

(36) Symposium: ARCHAEOLOGY OF THE DELAWARE INDIANS

- Outpost Room
Organizer and Chairperson: Melburn D. Thurman
Participants:
- 9:00 Melburn D. Thurman, Settlement Patterns and Migrations of the Delaware Indians
- 9:30 Herbert C. Kroft, Delaware Indians Origins in the Delaware Valley
- 10:00 Roger W. Moeller, "Munsee" Seasonality in the Upper Delaware Valley of Pennsylvania
- 10:30 Raymond S. Baby, Schonbrunn: A Delaware Indian Mission in Ohio
- 11:00 Wilfred Jury, Fairfield: A Canadian Delaware Mission
- 11:30 Henry A. Secondine, Reminiscences of Growing Up as a Delaware

(37) Symposium: CULTURAL INTERACTION IN CENTRAL MEXICO

- Eugene Field Room
Organizer: Evelyn C. Rattray
Chairpersons: Evelyn C. Rattray and Eduardo Matos Moctezuma
Participants:
- 8:30 Manuel V. Gandara, "Influences," Tradition, Interaction: The Study and Use of Formal-Style Similarities
- 8:55 Evelyn C. Rattray, Thin Orange: A Teotihuacan Trade Ware
- 9:20 Eduardo Matos Moctezuma, Relationships Between Tepepolco and Teotihuacan
- 9:45 Constanza Vega Sosa, A Comparison of the Ceramics of the Pueblo-Tlaxcala Valley—And Teotihuacan During the Tenanyecac and Miccoatali Phases
- 10:10 Yoko Sugiyama Yamamoto, Ceramics of Ojo De Agua and Their Relationships with Teotihuacan
- 10:35 Ana Ma. Crespo, El Tesoro, Tepeji Del Rio, Hgo., A Classic Site
- 11:00 Donovan Senter, The Degree of Autonomy of Xochicalco from Teotihuacan During the Early Classic
- 11:25 George Angulo and Kenneth Hirth, Teotihuacan Connections in Morelos
- 11:50 Discussant: Jaime Litvak King

(38) General Session: STUDIES IN LITHIC TECHNOLOGY

- Daniel Boone Room
Chairperson: Barbara A. Purdy

- Participants:
- 8:30 Catherine N. Shelton, Variability in Differentially Heat Treated Lithic Materials
- 8:50 Barbara A. Purdy, The Application of Instrumental Techniques to Prehistoric Stone Remains of Florida
- 9:10 Paul P. Ossa, The Illustration of Chipped Stone Artifacts in Archaeological Reports
- 9:30 William D. Ganzer, Scraped Knuckles, Cut Fingers, and Bruised Thumbs: Learning Theory and Flint Knapping
- 9:50 Frederick L. Briuer, The Identification of Plant and Animal Residues Found on Stone Tools: Some New Clues to Stone Tool Function
- 10:15 Barbara Domeier, Burin Manufacture and Utilization

(39) General Session: THEORETICAL CONSIDERATIONS

- Daniel Boone Room
Chairperson: Joseph L. Chertkoff
Participants:
- 10:30 Joseph L. Chertkoff, Natural Science, Positivism, and Archaeological Explanation
- 10:55 Jefferson Reid, Archaeology as a Second Language
- 11:10 Peter Schimdt, Structuralism and Archaeology: Can You Dig Levi-Strauss?
- 11:35 B. K. Swartz, A Logical Pattern of Archaeological Operations: A Post-Binfordian Reformation
- 12:00 William E. Edwards, The Origin of Cities

SATURDAY AFTERNOON, MAY 8

(40) Symposium: EXPLANATION OF PALEOLITHIC ASSEMBLAGE VARIABILITY

- Mississippi Room
Organizer and Chairperson: Lawrence G. Strauss
Participants:
- 1:30 Mercedes Cano and Alfonso Moure, The Magdalenian Occupation of Tito Bustillo Cave (N.W. Spain)
- 1:45 Kathleen A. Cushman, Spatial Analysis of an Aurignacian Occupation Floor at Cueva Morin, Spain
- 2:00 Leslie G. Freeman, 400,001 B.C. (±): A Paleolithic Space Odyssey
- 2:15 Margaret C. Fritz, Bone Artifact Typology, Decorative Treatment, and Sources of Variability Among Certain Paleolithic Assemblages
- 2:30 R. P. J. Gonzalez Echegary, The Concept of "Facies" Applied to Upper Paleolithic
- 2:45 Roberta Jewett and Geoffrey Clark, Local Group Size Estimation Procedures in Archaeological Contexts: An Example from the African Basal Pleistocene
- 3:00 Arthur J. Jelinek, Quantifiable Trends in Flake Shape in the Late Pleistocene of the Levant
- 3:15 Robert K. Hitchcock and James I. Ebert, The Archaeology of Central Botswana, A Previously Unexplored Area of the Eastern Kalahari
- 3:30 Michael Jochim, Hunter-Gatherer Economic Patterns: A Predictive Model for Archaeology
- 3:45 Anta Montet-White, Viability of Late Paleolithic of South Central Europe
- 4:00 Alan Osborn, Aconite and Old Slates: A Suggested Explanation for Changes in Lithic Resource Utilization
- 4:15 James R. Sackett, Upper Paleolithic Assemblage Variability in the Perigord in Southwestern France
- 4:30 Lawrence G. Strauss, New Light on the Upper Paleolithic of Southwestern Europe
- 4:45 Thomas P. Volman, Spatial Analysis at Torralba

(41) General Session: STUDIES OF ARCHAEOLOGICAL SOILS AND SURFACE DATA

- Spirit of St. Louis Room
Chairperson: Eugene L. Sterud
Participants:
- 1:30 Nancy A. Stenholm, Deflocculation and Flotation of Clay Soils in Archaeological Deposits
- 1:50 Charles M. Baker, An Experimental Application of Soil Phosphate Analysis
- 2:10 W. Raymond Wood and Donald L. Johnson, Pedoturbation (Soil Mixing), Context, and Archaeological Systemics
- 2:30 Stephanie M. Whittlesey, Eric Arnould, and William E. Reynolds, "Stronger than Dirt": The Concept of an Archaeological Soil and Its Application
- 3:00 Anne F. Rogers, Surface Collecting and Sampling: An Empirical Analysis
- 3:20 William B. Butler, The Demonstration and Explication of Intersite Relationships as Revealed by Lithic Debitage Analysis
- 3:40 James C. Chatters, The Longitudinal Land Use Study: A Method for the Investigation of Culture-Environment Relationships
- 4:00 Kelly C. Duncan, Burnt Rock Middens—A Theoretical Consideration
- 4:20 Charles D. Cheek, Activity Analysis of Collections of Lithic Surface Debris
- 4:40 Kevin Leehan, The Uses of a Proton Magnetometer and Auger Sampling in an Archaeological Setting
- 5:00 Eugene L. Sterud and Francis P. McManamon, The Identification of Activity Loci in Plough Zones: An Example from New York State

(42) Symposium: KINCAID SITES AND SOUNDINGS: ARCHAEOLOGICAL RESEARCH 1967-76

Lewis Room

Organizer and Chairperson: Jon Muller

Participants:

- 1:30 Jon Muller, Kincaid Sites and Soundings: Archaeological Research, 1967-76
2:00 Robert V. Riordan, Ceramics and Settlement: A Mississippian Example from the Thirteenth Century A.D.
2:30 Brian M. Butler, Mississippian Settlement in the Black Bottom: Environment, Community, and Site Distribution
3:00 Crawford Blakeman, Paleoethnobotany of the Black Bottom
3:30 Robert H. Lafferty III, The Black Bottom in Relation to Mississippian Settlement
4:00 Lawrence G. Santeford, Cherting the Issue: Lithic Studies in Southern Illinois
4:30 Frank Rackerby, The Selling of Kincaid: Putting the Site in the Public Domain

(43) Symposium: COMPUTERIZED DATA MANAGEMENT IN ARCHAEOLOGY

Clark Room

Organizers: Jeffrey M. Neff and Cynthia Irwin-Williams

Chairpersons: Jeffrey M. Neff, F. B. Fryman, and Sylvia Gaines

Participants:

- 1:30 James A. Brown and Stanley C. Clayton, The Organization of an Interactive Data Management System for an Archaeological Site
1:55 Patricia Hancock and Cindy Kennedy, Setting Up a Data Processing Lab
2:20 Mike Jacobs and Susan Ciolek-Torrello, Constructing a Thesaurus for Terms for Southwestern Archaeological and Ethnological Specimens
2:45 Paddy C. Johnson, Data Structures and the Recording of Archaeological Data
3:10 M. Katherine Jones, Structure of and Relationships Among the Several Components of FDAHRM's Archaeological Data Bank
3:35 Larry Manire and Don P. Morris, A Computerized Survey Recording System
4:00 Pamela Morden, The Development of an Archaeological Data Recording System
4:25 Sandra Scholtz, A Computerized Archaeological Photograph and Slide File
4:45 Jeffrey M. Neff, Perspectives on the Management of Archaeological Data

(44) Symposium: RECENT RESEARCH ON TEOTIHUACAN

Eugene Field Room

Organizer and Chairperson: George L. Cowgill

Participants:

- 1:30 Michael E. Smith, A Multivariate Analysis of Temples and Residences of Classic Teotihuacan, Mexico
1:50 Michael Ester, The Spatial Allocation of Activities at Teotihuacan
2:10 Rebecca S. Gottscho, Toward More Precise Status Categories at Teotihuacan
2:30 Matthew S. Freedman, Spatial Organization of the Urban Center of Teotihuacan, Mexico
2:50 Emily S. McClung de Tapia, Paleoethnobotanical Investigation at Teotihuacan, Mexico
3:10 David R. Starbuck, Faunal Evidence for Urban Adaptations and the Teotihuacan Support Area
3:30 David R. Drucker, Teotihuacan's Major Monuments: An Analysis of Their Systematic Interrelationship
3:50 Paula Homberger Kroster, The Potters of Teotihuacan
4:10 Michael W. Spence, Obsidian Dating in Teotihuacan, Mexico
4:30 George L. Cowgill, Teotihuacan and the Southern Maya Lowlands: Implications of Contrasting Developmental Rhythms

(45) General Session: PLAINS ARCHAEOLOGY

Daniel Boone Room

Chairperson: Patricia J. O'Brien

Participants:

- 1:00 Susan C. Vehik, The Quast Site (32LM234) and Its Implications for the Prehistory of the James River Valley, North Dakota
1:10 Rain Vehik, Archaeological Excavations in the James River Valley, North Dakota
1:20 Ruthann Knudson, The Anton Rygh Site, South Dakota, and Its Salvaged Information
1:30 Patricia O'Brien, Kansas City Area Settlement Patterns
1:50 Robert E. Cooley, The Patterson Spring Site: A Multi-Component Site in the Middle James River Basin
2:00 Michael J. Fuller, An Archaeological Study of Settlement and Land Use in the James River Basin
2:10 Charles D. Collins, An Early Hunter Tradition Site in the Western Drainage Region of Missouri
2:20 Donna C. Roper, Settlement Patterns on the Pomme De Terre River, Missouri
2:40 James E. Price, Current Research on the Powers Phase Settlement System
3:00 Francis B. King, Modeling Prehistoric Plant Food Resources of the Western Missouri Ozarks
3:10 Ann M. Johnson, Middle Missouri Cultural Dynamics—A.D. 1100-1500
3:20 David R. Evans and David J. Ives, The Meramec Basin Archaeological Research Project
3:40 Elizabeth Ann Morris, Archaeological Survey of Argentine Pass Across the

- Continental Divide in Central Colorado
4:00 Sarah M. Nelson, A Reexamination of Colorado Woodland Pottery
4:10 William S. Marmaduke, Cultural Patterns in the Prehistory of Trans-Pecos Texas
4:20 William B. Lees, A Functional Analysis of Eighteenth and Nineteenth Century Osage Gun Barrel Sections
4:40 Steve Hackenberger, An Areal Reconnaissance of McGee and Patapo Creeks

SATURDAY EVENING, MAY 8

- 5:30- POST-CONFERENCE GATHERING AT CAHOKIA MOUNDS
9:00 Sponsored by the Illinois Archaeological Survey. See General Information for details.

ABSTRACTS OF ORGANIZED SYMPOSIA

(1) **THE ARCHAEOLOGICAL CONSERVATION ACT: RETROSPECT AND PROSPECT.** Passage of Public Law 93-291 (the Moss-Bennett Act) in May 1974 stimulated an abundance of speculation by American archaeologists about the impact that the Act would have on the field. Two years later it is possible to review the real impact that the Act has had upon archaeology in the United States. In addition, it is important to discuss the various activities needed within the next two years in order to insure that the bill be continued when it comes up for review in 1978. It is important to show that archaeologists in America can respond effectively to this important legislative opportunity that has been provided by the American public.

(2) **ARCHAEOLOGY AND PALEOECOLOGY AT MEADOWCROFT ROCKSHELTER: AN INTERIM STATEMENT.** Meadowcroft rockshelter is a deeply stratified, multi-component site in Washington County, Pennsylvania. The 11 well defined stratigraphic units isolated at the site span at least 16,000 and perhaps 19,000 years of intermittent occupation by groups representing all of the major cultural stages/periods now recognized in northeastern North America. The salient features of the geology, archaeology, and paleoecology of this site are summarized on the basis of data accrued and processed through the termination of the 1975 excavation season. Since there are two more field seasons scheduled at the site, the data presented most needs to be considered subject to future modification.

(3) **THE ARCHAEOLOGY OF RESIDENCE: SOME EXAMPLES FROM PRE-COLUMBIAN MESOAMERICA.** The symposium reflects a growing interest in the excavation of non-ceremonial sectors of Pre-Columbian communities in an attempt to gain further knowledge of non-hieratic aspects of Mesoamerican culture. The participants will present data based upon excavations of residential remains from a wide variety of settlement types and ranging in time from the Preclassic to the Postclassic periods.

(5) **THE RECONSTRUCTION OF DIET FROM ARCHAEOLOGICAL EVIDENCE.** The papers will present examples of the application of techniques used in paleonutrition with only a brief discussion of methodology. These contributions will be theoretical in nature explaining the methods of the technique and range of its application. These will include analysis of faunal, flora, skeletal, and cultural evidence.

(6) **THE STUDY OF PREHISTORY: A BIO-ARCHAEOLOGICAL PERSPECTIVE.** The development of complex models of bio-cultural change requires the integration of data derived from a diversity of research fields. One means of facilitating the refinement of such models is to direct, within a geographic region, expertise reflecting the biological, social, and environmental sciences toward a common set of research goals. The 15,000 square kilometer area of the lower Illinois River region is an ideal laboratory for the development of interdisciplinary research strategies directed toward questions of prehistoric social organization, demography, bio-social relationships, and adaptive efficiency. The numerous archaeological sites in the area document the exploitation of a rich natural environment, and reflect marked cultural diversity through time. Thus, it is possible to trace the interaction of biological, cultural, and environmental variables through extensive series of temporally sequential populations. This symposium details the complex bio-cultural changes which define the Woodland and Mississippian periods for the lower Illinois region.

(7) **VARIETIES OF NON-AGRICULTURAL SETTLEMENT AND SOCIAL ORGANIZATION: A VIEW FROM PREHISTORIC NORTH AMERICA.** In spite of considerable recent research into hunter-gatherer social and settlement systematics, a tendency to think of non-agricultural societies as invariably being egalitarian bands continues to be observable among anthropologists and especially archaeologists. This symposium examines archaeological and related ethnographic evidence bearing on the amount of variability actually present among North American non-agriculturalists in terms of social and settlement organization. Recent data from various parts of the continent are summarized, and an attempt is made to project the kinds of organization present under varying conditions at varying times in the past.

(8) **TEACHING AND TRAINING OF ARCHAEOLOGISTS.** A consideration of the aims, methods employed, and problems faced in the graduate education of professional archaeologists. The required skills, knowledge, and experience and the possible methods of providing students with the opportunity to acquire them will be discussed. The question of adjustment of graduate programs to reflect the current employment situation will be examined. Specific cases of program evaluation and reorganization will be presented.

(9) **MIDDLE-LATE WOODLAND CONTINUITY IN NORTHEASTERN NORTH AMERICA.** The rapidly changing cultures of the A.D. 400-700 time period in northeastern North America have long been a focal point of archaeological speculation. Anthropological research into this time period has recently evolved into a major field of study within the area. Symposium reports cover various features of the cultural order including subsistence

practices, settlement organization, technological innovations, lithic technology, mortuary practices, and other features essential to the study of structural change in society. Predictive models are offered which attempt to explain the transitions of the time.

(10) **SPANISH COLONIAL ARCHAEOLOGY IN TEXAS AND NORTHEASTERN MEXICO.** Symposium participants will present papers reviewing recent investigations of Spanish Colonial sites and materials in Texas and northeastern Mexico. One paper will discuss archaeological excavations at Mission Rosario in southern Texas. A series of four papers will be devoted to a review of the archaeology, architecture, and ethnohistory of an eighteenth century Spanish mission complex (San Juan Bautista del Rio Grande) in northeastern Coahuila. Finally, the preservation and restoration procedures used in treating artifacts from mid-sixteenth century shipwrecks along the Texas coast will be treated in detail.

(11) **CURRENT INVESTIGATIONS INTO PREHISTORIC CERAMIC TECHNOLOGY.** Over the past several years the total volume of archaeometric analysis techniques available to the archaeologist has increased dramatically. While this expansion has characterized all aspects of archaeological research, the range of developments has been especially great in the proliferation of archaeometric techniques suitable for the analysis of prehistoric ceramic materials. As a result of these archaeometric developments those archaeologists concerned with changes in prehistoric ceramic technology have been provided with a wide array of new variables with which to measure such changes. Although the scope of new techniques available for the analysis of prehistoric ceramic technology is ever growing, it is hoped that this symposium, bringing together archaeologists and researchers in the physical sciences, will serve to draw the attention of the general archaeological community to the more important aspects of current research into prehistoric ceramic technology.

(13) **COMPETITIVE CONTRACT ARCHAEOLOGY: NEW DEVELOPMENTS IN THE INTERAGENCY ARCHAEOLOGICAL SERVICES DIVISION PROGRAM, DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE.** The Interagency Archaeological Service Division's (National Park Service) contracting program will be presented to the archaeological contracting profession as a revolution in procurement procedures for site mitigation. Specifically, the revolution is one of significant change in the nature of contract award, shifting from sole-source to competitive procurement. The philosophy behind this change is based on three premises: (1) contract procurement of the future must be conducted in a free and open research market as mandated by the Code of Federal Regulations (procurement regulations) now on the books; (2) the successful contractor will be one who submits the most creative problem-oriented research design, not the competitor with the lowest budget proposal, and finally; (3) competitive proposals for mitigation contracts will be open to all qualified institutions and organizations without restriction.

(14) **MIDDLE AMERICAN COASTAL ECOSYSTEMS.** The focus of the symposium is behavioral patterns and factors affecting them in coastal environments of Middle America. Substantive, methodological, and theoretical contributions on the topics of subsistence, economics, demography, and settlement pattern will be included. Both environmental and social relationships are regarded as relevant to the analysis of Middle American coastal ecosystems.

(15) **PALEOETHNOBOTANICAL ROUNDTABLE: THE IDENTIFICATION AND INTERPRETATION OF EVIDENCE FOR NATIVE AND INTRODUCED HORTICULTURE IN THE EASTERN UNITED STATES.** The evidence for identifying and interpreting domesticated plants in the Eastern United States will be discussed by the participants of this roundtable. Both hypothesized indigenous domesticates and introduced cultivars will receive considerable attention. New methods of identification, alternative models of interpretation, and directions for future research will be openly debated by the participating paleoethnobotanists. Participants are encouraged to bring perplexing specimens for identification or for illustrating a particular idea. The importance and implications of associated botanical evidence charcoal, pollen, phytoliths, etc. will also be reviewed. Questions and comments from the audience are encouraged.

(16) **CORDS, FABRICS, AND BASKETS FROM SITES AND CERAMICS IN NORTH AMERICA.** Prehistoric cords, fabrics, and baskets are regarded by most researchers as an afterthought or appendix to material culture descriptions from sites throughout the New World. Singularly successful articles dealing with these preserved phenomena have graced the literature for over a hundred years. With only rare exceptions have archaeologists sought confirmation for their conclusions via comparisons across mediums to seek stylistic keys which may unlock social, economic, or settlement patterns which may not conform to tribal, regional, or physiographic areas. Recent analyses of cords, fabrics, and baskets have become terminologically precise, technically accurate and imaginative in seeking internal relationships. There is a paramount need for communication among scholars working on these "soft items" and their direct transfers to other hard items such as ceramics, indirectly to building facades, or as painted motifs; or as mnemonic keys central to the social/cultural organization of prehistoric groups.

(17) **THE HINDS CAVE PROJECT: AN ARCHAEOLOGICAL AND BOTANICAL STUDY OF A LARGE DRY ROCKSHELTER IN SOUTHWEST TEXAS.** The objective of this symposium is to present a series of preliminary reports of the Hinds Cave research. These reports will describe the project objectives, the archaeology, the paleoenvironment, the

coprolite (dietary) studies, and plant macrofossil analyses. Hinds Cave is a large rockshelter-cave site containing more than three meters of a rich deposit of perishable refuse. It is one of the few such sites that remain in the area of southwest Texas which still contains vast quantities of undisturbed perishable deposits. Since it is now in immediate danger of being destroyed by relic collectors, an intensive effort is being conducted to systematically study the site and its deposits. One excavation season has already been completed and preliminary analyses of the data indicate that the site contains an 8,000-9,000 year record and has enormous potential for yielding the longest sequence of plant macrofossil and human coprolite data ever recorded from a site in the American Southwest. The study involves an extensive interdisciplinary program incorporating botanists, archaeologists, and nutritionists.

(18) DEVELOPMENT OF ECONOMIC AND POLITICAL SYSTEMS IN PREHISPANIC ANDES. Models for the development of economic and political systems in Prehispanic Peru are becoming more complex and sophisticated. Utilization of better field recovery techniques combined with more thorough laboratory analytical methodologies provides better data from which to reconstruct the economic support systems of the developing "civilizations" in Peru. This data in conjunction with other archaeologically recovered settlement pattern information allows more adequate explanatory hypotheses concerning the political institutions used to acquire and manipulate economic goods in the developing complex societies. Ethnohistorical data is used to provide additional validating hypotheses.

(19, 20) PHOTOGRAMMETRIC MAPPING AND COMPUTER GRAPHICS. Photogrammetry and computer graphics are rapidly changing technical fields which have a great impact on current archaeological research. This symposium provides a medium for discussing methods and techniques and disseminating these to the archaeological profession. The increasing use of computer-aided graphics in conjunction with other spatially related analytical methods is an aid to understanding behavioral relationships within the archaeological record. A broad range of topical applications in both photogrammetric and computer graphic mapping provides a basis for future archaeological research.

(21) EXPERIMENTAL REPLICATION. A growing number of independent workers are involved in Experimental Replication. Increasingly sophisticated experiments suggest its potential in dealing with that which does not survive in the archaeological record, both process and the bio-degradable majority of material culture. This symposium will present some examples of this work, with concern for measurement, control, and verification in a wide variety of areas and interests.

(22) REGIONAL CENTERS IN ARCHAEOLOGY: PROSPECTS AND PROBLEMS. Archaeologists are becoming increasingly conscious of the responsibilities of research, data retrieval, data curation, professional training, and other areas of our discipline that have requirements often exceeding our present institutional capacities. Today, almost without exception, archaeological activities are organized on a one-institution basis—one university department, one museum, or one governmental agency. This limited organizational base has imposed serious limits on the scale and complexity of archaeological efforts of all kinds. Increasingly, archaeologists are faced with problems whose solution is beyond our present organizational limits. This symposium will explore ideas and approaches for developing regional centers that have the capacity to solve problems on a higher level. Symposium participants will explore possible activities that might best be organized within regional centers. They will explore alternative strategies for organizing and funding centers. Specific attention will be directed to problems of support for interdisciplinary research, long-term curation, large-scale data retrieval systems, special research services, and other potential activities that might best be organized within regional centers.

(25) ZOOARCHAEOLOGICAL THEORY AND RECONSTRUCTIONS. Zooarchaeological analysis is increasingly becoming a major aspect of archaeological research; and the question arises as to whether or not there is any theory behind the analysis. While approaches vary, basic principles should be the same. Reconstructions are based on known or analogous habitat requirements and life histories. Using several faunal groups as examples, the symposium attempts to demonstrate the possibilities and problems in reconstruction and explore the theoretical background, if any.

(26, 27) CONFERENCE ON MESOAMERICAN ETHNOHISTORY. This symposium follows the pattern of the FIRST CONFERENCE ON MESOAMERICAN ETHNOHISTORY, held at the Society's 48th Annual Meeting in Dallas in 1975. The focus will be upon documentary materials concerning the high culture areas of pre-Hispanic native Mexico and Guatemala, and the relationship of these data to the analysis and solution of both pre-Conquest and post-Contact problems. The participants have been selected to reflect a broad coverage of current research in this complex field, and their papers will demonstrate how written and pictorial manuscript sources may be utilized to resolve a wide variety of ethnological, ethnographic, social, and linguistic problems.

(30) THE PREHISTORY OF OZETTE VILLAGE, WASHINGTON. Until its abandonment in the early twentieth century, Ozette was one of the five main villages of the Makah Indians. For the past six years year-round excavations have been conducted at the site. These investigations have revealed aspects of the inhabitant's lifeways that generally are never recovered through archaeology, especially in the area of woodworking. This is due to the unique state of preservation of the site.

(31) ASCA—CURRENT ISSUES IN CONSERVATION ARCHAEOLOGY. Since its inception in 1974, the American Society for Conservation Archaeology has sought to define its role. Our articles of incorporation state that the goals of the society are to "promote and coordinate scholarly activities, scientific research education, and high quality of standards in the pursuit of the preservation and protection of archaeological values of both the prehistoric and historic eras." The present complement of papers express the range of interests that may fairly be included within the conservation ethic. These papers range from professionalism to safety, environmental law, antiquities violations, administration of cultural resources by federal agencies and corporations, and archaeological research design under salvage conditions. This first ASCA symposium indicates clearly that Conservation of archaeological resources has many facets which affect the planning and execution of archaeological endeavors on a daily basis.

(32) THE USES AND ABUSES OF VARIOUS SCIENTIFIC AIDS TO ARCHAEOLOGICAL RESEARCH. Archaeology has, can, and should avail itself of the information which can be derived from a large number of fields within the natural and physical sciences. However, at times either archaeologists or their associates in other disciplines, or both, misapply or misinterpret data. It is the purpose of the several papers to review what their specialties can contribute to archaeological interpretation, what they cannot do, and how collaboration for common goals can best be achieved. This symposium was organized and sponsored by the Association for Field Archaeology.

(36) ARCHAEOLOGY OF THE DELAWARE INDIANS. This symposium summarizes present archaeological knowledge of the settlement and subsistence patterns of the proto-historic and historic Delaware, and relates this knowledge to ethnohistorical information on their settlement-subsistence patterns from the seventeenth century up to the early twentieth century. Thurman deals with Delaware migrations and characterizes changes in their settlement-subsistence patterns. Kraft and Moeller report on recent excavations clarifying Delaware origins and settlement-subsistence patterns in the Delaware Valley and contiguous areas. Baby and Jury provide detailed reports on excavation of mission villages, an important later settlement type, in Ohio and Ontario. Secondine provides reminiscences of the early twentieth century Delaware Indian community of northeastern Oklahoma.

(37) CULTURAL INTERACTION IN CENTRAL MEXICO. In this symposium we examine the evidence for cultural interaction between Teotihuacan and some neighboring regions. There has been a significant accumulation of three kinds of information making possible an abundance of new proposals regarding Teotihuacan trade and the interactions between communities engaged in this exchange. The new data are from (1) surface surveys and stratigraphic excavations at Teotihuacan itself, (2) surface surveys of the surrounding Valley, and (3) recent excavations in Hidalgo, Puebla-Tlaxcala, and the Valley of Toluca. Controlled intersite comparisons of architecture and cultural assemblages will be made. The contemporaneity of the sites and the identification of traded items will be discussed.

(40) EXPLANATION OF PALEOLITHIC ASSEMBLAGE VARIABILITY. Based on examples from Cantabrian Spain, Southwest France, Germany, and Central Europe, the symposium will deal with a number of explanations for variability in the archaeological record from the late and post-Pleistocene. Individual papers will discuss variability at the level of sites, small areas, and entire regions of Europe. Emphasis will be placed on functional and stylistic explanations of variability, using information from particular classes of artifacts, as well as from whole assemblages of tools and faunal remains, and from site locations and configurations.

(42) KINCAID SITES AND SOUNDINGS: ARCHAEOLOGICAL RESEARCH 1967-76. Southern Illinois University has been actively engaged in archaeological research at the Kincaid site for the past decade. The activities undertaken by the Field School in Archaeology have resulted in an extremely complete picture of settlement for the area during Mississippian times. Various aspects of the project will be discussed.

(43) COMPUTERIZED DATA MANAGEMENT IN ARCHAEOLOGY. Archaeological activity generates vast and typically unmanageable amounts of information. From one large-scale survey or excavation literally millions of potential observations may be made and recorded. In the past, archaeologists have attacked this problem through a multitude of manual cross-filing systems and forms, if they have cared to attack it at all. With the advent of modern electronic data processing systems, the computer has become an increasingly important tool in the handling of the information. This symposium will explore the rationale and techniques involved in the use of the computer to store and retrieve archaeological information. This use of computers in archaeology is to be strictly differentiated from the statistical and numerical analysis with which the phrase "computers in archaeology" has been traditionally associated. Although numerical analysis is important in its own right, this symposium will be concerned with computer techniques which guide the archaeologist to the information which he wishes to find and allow him to ask complex, logical questions of the data. It is not concerned with the actual examination or analysis of particular elements of the data which have been recovered. The use of the computer as a management tool brings complex new issues to the archaeologist. Middle level management information systems such as GRIPHOS or SELGEM require some level of computer expertise to deal with them. Thus a new professional has been added to the long list of personnel with which the archaeologist already has to deal: the computer specialist. A new level of accuracy and consistency is required for data recording and perhaps most important

of all, decisions must be made on just what information is to be recorded. These problems, their general significance, and applications of data management to different problems in archaeology will be explored by the papers in this session.

(44) RECENT RESEARCH ON TEOTIHUACAN. The Teotihuacan Mapping Project (directed by Rene Millon) collected an immense amount of data in the course of an intensive systematic surface survey of the entire city, supplemented by problem-oriented small excavations. This symposium reports results from a variety of analytical approaches being applied to this data.

ABSTRACTS OF PAPERS*

Adams, E. Charles (Museum of Northern Arizona) WALPI: THE ARCHAEOLOGY OF AN HISTORIC AND LIVING COMMUNITY. Beginning in November 1975, an 18-month restoration program for the Hopi Pueblo, Walpi, was begun. Funding for the restoration and attendant archaeology is provided by the Economic Development Administration. The development, implementation, and acceptance of an archaeological project within a living Hopi Pueblo provides a unique backdrop to the project. The continuity of archaeology with the living community allows the consideration of a large variety of hypotheses. The data being collected should shed light on processes of material culture disintegration (how material culture arrives at its archaeological context), culture continuity and change, material correlates of social structure, inter- and intravillage structure, the study of modern Hopi pottery, the evolution of architectural style, as well as many others. In general an ethnoarchaeological model is being applied. (4)

Adams, Richard E. W. (Texas-San Antonio) THE GUERRERO PROJECT: ARCHAEOLOGICAL AND ETHNOHISTORICAL STUDIES OF EIGHTEENTH CENTURY SPANISH MISSIONS IN NORTHERN COAHUILA. The Guerrero Project of The University of Texas at San Antonio is investigating, through the avenues of archaeology and ethnohistory, the eighteenth century Spanish mission complex in an area of northern Coahuila formerly known as San Juan Bautista del Rio Grande. Three missions—San Juan Bautista, San Bernardo, and San Francisco Solano—were established in this region beginning in 1699. The research, funded by the National Endowment for the Humanities and two Texas foundations, is providing new data on the mission system in the area, and is examining the historic Indian occupations associated with the missions. (10)

Adovasio, James M. (Pittsburgh) MEADOWCROFT ROCKSHELTER: RETROSPECT 1975. All of the data currently available indicate that Meadowcroft Rockshelter was more or less continuously utilized as a locus for hunting, collecting, and food processing from at least the early fifteenth millennium B.C. to the historic period. As such it represents not only the oldest well dated site in eastern North America but also one of the longest stratified occupational sequences in the hemisphere. The culture sequence at Meadowcroft Rockshelter is summarized, and the character and pattern of spatial and temporal intensity of site utilization are detailed. Summary comments are offered on the external affinities of the sequent Meadowcroft assemblages to complexes elsewhere in the eastern United States specifically, and North America generally. (2)

Adovasio, J. M. (see Carlisle, R.) (16)

Aikens, C. Melvin (Oregon) ASSEMBLAGE VARIATION AND ACTIVITY LOCI AT COFFEE POT FLAT, SOUTH-CENTRAL OREGON. Coffee Pot Flat is a mountain meadow several miles west of the vast Chewaucan Marsh of south-central Oregon at the western edge of the Great Basin. Intensive survey coverage of the 3-1/2 square-mile area yielded 51 activity loci of varying extent. Projectile point time markers indicate that the meadow was occupied over the past 5,000 to 7,000 years. Detailed analysis of controlled surface collections suggests activity variants. It is speculated that the Coffee Pot Flat occupation represents the summertime activity patterns of transhumant populations which wintered around the Chewaucan Marsh. (34)

Aldrich, Frank T. (Arizona State) COMPUTERIZED SURFICIAL DISPLAY AND CLASSIFICATION EXPERIMENTS FOR LIENCRES ARTIFACTS, NORTH COASTAL SPAIN. This paper presents the results of a series of computerized spatial and classificatory experiments designed to test the methodological validity of employing 3-dimensional perspective plotting and Braun-Blanquet "tabular analysis" to process surface artifactual scatter. The data is from Liencres, an early Holocene open site near Santander, Spain. Experiments include the production of single and multiple plots of continuous and discontinuous artifact surfaces generated from spatially modified data. The Braun-Blanquet methodology which was initially developed for ecological analysis was also applied to the data. All experimental results were compared with spatial findings of Clark (1975). (19, 20)

Andresen, John M. (Illinois) THE MAYA CHERT INDUSTRY OF NORTHERN BELIZE. A technological and functional analysis has been completed on a collection of chert artifacts from 11 sites in northern Belize. The analysis includes a model of the regional pre-Columbian chert industry. The role of bladmaking is emphasized, and lithic relationships with other parts of the Maya area are discussed. (12)

Andrews, R. (see Carlisle, R.) (16)

Angulo, George (INAH) TEOTIHUACAN CONNECTIONS IN MORELOS. Recent archaeological investigation indicates considerable variation in the nature and quantity of

RECORDING SESSIONS

Persons wishing to record scholarly sessions or portions of sessions should follow normal scholarly convention and obtain the permission of the person being recorded and of the chairman of the session at which recording is to be done. There should be no publication of such recorded material without following established procedures regarding permission and citation.

*Abstracts listed alphabetically by senior author; please see program for full citation.

Teotihuacan influence across the modern state of Morelos, Mexico. This influence is strongest and most long lasting in the eastern half of the state. Teotihuacan influence in western Morelos is scant, restricted to the early Classic, and gave rise to the enigmatic cultural assemblage of Xochicalco, Morelos. The material is discussed on terms of its utility for funding research in the Central Mexican Classic. (37)

Anzalone, Ronald D. (SUNY Binghamton) QUANTITATIVE AND QUALITATIVE STRATEGIES FOR ARCHITECTURAL ANALYSIS: A MEDIEVAL MOROCCAN EXAMPLE. A medieval town site on the north coast of Morocco provides the focus for describing and explaining settlement structure and change. Settlements are viewed as both networks of structures and as networks of social interactions. Architectural remains, like other artifacts, form a subsystem of patterned behavioral indicators. Spatial patterning of architectural units, the physical "structure" of the site, and technological variability within the constructional components of buildings are being systematically studied. By combining qualitative models with quantitative analysis of such architectural remains, it is possible to make tentative statements concerning changing patterns of land use and constructional resource utilization. (33)

Applegarth, J. (see Skirboll, E.) (2)

Arnold, Dean (Wheaton College) NEUTRON ACTIVATION ANALYSIS OF CONTEMPORARY CERAMIC MATERIALS: A TEST OF ASSUMPTIONS. By analyzing contemporary ceramic materials from highland Guatemala, this paper tests the assumptions which technologists utilize in interpreting the neutron activation analysis of ancient ceramic materials. (11)

Arnold, J. Barto, III (Texas) ARCHAEOLOGICAL APPLICATIONS OF COMPUTER-DRAWN CONTOUR AND THREE-DIMENSIONAL PERSPECTIVE PLOTS. Topographic contour maps have long been a basic archaeological tool. Magnetic and other remote sensing data can be handled in a similar fashion. The computer offers a fast, efficient and relatively inexpensive means for the production of traditional contour maps as well as shaded line printer or electro-static plots, vertex plots, and three-dimensional perspective plots. There are several contour plotting packages available. CPS-1 by Unitec, SYMVU by the Harvard Laboratory for Computer Graphics, and the University of Texas Computation Center's Contour and 3-D programs will be discussed in this paper, along with a brief coverage of NASA's LARSYS programs for remote sensing data reduction. (19, 20)

Arnould, Eric (see Whittlesey, Stephanie) (41)

Arundale, Wendy H. (Washington) A DISCUSSION OF SOME MODELS OF CLIMATIC CHANGE FOR THE EASTERN ARCTIC. Models which use climatic change as their independent variable have become increasingly important in eastern arctic research. In this paper, two such models are described and data which contradicts some of their predictions for environmental change is presented. One implication of this contradictory data is that alternative models of the processes of demographic change are needed. One such model is proposed. A second implication is that we need to be using a variety of explanatory models, including models of subsistence settlement system change if we are to maximize the productivity of arctic research. (35)

Aten, Lawrence E. (NPS) ADAPTIVE DIVERSITY AMONG HUNTERS GATHERERS OF THE NORTHWEST GULF COAST. This paper presents an initial attempt at framing organizational diversity, as well as some evolutionary trends in organization and their adaptive significance among hunters gatherers of the coast of the northwestern Gulf of Mexico. (7)

Aten, Lawrence E. (NPS) INTERDEPENDENCE AND RECIPROCITY FOR SOUND CULTURAL RESOURCES MANAGEMENT. Will address the philosophical and practical reasons for integrating the various programs in the federal government to the greatest degree practical. Among the programs to be discussed are the National Register, the National Landmarks, the Historic American Buildings Survey and Historic American Engineering Record, the Advisory Council on Historic Preservation, Smithsonian Institution programs, the National Park Service in-house programs, and how they relate to the Interagency Archaeological Services Division and how the Interagency Archaeological Services Division relates to them. (13)

Baby, Raymond S. (Ohio State) SCHONBRUNN: A DELAWARE INDIAN MISSION IN OHIO. In 1772, David Zeisberger, a Moravian missionary, established on the Tuscarawas River the mission town of Schonbrunn, about two miles south of the present-day New Philadelphia (Ohio). The mission was abandoned in 1777 after a series of Indian raids. Some 140 later, the village was located and partially restored. During the late 1940's and early 1950's, Dr. August Mahr conducted extensive library research, including the translation of Zeisberger's diaries. Excavations that followed later revealed the exact location and ground plan of the village, the associated fence pattern, and a cabin site of one of the Delaware Indian converts. (36)

Baker, Charles M. (Georgia) AN EXPERIMENTAL APPLICATION OF SOIL PHOSPHATE ANALYSIS. Data are provided which allow a further assessment of the overall efficiency and feasibility of soil phosphate analysis during archaeological field investigations. Robert

Eidt's (1973) rapid chemical field test for site surveying is applied at two sites in order to provide data to assess the behavioral significance of discrete spatial artifact distributions. Results of the experimentation are presented and, in addition, new techniques for extracting and processing soil samples are discussed. (41)

Banks, Larry (Army Corps of Engineers) THE ARCHAEOLOGICAL CONSERVATION ACT--CO-ORDINATED. The Tulsa District of the Corps of Engineers has been involved in archaeological contracting for the past five years, and by May 1974 had an operating staged program with a built-in mechanism for incorporation of contracting for archaeological mitigation. As a result, the district began such investigations in almost immediate response to Public Law 93-291. In addition to a number of on-going preliminary archaeological investigations, the district is administering fourteen mitigation programs developed from earlier reconnaissance reports. It is only by these follow-up studies that the quality and legal sufficiency of the previous reports can be fully evaluated. In most cases, considerable deficiencies have been observed. In addition, the district has been employing all three facets of study authorized by Public Law 93-291, which are (1) transfer of funds to the NPS, (2) direct contracting, and (3) in-house studies. The three methods have varied degrees of success. Based on results of case histories within the district, recommendations for upgrading the continuity of an archaeological program as authorized by Public Law 93-291 are: (1) better administration, co-ordination, and responsiveness between contractors and federal agencies and between federal and state agencies; (2) more critical reviews of reports by principal investigators and the sponsoring agencies; (3) more critical reviews of budgetary proposals; (4) a more conscious effort to explore means of mitigation other than excavation; (5) a concerted effort to make the public aware of archaeological goals through better communications, publicly oriented publications resulting from technical studies, and interpretative displays. (1)

Benn, David (Luther College) NOTES ON LATE WOODLAND FABRIC IMPRESSED POTTERY: A VIEW FROM NORTHEAST IOWA. The fabric impressions on Late Woodland Madison Ware ceramics are investigated for their structural variations and composition. A sample of such fabrics from the Hadfield site (13LN3) in northeast Iowa indicates the presence of a single fabric sheet. Other regional variations of Late Woodland fabrics are also considered for their comparisons with Madison Ware. (16)

Bennett, Victoria C. (UCLA) MICROPROBE ANALYSIS AND THE IDENTIFICATION OF TRADE CERAMICS. A series of investigations designed to determine the utility of microprobe analysis as a means of discriminating between ceramic pastes are discussed. Initial results suggest that under certain conditions the microprobe may be a tool suitable for the isolation of trade ceramics. (11)

Benson, Charlotte L. (Museum of Northern Arizona) ASSESSING THE ADEQUACY OF A REGIONAL SAMPLING DESIGN: CEDAR MESA, UTAH. The results of a block survey recently conducted in the Owl Creek drainage of eastern Cedar Mesa, Utah, are used to test the adequacy and predictive power of the quadrat survey designed by W. D. Lipe and R. G. Matson and undertaken in 1972-75. Several of the Cedar Mesa Project predictions concerning differential site densities are replicated in the block survey data, while other results indicate substantial departures from those obtained by the quadrat sampling method. The initial assumptions of the Cedar Mesa regional sampling design are examined, and the design held to be inadequate for predicting the degree of variability within the site population of Cedar Mesa. Although the reliability and precision of the quadrat samples are good, their relationship to the sampled universe is questioned. (4)

Berger, C. Rainer (see Findlow, Frank J.) (11)

Bettinger, Robert L. (New York) ALTERNATIVE SETTLEMENT-SUBSISTENCE STRATEGIES IN THE GREAT BASIN. It has been generally held that the indigenous prehistoric cultures of the Great Basin were uniformly marked by eclectic subsistence patterns, impermanent settlements, and rudimentary forms of social and political organization. A growing body of archaeological evidence from a variety of localities, however, presents a far more complex picture. In addition to the traditionally recognized settlement-subsistence patterns, it is now clear that in some areas highly specialized subsistence patterns were linked with large, permanent settlements, and surprisingly complex social and political forms. As previously suspected, the diversity in subsistence-settlement patterns is related to regional and temporal resource variations, but demographic factors have exerted a major influence on these patterns as well. (7)

Blakeman, Crawford (Mississippi State) PALEOETHNOBOTANY OF THE BLACK BOTTOM. The paleoethnobotanical materials recovered from four late-prehistoric sites in the Black Bottom of southern Illinois will be examined along the following lines: species present; nutritional characteristics of the representative species; potential aboriginal uses of these plants; and indications of the prehistoric subsistence patterns which can be derived from the paleoethnobotanical materials. This data will then be compared with the ethnohistoric data to determine the degree to which changes in the subsistence patterns can be inferred from the late prehistoric to the historic periods in the Black Bottom. (42)

Bonnichsen, Robson (Maine) BONE FLAKING TECHNIQUES APPLIED TO MID-WISCONSIN FAUNA FROM THE OLD CROW BASIN, YUKON. During 1973-75 an intensive analysis was conducted on 14,000 Mid-Wisconsin faunal remains from Old Crow

Flats, Yukon territory, in search of specimens altered by man. New analytic techniques backed by bone breaking experiments were employed to generate diagnostic criteria that can be used to distinguish bones altered by man from biological and natural processes. Hundreds of specimens were discovered which exhibit spiral fractures and impact marks. These specimens may have been broken for marrow extraction purposes. More than 100 bone artifacts shaped by flaking were located that are made on mammoth, horse, bison, and caribou bones. (35)

Borns, Harold W. (see Sanger, David) (28)

Borritsky, Gordon PREHISTORIC BANKING IN THE SOUTHWEST. No Abstract received. (4)

Bowen, Joanne (Brown) ZOOARCHAEOLOGY AND MILITARY FOODWAYS: AN EXAMPLE FROM FORT PELHAM. Faunal materials from Fort Pelham, a mid-eighteenth century fort located in northern Massachusetts, will be used to examine English foodways as manifested in military communities. Dietary patterns will be established first by placing the heavy reliance on domestic foodstuffs evidenced in the Ft. Pelham faunal material in context with English foodway patterns, and then comparing this data with faunal reports from other eighteenth century British forts. This comparison, which shows a similar reliance on domestic animals, also demonstrates a considerable variation in the proportions of the domestic animals used in different communities. A number of variables will be examined to suggest that these differences are in part the result of differences in local resources and the logistics of their supply system. Documentary data from Ft. Pelham will be used in conjunction with data from the faunal material to demonstrate that with the combination of local resources and a reliance on their supply system, dietary patterns within this military community were essentially English in character, but varied in ways compelled by their living situation. (5)

Boynton, Michael J. (U.S. Forest Service) CULTURAL RESOURCE MANAGEMENT AND ARCHAEOLOGICAL CONSERVATION PRACTICES ON THE MODOC NATIONAL FOREST, U.S. FOREST SERVICE, CALIFORNIA REGION. After nearly two years of effort toward implementation of federal cultural resource management guidelines the U.S. Forest Service, Modoc National Forest, has begun to direct its archaeological inventory program into one which is approaching the concept of conservation archaeology. Conservation archaeology is viewed in this paper as something more than asystematic, project-oriented site recordation and evaluation. This dichotomy between conservation and asystematic recordation is discussed, utilizing examples of such work done upon the Forest. In conclusion, recommendations toward needed directions to incorporate cultural resource management into the National Forest Multiple-Use Planning process will be made. (31)

Braun, David P. (Michigan) RIM FORM AND CERAMIC VESSEL USE: RESULTS OF AN EXPERIMENT WITH A CENTRAL ARIZONA ARCHAEOLOGICAL COLLECTION. Pottery from a Museum of Northern Arizona contract project were examined in an experimental vessel form study designed to permit interpretation of site vessel assemblages in terms of the ranges of domestic activities which might have produced them. The experiment employed a general model for the relationship between vessel form and use, derived from data on ceramic vessel use among Southwestern ethnohistoric groups, which emphasizes the importance of vessel orifice size and shape in determining use patterns. Initial analysis of archaeological rim sherd formal attributes prescribed by the general model led to the definition of six cross-cultural shape classes and seven size classes, yielding a classification paradigm of 42 idealized vessel form classes, the difference between which could be directly interpreted in terms of differences in associated patterns of use. The development and testing of the classification framework are discussed, and the result of its application to an archaeological data set are presented. (11)

Briuer, Frederick L. (California State) THE IDENTIFICATION OF PLANT AND ANIMAL RESIDUES FOUND ON STONE TOOLS: SOME NEW CLUES TO STONE TOOL FUNCTION. Microscopic identification and chemical reagents are used to identify organic use residues on stone tools. A basic distinction is made between plant and animal residues on stone tools from prehistoric sites in east central Arizona. Morphological identification undertaken in a crime lab independently supports the chemical technique. Other possible techniques and controls are discussed, as well as the implications for further research. (38)

Borritsky, Gordon (Arizona) PREHISTORIC BANKING IN THE SOUTHWEST. Social and environmental factors leading to banking crop surpluses in luxury goods in the prehistoric Rio Grande area are outlined. Possible archaeological correlates of such behavior are considered, and the concept is then compared to other archaeological ideas about the role of luxury goods in prehistoric societies. (4)

Brose, David S. (Cleveland) SQUAW ROCK SHELTER: AN EARLY ARCHAIC CAMPSITE IN NORTHEAST OHIO. Recent excavations at the stratified Squaw Rock Shelter, Cuyahoga County, Ohio, have revealed sealed Early-Middle Archaic occupations. Basal levels of the shelter contained portions of a female adult skeleton associated with a radiometrically dated lithic assemblage containing Plano and St. Albans styles. Overlying dated strata contained assemblages with Panhandle and Mid-Southern affinities. This site, with nearby Early Archaic sites recently excavated, and new palynological data, is used to formulate a model of transitional Paleo-Archaic occupation in this region. (24)

Browman, David L. (Washington-St. Louis) THE TEMPLE OF CHIRIPA AND THE ECONOMIC DEVELOPMENT OF THE TITICACA BASIN. Two seasons of work on the temple of Chiripa allow us to present a new picture of the early development of settled village life at the ecotonal boundary of lacustrine-altiplano resources. SEM and diffraction studies of lapidary indicate a long-distance trading network in status-validating goods much greater than had been expected. In conjunction with results from flotation of plant remains and study of both marine and land faunal remains, a much more elaborate economic system than previously hypothesized is seen to exist in the Titicaca Basin during the Early Horizon. (18)

Brown, Antoinette B. (Florida) BONE STRONTIUM AND THE RECONSTRUCTION OF HUMAN DIET. Bone strontium can be used to determine the relative proportions of animal and vegetable matter in the diet by comparing human bone strontium levels with those of known faunal remains from the same site. Changes in the diet through time will be reflected in changes in bone strontium in successive skeletal populations. At the Farukhabad site in Iran the human bone strontium level in relation to that of a domesticated herbivore from the same site remains stable through time. This suggests little change in the proportions of dietary components. Changes in access to resources due to social structure will also be reflected in bone strontium content. From the Huitzo site in the Valley of Oaxaca, the development of social classes can be traced by the increase in bone strontium variation within the population and the disparities between the upper, middle, and lower segments of the population. (5)

Brown, Betty Ann (Illinois State) EARLY COLONIAL REPRESENTATIONS OF THE MEXICA MONTHLY CALENDAR. Several Early Colonial manuscripts from the Valley of Mexico region contain illustrated descriptions of Mexica calendrics. Often, two calendrical systems are described: the tonalpohualli and the monthly calendar. The monthly calendar is composed of 18 20-day "months" and five nameless days, thus totaling 365 days. The months are often described in the Early Colonial manuscripts as ceremonial periods each with a patron deity or deities. There are no pre-Conquest representations of the Mexica months per se nor are there pre-Conquest glyphic notations of the monthly periods from the Valley of Mexico. The post-Conquest descriptions and illustrations of the months vary greatly, as do the post-Conquest glyphic symbols for the months. Analysis of the Early Colonial descriptions and illustrations of one month, Tlacaxipehualiztli, demonstrates the marked inconsistencies in the post-Conquest representations of the monthly calendar. Moreover, it is found that both the pictorial and textual content of the Early Colonial descriptions contain parallels with the European calendrical tradition. It is suggested that the Spaniards who wrote the Early Colonial descriptions of the months manipulated the data they received from the Mexica in order to produce a calendrical system that met their own cultural expectations and was therefore comprehensible to them. (26, 27)

Brown, James A. (Northwestern) ARCHAEOLOGY OF DISPOSAL OF THE DEAD PATTERNS IN THE LOWER ILLINOIS VALLEY. Archaeological research in the Lower Illinois Valley and its environs has progressed to the point where fine temporal control can be exercised over variation in mortuary treatment during the 1,000 year period from Middle Woodland to Mississippian times. Through the use of measures of diversity in mortuary treatment on burial variability, this record reveals increasing cultural complexity mostly near the end of the Late Woodland period. This change takes place within a basically conservative burial program centering around processing of the corpse in the charnel enclosure, although the forms of mortuary treatment vary during the 1,000 year period. (6)

Brown, James A. (Northwestern) THE ORGANIZATION OF AN INTERACTIVE DATA MANAGEMENT SYSTEM FOR AN ARCHAEOLOGICAL SITE. A computerized data management system is successful only if it provides the output necessary to carry out a scientific investigation. The system described here was designed to expedite the management of information recovered from a single large-scale excavation in a deeply stratified site and to lead to phases of analysis essential to the interpretation of the sequence of occupations. Special emphasis is placed on the preparation and entry of raw data, creation and updating of large data files, methods of generating output via interactive APL and FORTRAN functions, and a survey of the different types of illustrative and analytical output. The cost efficiency of commercial versus university installations is evaluated. (43)

Brown, Kenneth L. (East Carolina) A NEW APPRAISAL OF POLITICS AND ECONOMICS DURING THE MIDDLE CLASSIC IN THE VALLEY OF GUATEMALA. Within Mesoamerican Archaeology, the Middle Classic in the Valley of Guatemala has been interpreted as a period of Teotihuacan control over the political and economic subsystems of culture. Recent data has demonstrated that a port of trade is a more likely hypothesis. The foreigners did not control the Valley, but merely used it for special purposes. The foreign cultural traits employed by the native elite were molded to fit native patterns. The paper presents, for the first time, a reconstruction of the political and economic subsystems of culture within a system under native control. (12)

Bryant, Vaughn M., Jr. (Texas A&M) FOOD PREPARATION TECHNIQUES. No Abstract received. (5)

Bryant, Vaughn M., Jr. (Texas A&M) AN OVERVIEW OF THE PALEOENVIRONMENTAL AND BOTANICAL RESEARCH AT HINDS CAVE. The paleoenvironmental and botanical aspects of the Hinds Cave project are varied. Current projects under investigation include the

following: (1) fossil pollen studies of soils to determine the paleoenvironmental conditions of the lower Pecos region during the past 30,000 years; (2) plant ecological studies to explain the current flora and its distribution in the local and regional environment; (3) plant macrofossil analyses of the more than 100,000 individual plant remains thus far recovered from cultural levels in the site; (4) prehistoric human coprolite studies of some of the more than 1,000 specimens already excavated from all levels covering a time span of more than 8,000 years; and (5) nutritional analyses of prehistoric food resources in order to better understand suspected levels of caloric intake, seasonality of plant usage, and nutritional health of the individual. (17)

Buge, David E. (Illinois-Urbana) CLIMATE OR LAND MODIFICATION? PALYNOLOGY AT CHALCATZINGO. During the three years of the Chalcatzingo Project, nearly 700 pollen samples were collected and analyzed. Customarily such analyses view vegetational changes at a site in terms of climatic and environmental changes. However, vegetational changes can be brought about by land, environmental, or plant modifications carried out by man. The Chalcatzingo pollen analyses indicate that human modification of the environment or landscape can be interpreted in the pollen record. This has provided independent confirmation of archaeological data, as well as noting changes not readily apparent in the standard archaeological record. This paper discusses methods and results of this research. (23)

Buikstra, Jane E. (Northwestern) EPIGENETIC VARIABILITY: BIO-CULTURAL MODELS. Archaeology defines at least three distinct temporo-cultural periods for the most recent 2,000 years of prehistory in the lower Illinois River region. These units are described in terms of distinctive artifact and burial styles, subsistence strategy, and social organization. It is frequently assumed that interface periods of social-cultural transformation reflect times of population movement and gene flow. In this paper it is argued that migration is an unsatisfactory explanation of intra-regional epigenetic variability in temporally sequential populations. Skeletal studies indicate that variable morphological patterning is best described as a response to changing patterns of local adaptation and has little explanatory power as a causal factor. (6)

Burtchard, Greg C. (New Mexico) POPULATION PATTERNING: AN ARCHAEOLOGICAL CONSIDERATION OF NUTRITIONAL FACTORS. Preliminary evidence from Tijeras Canyon, New Mexico, suggests that changes in settlement pattern are determined by changes in regional subsistence resource availability. In this study, a sequence of population aggregation, site abandonment, and rehabilitation is discussed. The sequence is related to nutritional factors such as availability of high-quality protein resources and dietary consequences of minor environmental changes. The data necessary to examine this relationship require a regional perspective utilizing both site survey and intensive excavation. This body of data should include relative size of population units and temporal sequence of the units. It must also include floral and faunal resources exploited during habitation and immediately prior to site abandonment. Techniques used to recover these data are discussed as well as methods of quantitative analysis. This study stresses the importance of considering nutritional factors relevant to the archaeological investigation of population patterning. (5)

Butler, Brian M. (Tennessee Dept. of Conservation) MISSISSIPPIAN SETTLEMENT IN THE BLACK BOTTOM: ENVIRONMENT, COMMUNITY, AND SITE DISTRIBUTION. With the archaeological survey of the Black Bottom virtually complete, various studies have been initiated on different aspects of Mississippian settlement. Previous work by this author has produced a reconstruction of the various ecozones in and around the Bottom. The resource potential of key zones is briefly discussed and the site distribution examined. Although a complex of factors is involved, the zonal distribution of sites is characterized by a clear selection for areas of superior agricultural potential. Within the major habitation zone, however, the patterning of sites appears to be largely influenced by factors such as social/political groupings and community structure, evidence for which will be briefly discussed. (42)

Butler, William B. (Missouri) THE DEMONSTRATION AND EXPLICATION OF INTERSITE RELATIONSHIPS AS REVEALED BY LITHIC DEBITAGE ANALYSIS. Rarely have comparative studies of lithic debitage been employed by the archaeologist to investigate aspects of past human behavior. This paper reports an initial attempt to investigate what can be learned from debitage in and of itself, and as applied to other aspects of the archaeological record. Multivariate statistical routines are used to aid in comparing variability and patterning in lithic tool manufacturing behavior, as revealed by analysis of debitage from each of 100 sites, with site function and location for over some 6,000 years of prehistory in the Palmette de Terre River Valley, Missouri. (41)

Caine, Christy (see Gibson, Guy) (9)

Cairns, Thomas (see Drover, Christopher E.) (11)

Calabrese F. A. (NPS) FEDERAL ARCHAEOLOGICAL LEGISLATION AND ADMINISTRATION: INTENT AND REALITY. The author considers some of the basic concepts included in the federal legislation which is designed to preserve and protect cultural resources. In contrast, the reality of how the legislation is interpreted and implemented by agency and archaeological program administrators is discussed. Consideration is also given to resulting problems in the inventory-evaluation-mitigation cycle, archaeological program

planning and control cycle, and the ultimate effect upon the archaeological resource and the archaeologist. (31)

Callahan, Errett (Virginia Commonwealth) LIVING ARCHAEOLOGY: RESURRECTING THE PAST. Projects in experimental archaeology have been conducted wherein substantial portions of particular prehistoric material cultures are recreated. The recreated items are subjected to intensive and extensive field testing under hunter-gathering conditions relevant to the culture under study. This has been done to document the possible manufacture and utilization of the items, to provide wear patterns analogous to ancient specimens, to make inferences into the prehistoric lifestyle, and thus to interpret more accurately the archaeological record. (21)

Cano, Mercedes (Madrid) THE MAGDALENIAN OCCUPATION OF TITO BUSTILLO CAVE (N.W. SPAIN). Meticulous new horizontal excavations in the original entrance of the painted cave of Tito Bustillo (Ribadesella, Asturias) have revealed a genuine, intact Upper Magdalenian living floor. It is rich in food remains, hearths, manufacturing debris, stone and antler tools, and mobile art works. A series of six radiocarbon dates show this occupation to be remarkably early for one with an industry including classic antler harpoons (ca. 14,000-15,000 B.P.). Since preliminary soundings led earlier investigators to conclude, on the bases of the lithic industry and one C-14 date, that this was a Lower Magdalenian occupation, the nature of the supposed distinctions among Magdalenian phases is clearly called into question. (40)

Carbone, Victor (NPS) TRUSTBUSTING, TERRITORIALITY, AND UNIONISM: A CASE FOR AN OPEN RESEARCH MARKET. This paper will address the questionable legality of: the formation of trusts for thwarting free enterprise in the archaeological market (Goldfarb v. Virginia State Bar Association); the philosophical claims of territory; and the licensing implications of the unionism movement as indicated in *Leslie Miller Inc. v. Arkansas*. (13)

Carlisle, R. (Pittsburgh) THE EVOLUTION OF ANASAZI BASKETRY: A VIEW FROM ANTELOPE HOUSE. Recent detailed attribute analyses of the very extensive and well dated prehistoric basketry assemblage from Antelope House, Canyon de Chelly, Arizona, suggest that the evolution of basketry production in the Anasazi sub-area of the American Southwest is rather different than heretofore postulated. The developmental sequence of basketry manufacture at Antelope House is summarized and the implications of this data to the evolution of Anasazi basketry are presented and assessed. (16)

Carstens, Kenneth C. (Washington-St. Louis) RECENT INVESTIGATIONS IN THE CENTRAL KENTUCKY KARST: A PRELIMINARY TEMPORAL ORDERING OF SEVERAL SURFACE SITES IN THE MAMMOTH CAVE AREA, KENTUCKY. Prior to this research, archaeological investigations of west-central Kentucky have been concentrated on the large Archaic shellmounds west of Mammoth Cave National Park and only recently within the Flint Mammoth Cave System. Both areas demonstrate evidence of early prehistoric (Late Archaic-Early Woodland) horticultural utilization. The primary objective of the surface archaeological reconnaissance of the Mammoth Cave area is to establish a cultural historical framework for the surface archaeology and to provide a context for the prehistoric remains found within the Flint Mammoth Cave System. This paper presents the description and temporal ordering of several archaeological surface sites that span the duration of shellmound and caving activity of the Central Kentucky Karst. (28)

Cattle, Dorothy J. (see Burtchard, Greg C.) (5)

Chapman, Carl H. (Missouri-Columbia) REGIONAL CENTERS: PHYSICAL FACILITIES AND MANAGEMENT FUNDING. Several possible sources have been explored for obtaining the physical facilities for regional or state Archaeological Resource Centers and for funding their management. Direct funding for new buildings or for remodeling already existing facilities was found to be improbable from federal, state, or private sources. Conversion of buildings constructed for other purposes and no longer needed for such but still under federal or state control or management was found to be the most likely means of obtaining space. Management by one institution already involved in major archaeological conservation work in coordination with others conducting cultural resource management studies in each state is proposed as the best solution. Long-term funding by federal agencies for management support is a necessity. (22)

Charles, Douglas K. (Northwestern) THE IMPORTANCE OF COMPLETE MORTUARY SITE SURVEY IN REGIONAL DEMOGRAPHIC ANALYSIS. Regional mortuary site survey is recognized as essential to bio-archaeological research. In the lower Illinois River valley, complete surveys of transects of the main and tributary valleys have allowed precise quantitative analysis of temporal changes in population density and distribution. Population density increased markedly and steadily during the Late Woodland period, with emphasis upon mortuary activity on the east side of the Illinois river. Examination of site patterning indicates that site types distribute in the main valley according to topographic variables and the spacing of habitation sites. Woodland sites in a major tributary valley follow a distinctive spacing paradigm, best described in terms of a rectangular pattern. (5)

Chartkoff, Joseph L. (Michigan State) NATURAL SCIENCE, POSITIVISM AND ARCHAEOLOGICAL EXPLANATION. Recent debates over the merits of alternate models of scientific explanation such as the covering-law model (e.g., Levin 1973; Morgan 1973, 1974;

Salmon 1975; Watson et al. 1971, 1974) are premature and obscure the far more fundamental differences between ongoing archaeological practice and the ideals of natural science. Association of the new archaeology with logical positivism is mistaken because natural science represents the fundamental revolution in method engendered by Galileo, Francis Bacon, and their colleagues rather than just the much more circumscribed dicta of the "Vienna Circle." Most archaeological method in use today still reflects the pre-Galilean position of Aristotelian logic as the way to knowledge. The transition from Aristotelian to Galilean reasoning must be understood and completed before debates over the merits of alternate models of Galilean explanations are particularly fruitful. (39)

Chatters, James C. (Washington) THE LONGITUDINAL LAND USE STUDY: A METHOD FOR THE INVESTIGATION OF CULTURE-ENVIRONMENT RELATIONSHIPS. The relationship between cultural and environmental change is seldom treated by archaeologists in a sophisticated manner; that is, if cultural change is perceived to have occurred, the hypothesis that an environmental event is responsible is often deemed sufficient if the latter merely correlates with the cultural event. Whether such hypotheses are of the linear form or are stated in systems theoretic terms, causal links between the environmental and cultural events are seldom demonstrated, nor are alternative hypotheses considered. A method is presented which has been designed to improve this situation for the archaeological study of land use. The longitudinal land use study method advances a series of alternative conceptual models against which archaeological, paleontological, palynological, and paleoclimatological data may be compared. When data have been collected within the constraints of the method, this comparison constitutes a test of several alternative hypotheses in a single step, without extensive prior knowledge of a study region. Results of the application of this method in the Pahsimeroi Valley of central Idaho are discussed and prospects for more extensive use of the method are considered. (41)

Cheek, Charles D. (Tulsa) ACTIVITY ANALYSIS OF COLLECTIONS OF LITHIC SURFACE DEBRIS. The vast majority of artifacts from lithic surface collections are seldom used in an assessment of site activities, particularly if there are few tools on the sites. However, stages in tool manufacturing activities may be reflected in such surface collections. This paper uses simple scaling and clustering techniques to group the data from a series of Texas sites and attempts to correlate such clusters with other variables such as stream rank and physiographic location. The problems of using non-chronologically controlled surface collections are discussed also. (41)

Ciolek-Torrello, Richard (Arizona) A MODEL OF REFUSE TYPES. A major research focus in the investigation of the Grasshopper Pueblo is the delineation of domestic and community activities. Evidence for activities exists in both rooms and outdoor areas as the three refuse types defined by Schiffer (1972, 1973). At Grasshopper, however, these types are defined by context only; no objective, non-contextual measures exist. To provide such measures, test expectations are abstracted from Schiffer's definitions and applied to context-defined refuse from rooms and plazas. This methodological exercise aims at generating a model for objectively evaluating the status of any given refuse type. At Grasshopper, this can aid in interpreting the source and types of activities; more broadly, the model should be applicable to most southwestern pueblo sites. (4)

Ciolek-Torrello, Susan (see Jacobs, Mike) (43)

Clark, D. T. (Pittsburgh) THE MEADOWCROFT ARCHAEOLOGICAL PROJECT: AN INTRODUCTION. The general setting, physiography, modern climate, flora, and fauna of Meadowcroft Rockshelter and the surrounding area of Washington County, Pennsylvania, are detailed and a brief history of the Meadowcroft Archaeological Project is presented. Also included is a summary of excavation and field analysis/recovery procedures as employed specifically at the rockshelter. (2)

Clark, Geoffrey (see Jewett, Roberta) (40)

Clayton, Stanley C. (see Brown, James A.) (43)

Cleland, Charles E. (Michigan State) THE DEVELOPMENT OF A PREHISTORIC FISHERY IN THE UPPER GREAT LAKES REGION. The development of a fresh-water fishery in the Upper Great Lakes Region began during the Archaic era, but was given great impetus by the development of gill netting techniques during the Middle Woodland era. Major impact of this Great Lakes fishery was apparent by the end of the first millennium A.D. by which time fish resources were the major component of Late Woodland economies. (24)

Collins, Charles D. (SMSU) AN EARLY HUNTER TRADITION SITE IN THE WESTERN DRAINAGE REGION OF MISSOURI. An archaeological survey in the Western Drainage Region of Missouri has located a deeply buried open-air site which reflects occupation during the Paleo-Indian through Early Archaic periods. The depth of the site and flaking characteristics of the chert artifacts suggest that the two or three components at the site are closely related, or possibly the same. The site has not been excavated, so the question still remains unanswered. Formal and functional analysis of the lithic artifacts suggest similarities and differences with material from Rodgers Shelter along the Pomme de Terre River and material from the James River Basin in the Southwest Drainage. (45)

Collins, Michael B. (Kentucky) INVESTIGATIONS AT 15-MS 28, AN EARLY LATE WOODLAND VILLAGE SITE IN NORTH CENTRAL KENTUCKY. Investigations now in progress at an early Late Woodland village (15 MS 28) on the North Fork of the Licking River in Mason, County, Kentucky, are designed to achieve the following: (1) generate data for the description of this hitherto unreported, pre-Fort Ancient manifestation; (2) determine the nature of the village and its resource base; and (3) test hypotheses concerning the participation of 15 MS 28 residents in a pattern of seasonal transhumance between the valley of the North Fork of the Licking River and the mountains of eastern Kentucky. (28)

Cook, Della C. (Indiana) HUMAN GROWTH: A PERSPECTIVE ON SUBSISTENCE BASE CHANGE. The biological impact of changes in subsistence base strategies of exploitation, and density on human populations is most directly measured in the immature skeleton. Disturbances of growth in individuals dying between one and four years are a particularly sensitive index, in that these deaths generally reflect nutritionally mediated disease in modern primitive groups. A model for these effects is tested using Woodland and Mississippian skeletal material from the lower Illinois Valley region. Evidence for growth arrest, growth retardation, enamel defects, and interactions with nutritionally mediated diseases suggest higher biological costs in the terminal Late Woodland populations of the region. (6)

Cook, John (Alaska) ORGANIZATION OF THE ALASKA PIPELINE SURVEY. Many recent discussions within the profession have centered upon contract archaeology—its goals, methods, and achievements. One of the largest of these projects has been the work along the Transalaska pipeline. The development of this project will be traced and its organization and methodology will be discussed. Particular emphasis will be placed upon the deficiencies and possible remedies as a guideline for future similar projects. (31)

Cook, Thomas Glen (Northwestern) MULTIDIMENSIONAL MODELS OF BIO-SOCIAL CHANGE. Synthesis of prehistory involves the testing of models derived from diverse data sets including settlement size, bone lesions, skull measurements, rim sherds, flotation samples, and so on. Because much of this data is not directly comparable, dimensionalization of variables permits the creation of controlled comparisons. The dimensions utilized in this study include population, natural environment, human disease, status systems, trade, environmental manipulation, warfare, and migration. These dimensions and their interactions are modeled by directed graphs, which are amenable to complex mathematical analysis such as the stability of linear systems. The models presented here form a sequence of increasing cultural complexity from Archaic to Mississippian times. (6)

Cooley, Robert E. (SMSU) THE PATTERSON SPRING SITE: A MULTI-COMPONENT SITE IN THE MIDDLE JAMES RIVER BASIN. Archaeological investigations at the Patterson Spring site (23CN064) have yielded new information concerning Middle Archaic through Woodland occupation along the Finley River in Southwest Missouri. Excavations at the site have uncovered a secondary burial with grave goods, trash pits, and other activity areas. The site is operated as both a training and research project under the direction of the Ozarks Archaeological Survey and the Center for Archaeological Research at Southwest Missouri State University. (45)

Cottom, Carol R. (Indiana) PALEODEMOGRAPHIC ANALYSIS OF ILLINOIS RIVER VALLEY POPULATIONS. Demographic profiles have recently been established for several skeletal series, representing Middle Woodland, Late Woodland, and Mississippian periods in the lower Illinois River Valley. This paper analyzes census information to detect discrepancies in age of sex distributions using several statistical models. Differences in population structure due to population pressure, subsistence base, genetics, or social organization are partitioned from the effects of mortuary practice, differential preservation, and sampling error. (6)

Cowan, C. Wesley (see Collins, Michael B.) (28)

Cowgill, George L. (Brandeis) TEOTIHUACAN AND THE SOUTHERN MAYA LOWLANDS: IMPLICATIONS OF CONTRASTING DEVELOPMENTAL RHYTHMS. Population trends (inferred from sherd frequencies), monumental architecture, and obsidian workshop evidence all imply that Teotihuacan developed rapidly and by the third century A.D. into a very large, complex, and powerful center. Thereafter the rate of further development was much slower, but the city continued to flourish probably into the eighth century. This differs markedly from the Southern Maya Lowlands, where it appears that more gradual growth over a longer time led to a much briefer climax in the seventh and eighth centuries, before the ninth century collapse. Implications of these contrasting patterns are discussed. (44)

Crespo, Ana Ma. (INAH) EL TESORO, TEPEJI DEL RIO, HGO., A CLASSIC SITE. En el reconocimiento arqueológico de superficie, que como parte del Proyecto Tula del INAH, estamos reallando sobre un área de aproximadamente 17 km. de radio, alrededor de la zona arqueológica de Tula, quedo incluido el sitio conocido como El Tesoro, situado al noreste del pueblo de Tepeji del Rio. Este sitio habia sido considerado por otros investigadores como un asentamiento correspondiente al Postclásico Temprano y tardío, pero de acuerdo con nuestro material se trata de un sitio de época Clásica, con un porcentaje muy alto de cerámica de tipos diagnósticos de Oaxaca, de las fases Montalbán II y IIIa, por lo que analizamos la posibilidad de que se trata de una colonia de comerciantes de esa región. (37)

Croes, Dale R. (Washington State) OZETTE BASKETRY, MATTING, AND CORDAGE. Ozette basketry and cordage artifacts have been examined on three analytic levels. First, Ozette basketry and cordage attributes, including construction materials, construction techniques, forms, and sizes, have been analyzed and defined. Second, the results of the attribute (mode) analyses have been synthesized into paradigmatic classifications creating technical/stylistic classes of Ozette baskets, mats, hats, and cordage. And third, these technical/stylistic classes have been utilized in discussing functional categories of Ozette basketry and cordage as recovered and examined in the Ozette House I context. Computer mapping procedures have been used to trace basketry and cordage items of specific functional categories throughout the House I area. Utilizing the Ozette analysis as a focus, prehistoric basketry and cordage from ten other Northwest Coast water-saturated archaeological sites have been similarly examined. Comparisons of the Ozette and other prehistoric Northwest Coast basketry and cordage on the three analytical levels provided information concerning the development of basketry and cordage technologies on the Northwest Coast for the last 3,000 years. These comparisons have provided valuable new information about the development of, and relationships between, different Northwest Coast cultural manifestations through time and space. Examining this kind of material also provided explicit information concerning the activities taking place at different Northwest Coast wet sites. From the above accumulated information it is clear that basketry, in particular, and cordage to some degree will be important analytic artifact categories for establishing sensitive chronologies on the Northwest Coast and for deriving essential information for testing hypothetical cultural interrelationships on the Northwest Coast through time and space. (30)

Cumbaa, Stephen L. (National Museum, Ottawa) THE HISTORIC (RE)PAST: EIGHTEENTH CENTURY DIETARY RECONSTRUCTION. Tight chronological controls and the realities of the documentation concerning specific households in eighteenth century European communities in North America have enabled an expansion of traditional limits to faunal analysis. The realities of food supply and production, hard times, and cross-cultural dynamics on the frontier are lent more credence by supportive documentation. Furthermore, faunal analysis provides hard evidence of food preparation and consumption and fills in many details of daily life not touched on in the historical records, details necessary for accurate historical reconstruction. (5)

Cushman, Kathleen A. (Texas A&M) SPATIAL ANALYSIS OF AN AURIGNACIAN OCCUPATION FLOOR AT CUEVA MORIN, SPAIN. The Early Aurignacian complex at Cueva Morin, including burials and the remnants of a structure, offers a unique opportunity to examine the spatial organization of Early Upper Paleolithic occupants at this Cantabrian cave. From the analysis of spatial utilization on the occupation floor at Cueva Morin direct evidence can be obtained for the association of particular tool types with specific areas on the floor. The association of particular tools with particular areas is evidently not to be attributed to stylistic influences, but rather to the specific functions for which these tools were intended. Instead of treating particular tool types as products of special identity-conscious groups, it would obviously seem to be more valid to view particular tool types on single living floors as functionally-specific rather than as culturally specific items. (40)

Cyphers, Ann FORMATIVE CERAMIC HORIZON STYLES: DEFINITION AND SIGNIFICANCE. Styles in prehispanic ceramics which cover broad geographical areas, called horizon styles, define culture areas. Horizon styles in ceramics indicate a cognitive unity on the part of the makers of the ceramics which can be inferred to a cognitive and cultural unity of the part of the users of those ceramics. Recent research at Chalcatzingo, Morelos, indicates the possibility that there are four ceramic horizon styles definable for the Early and Middle Formative periods. The importance of these early horizon styles in Mesoamerica is that they indicate large, culturally unified areas having long-distance contacts at a very early date. The wide geographical extent of certain ceramic styles indicates the extent of the expansion of West Mexican culture into the highlands, the paths of interaction of the Gulf Coast Olmec with the highlanders, and the development of complex interregional exchange and communication networks. (23)

D'Airoy, Terrence (UCLA) SPATIAL DISTRIBUTION OF MOCHE FLARING BOWLS. Determination of production and distribution systems of material goods is important to understanding pre-literate economic organization. Ceramics from a series of river valleys on the north coast of Peru were examined to determine the nature of ceramics exchange in the Early Intermediate Period Moche State. Iconographic and morphological analyses indicate that distribution systems were restricted to single valleys. (11)

Daugherty, Richard D. (Washington State) AN INTRODUCTION TO OZETTE PRE-HISTORY. Until it was abandoned early in the twentieth century, Ozette was one of the five main villages of the Makah Indians. Linguistically related to the Nootka of Vancouver Island, the Makah were noted for their sea mammal hunting, particularly the hunting of fur seals and whales. Ozette was perhaps the most strategic location for sea mammal hunting along the entire Northwest Coast. Archaeological excavations have indicated that the site has been occupied for over 2,000 years, and probably twice that long. For the past six years, excavations have been conducted on a year-around basis at a location near the center of the village where a series of slides and mud flows in the late prehistoric period smashed into and covered a number of large, shed roof, plank houses. Buried under many feet of wet clay and sand for several hundred years, the houses and their contents are in a near perfect state of preservation, including all of the normally perishable items such as baskets, mats, bows,

arrows, loom and loom parts, clothing, harpoons, art work, and many other categories of artifacts. Over 40,000 items have been recovered to date. At Ozette we have an opportunity to observe in great detail a functioning Northwest Coast community that was stopped at a moment in time. (30)

Davis, Dave D. (Brandeis) MIDDLE FORMATIVE COASTAL ADAPTATIONS AND INTER-REGIONAL CONTACTS IN SOUTHERN MESOAMERICA. Middle Formative occupations along the Pacific coast of southern Mesoamerica are marked by changes in subsistence emphases as well as in cultural material. Although relatively few occupations of earlier Middle Formative age are as yet known from the coastal region, the available evidence is sufficient to indicate that this period, in comparison to the Early Formative, was marked by greater influences from interior Chiapas and the adjacent isthmian region. The nature of interaction between the coast and interior is discussed. While the early Middle Formative did not mark major changes in the patterns of Pacific coastal life, increased contact with the interior expanded and strengthened coastal subsistence patterns. A greater reliance on maize cultivation is also indicated for Middle Formative times. (14)

Davis, Emma Lou (Natural History Museum of L.A. County) LATE POPULATION SHIFTS FROM THE GREAT BASIN-GREAT PLAINS: A HYPOTHESIS. For the past decade, a hypothesis of a Clovis Conquest of the New World has stood uncontested. This paper presents an alternative set of cultural events with a proposed time depth of 40,000 years or more in the Great Basin "Lakes Country." Based on broad spectra of Upper Paleolithic sites with associated animal and lithic remains at China Lake, we propose the Lakes Country as one of the New World cultural hearths. There appear to have been Late Wisconsin migrations from there into the emerging Great Plains. In our hypothesis small bands of Paleo-Siberians with maritime cultures and water craft had been drifting into North America for 50,000 years. By 35,000 years ago, the Lakes Country was thinly populated by culturally diverse bands of foragers who also bagged an occasional camel, bison, horse, or mammoth. They used implements stemming from Core Tool tradition technologies of Northeast Asian origins. During much of the Late Wisconsin stadials, the Lakes Country was cold steppe with some xeric woodland, while territory east of the Rockies was less productive. It was boreal forest, parkland, sand and tundra. Therefore the Lakes Country and California coasts were preferred habitats and migration routes for humans and the Pleistocene megafauna alike. In the basin of Pleistocene Lake China, two lithic traditions contributed to late evolution of Proto-Clovis and then Classic Clovis butchering tools. After 12,000 years B.P. recent desiccation cycles of the lakes began while at the same time, a northward retreat of forests opened the emergent Great Plains to advancing grasslands. The combination produced an eastward flow of Clovis Hunter-foragers and the last of the megafaunal grazers. This hypothesis accounts for the late appearance and brief duration of Clovis hunting patterns east of the Rockies. (34)

Davis, Hester A. (Arkansas Archeological Survey) REAUTHORIZATION OF PL 93-291. It was the stipulation of the Congress that five years from passage, PL 93-291 was to be reviewed and reauthorized. There had been questions concerning its workability in several areas and the Committee on Interior and Insular Affairs felt the need for a review of how and whether the bill was really doing what it was supposed to do. This review will presumably take place in 1978, two years from now, for reauthorization in 1979. The National Park Service is required to report to Congress each year on activities under this legislation, and will, naturally, have major comment at the time of the 1978 hearings. It is the purpose of this paper to summarize the areas of concern and inquiry which can be expected from the Interior Committee, and for which archaeologists must start gathering data now. (1)

Davis, Hester A. (Arkansas) REGIONAL PLANNING AND STATE ARCHAEOLOGICAL PROGRAMS. Only in rare cases have archaeologists been able to look beyond a single research problem or a specific geographic area. Recently, there has been a healthy trend toward state archaeological councils in order that some semblance of order might be maintained in the light of increased field activity. Federal agencies generally begin planning on a regional basis. If archaeologists are to maximize the recovery and/or protection of cultural resources, we, too, must expand our view and our planning process. Cooperative planning for research on a regional basis will provide direction to state or inter-state research projects. Regional centers should be able to provide state archaeological programs with the kind of overview facilities and information necessary for realistic resource management. States generally cannot themselves support the necessary basic coordination of records and material. A combination of public, state, and federal support will mean a greater ability to conserve our cultural heritage. (22)

Davis, Ronald B. (see Sanger, David) (28)

De Atley, Suzanne P. (UCLA) CERAMIC ASSEMBLAGES FROM HIDALGO COUNTY, NEW MEXICO. The technique for reconstructing ceramic assemblages suggested by Ericson and De Atley is used on sherds from sites in Hidalgo County, New Mexico. The resulting assemblages are described on the basis of vessel form and size, and minimum number of vessels in each category. The information is then used in examining functional differences between sites. (11)

De Atley, Suzanne P. (see Findlow, Frank J.) (11)

DeGarmo, Glen D. (California) SYSTEMATICS OF PREHISTORIC POTTERY ANALYSIS. Some of the different systematics used for the classification of prehistoric pottery are discussed. It is argued that these systematics often cause attributes that are not understood to be arbitrarily selected for inclusion as part of the definitional criteria for the resulting pottery types. Thus, these types probably do not represent prehistoric sociocultural phenomena. An alternative approach to pottery systematics is suggested. Data excavated from a P-III pueblo are used to illustrate the discussion. (11)

DePratter, Chester B. (Georgia) AN ARCHAEOLOGICAL SURVEY OF A PORTION OF CHATHAM COUNTY, GEORGIA: ARCHAEOLOGICAL AND GEOLOGICAL IMPLICATIONS. A recent archaeological survey of a portion of coastal Chatham County, Georgia, produced a large number of sites located on remnant beach ridges, remnant spits, or modern accretional barrier islands. Since the entire survey area was known to be of recent (Holocene) origin, distribution of sites during the various occupational phases was studied in an attempt to understand the paleoecology of the area. Patterning of site distribution indicates that rates of shoreline progradation, variations of shoreline orientation, and variation in aboriginal settlement can be determined through the study of archaeological site distribution in this area. (28)

Dering, Phil (Texas A&M) PLANT MACROFOSSILS RECOVERED FROM HINDS CAVE. One major objective of the Hinds Cave excavations was to recover a stratified sequence of plant materials. Collection was accomplished by using a series of two screens, one having one-quarter inch openings and the other having one-sixteenth inch openings. Our primary problem was to determine a systematic (yet statistically accurate) system of sampling these collections for final analysis. This paper will examine the methods used to sample, separate, identify, and quantify the more than 1,000 bags of botanical specimens. A preliminary summary of the analyses already completed will be presented. (17)

Dickson, D. Bruce (Texas A&M) INDUCTION ON THE DUCK RIVER: AN APPLICATION OF GOODMAN'S HIERARCHICAL MODELS FOR SIGNIFICANCE TESTS IN MULTIVARIATE CONTINGENCY TABLES TO ARCHAEOLOGICAL SITE SURVEY DATA FROM MIDDLE TENNESSEE. Goodman's new methods of dealing with nominal and ordinal data by means of hierarchical models for significance tests in multivariate contingency tables are applied to a corpus of systematically collected site survey data from 261 site loci in the proposed Columbia Reservoir on the Duck River in middle Tennessee. Some preliminary hypotheses about site location in this portion of Tennessee are advanced to examine the utility of Goodman's approach for archaeology. (33)

Dillehay, Tom D. (Universidad Catolica de Chile) STORAGE FUNCTION AT HUANCAYO ALTO. An alternative view of the function of large scale storage complexes in a Central Andean context is developed and evaluated in light of recent studies at Huancayo Alto, a late Early Horizon-Colonial Period urban settlement in the middle Chillón Valley. This complex consumes approximately one-third of the total site community pattern and reveals evidence of a temporally successive usage by externally based societies—first the Maranga and later local highlanders and the Inca. It is most important that (1) it is the earliest known complex of its kind in the Central Andes, and (2) it was constructed and maintained by a stateless society. This data is reviewed in terms of some political and economic implications. (18)

Dirst, Victoria (Arizona) ECONOMIC NETWORKS: MESOAMERICA AND THE AMERICAN SOUTHWEST. Initial results of a current research project in the eastern Sonoran foothills support the proposition of a Sonoran "foothill culture" having strong ties with the Casas Grandes province, and linking the American southwest and Mesoamerican Sinaloa. It is postulated that the southwest was a component of the Mesoamerican world economy, and that the foothill zone served as a corridor of trade between north and south. Such trade would be as important as the local environment to the settlement-subsistence system. A research design testing propositions concerning the nature and significance of Mesoamerican-southwest trade through the foothill corridor is summarized. (4)

Dolphin, Lambert T. (Stanford Research Inst.) APPLICATION OF GROUND-PENETRATING RADARS FOR ARCHAEOLOGICAL SITE SURVEYING. Standard remote sensing and geophysical techniques have been used with some success in preliminary investigations of archaeological sites for many years. In this paper, the application of a new generation of radar systems which look down into the ground is described. The results of preliminary experiments at Chaco Canyon, New Mexico, are reported in which radar echoes were obtained over near surface structures revealed by subsequent excavation and that displayed no surface expression. The potential capabilities and limitations of an archaeological radar survey unit are discussed and illustrated by examples from experiments at a variety of sites including the Giza pyramids and the White Mountain alluvial fans in search of buried Bristlecone pine stumps. (19, 20)

Domeler, Barbara A. (Arizona State) EXPERIMENTS IN THREE-DIMENSIONAL PERSPECTIVES AND ARTIFACTUAL GRAPHIC PLOTTING. A program borrowed from architecture (DRAWL) is discussed with respect to archaeological usage. Through the manipulation of four geometric primitives, squares, cubes, arcs and pyramids, most hand-drawn maps and figures can be graphically produced. DRAWL further provides options for front, top, side, isometric or diametric views in addition to the option of orienting the eye at any point outside the object to obtain varying perspectives. Archaeological examples using this program are presented. (19, 20)

Domeler, Barbara A. (Arizona State) BURIN MANUFACTURE AND UTILIZATION. Burins were experimentally manufactured and utilized to differentiate the effects on wear patterns of raw material, method of manufacture, material utilized, and mode of utilization. The burins were manufactured by three methods (hard-hammer, soft-hammer, pressure) from three raw materials (obsidian, basalt, chert) and worked in both a scraping and graving mode of use. Alternatives to the assumed function of burins as being exclusively bone/antler working tools are presented, as well as the results of experiments of the use of hard wood, soft wood, soaked bone, and dry bone. (38)

Donahue, J. (Pittsburgh) GEOLOGICAL FRAMEWORK OF MEADOWCROFT ROCK-SHELTER. Meadowcroft Rockshelter is located beneath a cliff of Morgantown-Connellsville sandstone (Pennsylvanian) on the north bank of Cross Creek, a small tributary of the Ohio River. The rockshelter formed during Pleistocene downcutting of the Cross Creek drainage. Sediments beneath the rockshelter have two sources. Sand and coarser blocks are derived by attrition from the sandstone cliff. Sediment falling from the cliff is being collected in a systematic fashion to determine present sedimentation rates from this source. Clay-sized material is transported by sheet wash from the upland surface. The colluvial fill at this site has not been disturbed since deposition except for man's activities. Grain size analysis as well as oxygen isotope data suggest a warming climate since 14,000 B.C. Chemical analysis for potassium, magnesium, calcium, phosphorus, and nitrogen give some information on the spatial and temporal intensity of site utilization within the sediment column. A detailed petrographic examination of the sandstone cliff is being carried out. This will allow determination of the evolution of the rockshelter through the 16,000 year occupational sequence. During early phases of occupation, the Wisconsin glacial boundary was less than 150 km. to the north. After 13,000 B.C., the glacial boundary retreated northward. (2)

Dougherty, Bernardo (Smithsonian) AN EARLY POTTERY COMPLEX IN THE WESTERN FOREST REGION, NORTHWEST ARGENTINA. This paper deals with an ancient pottery complex (9750 B.C.-A.D. 300) which spread throughout the northern part of the forest region of Northwest Argentina, and which clearly relates to later cultures developed as far as Mendoza Province. It is claimed that there are at least two different routes for the spread of what is currently labeled "Amazonian" or "Tropical Forest" influences in the development of pottery entities in Northwest Argentina; one is the Chaco Area and the other the San Francisco Valley Region, which is the main subject of this research. Some time around 7500 B.C. the valley was occupied by semisedentary groups which lived in the piedmont forests and near the river basins, avoiding the hill slopes. Some sites are evidenced by habitation mounds, while others appear as circular areas from 300 to 1,500 m. in diameter amidst the forest. Materials recovered are mostly ceramics and very few burials have been found; bones, human and nonhuman, are poorly preserved. Pottery clusters in two main groups, one polished and the other unpolished. The former consists of shallow, flat-bottomed bowls and small rounded ollas, together with funerary oval urns with modeled adornos and lugs, while the latter consists of large oval ollas with big vertical handles. Vessels of both groups exhibit thickened lips, a trait rare elsewhere on the Argentine Northwest. Decoration on polished surfaces is by red-on-buff painting, or incision filled with red pigment, or zoned red-on-buff. Motifs are geometric and rectilinear. The unpolished surfaces may have corrugation on the exterior, or the necks may bear incised chevrons or finger groovings. This complex appears to have spread mainly West and Southward, following the forest environment. Few traces have been found in the dryer Quebrada de Humahuaca and Chaco areas. A well established trade with the highlands is indicated by obsidian points and copper rings, which are not of local origin or manufacture. Some of the pottery decorative traits resemble those of the Chiripa culture on the Bolivian Plateau. (18)

Doyel, David E. (Arizona) CHANGING PATTERNS OF ORGANIZATION AMONG THE CLASSIC PERIOD HOHOKAM OF THE ESCALANTE RUIN GROUP, GILA BASIN, SOUTHERN ARIZONA. Recent excavations have contributed information regarding some aspects of Classic period Hohokam social organization during both the Soho (A.D. 1150-1130) and the Civano (A.D. 1130-1450) phases. It is argued that under conditions of population reorganization, novel integrative mechanisms and functionally specialized facilities were developed, structured along organizational lines. The changes apparent at Escalante may be reflective of a regional change in organizational patterning. (4)

Drager, Dwight L. (New Mexico) ANASAZI POPULATION ESTIMATES WITH AID OF PHOTOGRAMMETRIC DATA. An estimate of the prehistoric population of the Bonito and McElmo phase sites in Chaco Canyon National Monument is made after studying the modern pueblos for significant relationships. Aerial photogrammetric maps are used as the primary data source. The techniques of linear correlation, factor analysis, and linear regression are used to develop the formula for estimating the prehistoric population. Results based on the photogrammetric data were found to compare closely with other estimates which were based on different estimating methods. (19, 20)

Droessler, Judith G. (Indiana) CHANGE AND CONTINUITY: BIOCULTURAL INTERACTION AT THE LATE WOODLAND-MISSISSIPPIAN INTERFACE. Inter-regional population movement is examined as an explanation of culture change at the Late Woodland-Mississippian interface in the lower Illinois Valley region. Craniometric data are used to derive biological distance estimates among skeletal series from Late Woodland and Mississippian sites. The resulting pattern of between-group relationships does not support a model of large inter regional migration. Regional continuity in cranial morphology together with changes through time in the pattern of within-group variability support an alternative model of change involving alterations in the structure of biosocial interactions within the region. (6)

Drover, Christopher E. (California-Riverside) A FOURTH MILLENNIUM B.C. CERAMIC COMPLEX IN SOUTHERN CALIFORNIA: THE CHRONOMETRIC EVIDENCE. Various chronometric techniques are utilized to document an early ceramic complex in an Archaic archaeological context from southern, coastal California. The reliability of marine shell radiometric analysis is discussed in light of secular variation and the standardization of upwelling effects. The results of thermoluminescence, obsidian hydration and firing temperature determination are also presented. In conclusion, the archaeological context permits a discussion of the geographical and cultural implications. (11)

Drucker, R. David TEOTIHUACAN'S MAJOR MONUMENTS: AN ANALYSIS OF THEIR SYSTEMATIC INTERRELATIONSHIP. Although the orientation of Teotihuacan (15°25' + east of True North) is no longer mysterious, a satisfactory accounting for the particular locations of the Sun Pyramid, Moon Pyramid, Street of the Dead, and Ciudadela never has been given. This paper advances the hypothesis that the Teotihuacanos used selected, unusual natural features of the landscape in which they found themselves (notches or saddles and prominent peaks) in conjunction with the bearing of sunset on particular dates in the solar calendar to locate the monuments. Only a combination of astronomy and natural topographic alignments yields a solution. Neither alone is sufficient. (44)

Dumond, Don E. (Oregon) ARCHAEOLOGY OF THE ALASKA PENINSULA. In 1975, the University of Oregon concluded a three year program of research in this region. In the upper Ugashik River drainage an Akmak-related assemblage of 9000 B.P. was found to be followed by a side-notched point complex, an Arctic Small Tool-related complex, and Norton and Thule assemblages. Preliminary tests in the Chignik River drainage, on the other hand, revealed an apparently long-lived tradition of Port Moller affiliation that gave way in the second millennium A.D. to the Thule tradition, suggesting that peoples of the Ugashik and Chignik regions were ethnically distinct until A.D. 1000 or later. (35)

Duncan, Kelley C. (Tulsa) BURNT ROCK MIDDENS—A THEORETICAL CONSIDERATION. Much debate has centered around the class of sites termed, in general, "burnt rock middens." As yet, efforts to interpret such sites have met with little success. This paper will present an assessment of the range of variability of such sites, and will consider a number of models that might profitably be tested against data from such sites. Special consideration will be given to a site in eastern Oklahoma, Ms32. (41)

Dunnell, Robert C. (see Jermann, Jerry V.) (19, 20)

Dye, David H. (Washington-St. Louis) RIVERINE ADAPTATION IN THE LATE ARCHAIC OF THE SAVANNAH RIVER REGION. The general subsistence-settlement system of the local Bilbo population in the Savannah River Region of eastern Georgia is discussed in terms of recent information concerning band level society. A static model is proposed to accommodate data excavated by Waring in 1939 and Haag in 1957 at the Bilbo site and excavations at other sites in the floodplain zone of the Savannah River Region. (28)

Eaton, Jack D. (Texas-San Antonio) ARCHITECTURAL REMAINS AT MISSIONS SAN BERNARDO AND SAN JUAN BAUTISTA, NORTHERN COAHUILA. Archaeological excavations at Mission San Bernardo in 1975 and at Mission San Juan Bautista in 1976 have yielded significant information on the architecture of these eighteenth century localities. Information on mission layout, function of rooms and buildings, and architectural technology are provided. Particular attention is devoted to the architectural evidence for the Indian quarters at Mission San Bernardo. (10)

Ebert, James I. (see Hitchcock, Robert K.) (40)

Eddy, Frank W. (NPS) THE ROLE OF SCOPE-OF-WORK IN THE NEGOTIATION PROCESS. A Scope-of-Work is a statement of research specifications written by the government in order to set the parameters for research design response by potential contractors. It is to emphasize the problem-orientation first established by earlier phases of the investigation thereby providing long-term continuity to the research study of any land-alteration project. The Scope, then, is a call for a contract proposal to which all potential offerers can respond on an equal-competitive basis. Examples illustrating pioneering Scopes are employed to demonstrate the role of the Scope-of-Work within the contract negotiation process. (13)

Edwards, William E. (U.S. International University) THE ORIGIN OF CITIES. Towns and cities seem best defined by proportionate specialization. Towns did not originate from homogeneous villages by the clustering of landless, hungry farmers seeking employment, or through potential urban efficiency. Quite universally interpreted is that farming finally improved to produce a surplus, spontaneously channeled to urban specialists for needed goods and services. This is fallacious and invalid. Population growth generally presses the subsistence ceiling excessively (Malthus 1798). Where otherwise primitive farmers tend to expend surplus productivity not on extrarural goods but on additional food consumption and leisure time, per capita potential food productivity soon declines as population increases. Thus there is only an extremely low correlation between an area's potential technological and domestic productivity and the presence and extent of early urbanization (Southeast Asia, Russia, Mesoamerica). Interpreting the origin of cities simply requires identifying the persuasive-coercive mechanisms, singly or in combination, for extracting nonexistent "surplus" from hungry farmers. (1) Especially in recently settled

areas with remaining potential surplus, farmers may be persuaded or, more reliably, coerced (Japan, 1603-1868) to exchange work and food for superior farming equipment or useful, attractive, prestigious luxury (soon "necessity") manufactures of part-time village craftsmen transformed to full-time town specialists. (2) Hungry farmers may be persuaded to contribute nonsurplus food to priests specialized in interceding with the supernatural, thereby establishing ceremonial centers which expand to true towns and cities as political, military, and economic functions are added (Sumer, Southeast Asia, La Venta to Mayapan). (3) Political integration and specialists may ensue from the need for organization to construct fortifications or irrigation systems or from cultural selection advantages of voluntary (rare) or conquest states, with tribute and taxes to the capital town. Governmental coercion has constituted the primary factor in the origin of cities. Taxes, not "surplus" or farmers' needs, enabled a few pre-industrial cities (Rome, Tokyo) to achieve populations of 1,000,000. (39)

Effland, Richard W. (Arizona State) STATISTICAL DISTRIBUTION CARTOGRAPHY AND COMPUTER GRAPHICS. Geographers have long used the map as a research tool, and recent archaeological use of the map in analytical phases of research illustrates the importance of what may be termed "statistical distribution cartography." Cartographic techniques for the display of spatial phenomena have been blended with a variety of statistical measurements for objective evaluation of spatial relationships. The results of this innovative research have made the map an analytical tool for research. Computer graphic enhancements have made the map a readily accessible medium. The history and relevance of statistical distribution cartography is discussed and related to archaeological problems. (19, 20)

Ericson, Jonathon E. (California) CERAMIC FIRING-TEMPERATURE DETERMINATION. The determination of the firing-temperature of ceramics is important in certain aspects of ceramic technology and thermoluminescence dating research. A brief review of the literature on this topic is presented. The results of applying three innovative techniques are evaluated. (11)

Ericson, Jonathon E. (see Drover, Christopher E.) (11)

Ester, Michael (Brandeis) THE SPATIAL ALLOCATION OF ACTIVITIES AT TEOTIHUACAN. The past decade has produced an increasing appreciation of the richness of Classic Teotihuacan occupation; its thousands of residence compounds and hundreds of temples and craft workshops. To complement studies of particular activities, a more global approach is presented here. Drawing on available information from the most recent version of the Teotihuacan Computer File, an attempt has been made to describe and interpret how these facilities were arranged over the urban landscape. Examples of the methods employed and conclusions reached are discussed. (44)

Euler, Robert C. (NPS) ARCHAEOLOGICAL AND PALEOBIOLOGICAL STUDIES AT STANTON'S CAVE, GRAND CANYON NATIONAL PARK, ARIZONA—A PROGRESS REPORT. Archaeological and biological excavations were conducted in Stanton's Cave, Grand Canyon National Park, Arizona, under the sponsorship of the National Geographic Society, for two primary reasons. (1) To attempt to locate diagnostic artifacts in direct association with Desert Culture split twig figurines in order to determine the cultural affinities of the latter. (2) To obtain a stratigraphic biological record from the cave deposits to reconstruct a paleo-environmental sequence in Grand Canyon. While 65 figurines were recovered, all from the upper five centimeters, no other artifacts were found in association. The author's earlier postulate that the twig figures were associated with the Pinto Basin culture remains hypothetical. The biological remains recovered yielded important data which, when placed in relationship to the radiocarbon dates obtained, extend back more than 35,000 years. In lower levels, Pleistocene birds and animals were found in association with dominant Artemesia and Juniperus, indicating a cooler, more moist climate than exists at present. Upper levels, younger than 10,000 B.P. revealed modern fauna and a more xeric climate. (29)

Evans, David R. (Missouri-Columbia) THE MERAMEC BASIN ARCHAEOLOGICAL RESEARCH PROJECT. A multi-year interdisciplinary research project has recently been initiated in the proposed Meramec Park Lake in east-central Missouri. The goals for the initial phase reflect both the needs of the Corps of Engineers and the archaeological community and will require the application of non-traditional survey techniques. In order to ensure the utility and applicability of data to a regional research universe, an interdisciplinary research and resource group has been loosely organized. It is anticipated that the Meramec project will produce data on at least five levels of utility: (1) Corps of Engineers requirements, (2) intra-Basin requirements, (3) inter-basin requirements within Missouri, (4) inter-basin requirements within the region, and (5) non-archaeological requirements. (45)

Faignaert, D. (Pittsburgh) FAUNAL REMAINS FROM MEADOWCROFT ROCK-SHELTER. Faunal remains constitute the most numerous class of materials recovered at Meadowcroft Rockshelter. These include not only some 168,000 mammal, reptile, amphibian, fish, and bird bones but also thousands of terrestrial and aquatic gastropods. Also represented are such diverse items as feathers, claws, insect carapaces, egg shells, fish scales, etc. The faunal assemblage as a unit spans the entire 16,000 year occupational sequence and represents both substantial components of the aboriginal diet at the site as well as resident or transient non-exploited animal species. The salient characteristics of the

extensive faunal assemblage are detailed and limited paleo-climatic reconstruction is attempted, notably on the basis of the molluscan remains. (2)

Farnsworth, Kenneth B. (Northwestern) IDEAS ON ARCHAEOLOGICAL CURATION AND ITS ROLE IN REGIONAL CENTERS. Although proper curation of archaeological data is an integral part of archaeological research, researchers have given little attention to this problem. The archaeologist's responsibilities for curation have increased dramatically in the past decade as a direct consequence of the growth of contract archaeology. This has aggravated the already acute problem of curating all forms of archaeological field and laboratory data. The Northwestern Archeological Program has begun to explore various aspects of the problem, ranging from a study of the kinds of facilities required to the definition of specific curatorial roles. This paper will explore the Northwestern experience, and suggest ways in which curation might be integrated into the total concept of a "regional center." (22)

Farrand, William R. (Michigan) SEDIMENTOLOGY OF ARCHAEOLOGICAL SITES. All stratified sites consist of sediments, which are a combination of natural deposits and products of human activities. They form the physical framework in which artifacts and bones occur. Although the artifacts or fossils may be absent in a given layer, the sediments are always present and provide the greatest possible continuity of record in the site. Sediment study has two aspects: (a) accumulation of original sediments (processes, sources); and (b) subsequent modification of those sediments (weathering, mineralization, etc.). These studies lead to inferences concerning the physical environment during and between habitations and, under favorable conditions, the paleoclimate that prevailed. (32)

Feder, Kenneth L. (Connecticut) THE GEOGRAPHIC PATTERNING OF TOOL TYPES AS ELICITED BY TREND-SURFACE ANALYSIS. The use of trend-surface analysis, a least squares regression technique, is suggested for the graphic presentation and analysis of the geographic patterning of tool types at the Anangula blade site on Anangula island in the Aleutians. Trend-surface analysis provides the archaeologist with an avenue of approach wherein contour maps are produced by the computer treating number of artifacts of each type recovered from each X,Y coordinate as the Z or relief value. A series of these maps aids tremendously in analyzing the mix of activity which occurred at the site. Further, synthesizing the data from these individual maps can furnish information pertinent to the reconstruction of tool kits and activity areas. (33)

Feldman, Lawrence H. (Missouri-Columbia) COASTAL DECLINE AND HIGHLAND SURVIVAL: CHANGE AND STABILITY IN TWO COLONIAL GUATEMALAN POPULATIONS. A comparison of census data from two colonial Xincan towns with the aim of determining why Tlacuilula in the coastal lowlands had vanished by the end of our study period while Jumaitepeque in the highlands continued as a viable community. (14)

Feldman, Lawrence H. (Missouri-Columbia) COUNTING PEOPLE: THE LATE COLONIAL PADRONES OF CENTRAL AMERICA. A brief survey of the nature and geographical extent of the official government census records in the Captaincy-General of Guatemala. Emphasis is placed on the series of 1813. Reference is made to several ways in which these little known, but abundant, documents can be of value for both the anthropologist and the linguist. (26, 27)

Fields, Brian A. (Indiana) TEMPORAL AND REGIONAL DIFFERENTIATION OF THE DENTITION. Multivariate discriminant analysis is applied to odontometric variation among six prehistoric Indian populations which date to the Late Woodland-Mississippian interface, an important transition period in the prehistory of southern Illinois. Assuming that (1) the forces affecting biological variation in paleopopulations can be identified by analysis of large samples of dental variables, and (2) biological and cultural change may be produced by the same forces, this study will examine alternative models of cultural interaction and in situ change for congruence with odontometric patterning. (6)

Findlow, Frank J. (UCLA) RECENT DEVELOPMENTS IN THE DIRECT APPLICATION OF C-14 DATING TO PREHISTORIC CERAMIC MATERIALS. While the direct application of C-14 dating techniques to ceramic materials has always been considered feasible, it has never been thought to be truly practical. This paper examines some recent efforts aimed at improving the general applicability of C-14 dating of prehistoric ceramic materials. Initial results using tree-ring dated ceramic materials suggest that the technique may have a greater utility than has hitherto been supposed. (11)

Findlow, Frank J. (see Bennett, Victoria C.) (11)

Findlow, Frank J. (see De Atley, Suzanne P.) (11)

Fitzhugh, William W. (Smithsonian) A VIEW FROM THE SMITHSONIAN. Severe problems exist for the conservation of archaeological materials collected under federal contracts. Existing museums, including the Smithsonian, are not equipped to serve as central repositories for these collections. The curatorial and collection management program of the Smithsonian is described as a possible model for regional centers. Although the Smithsonian is designated as the U.S. National Museum, its role in public archaeology at the national level has been largely advisory, and is limited to management of the River Basin Survey and review of the Antiquity Act permits. Our experience suggests that a decentralized,

multi-level approach to the maintenance of public collections should be implemented with guaranteed federal funding. (22)

Ford, Richard I. (Michigan) THE SIGNIFICANCE OF ETHNOBOTANY TO ARCHAEOLOGY. Plant remains excavated from archaeological sites as well as plants actually growing on sites are useful for interpreting other archaeological evidence and for reconstructing past life ways. These data, however, are only as good as the excavator is careful in planning, sampling, recovering, and recording contextual information about them. Viewed from the perspective of the botanist asked to identify and "explain" these plants, archaeological field procedures continue to handicap the interpretation and importance of plants to prehistoric cultures. General information vital to our understanding will be presented. (32)

Fowler, Melvin L. (Wisconsin-Milwaukee) THE PUEBLA PRECLASSIC PROJECT: SITE SURVEY METHODOLOGY AND SOME PRELIMINARY RESULTS. The Puebla Preclassic Project was designed to examine the change in settlement systems in the late Preclassic as an attempt to determine the nature of sociopolitical organization before full urban centers developed. An intensive site survey was conducted of an area of approximately 150 square kilometers just east of the city of Puebla. Controlled surface collections were made of over one hundred sites. Detailed topographic maps were made of eight large sites in the region. Some small excavations were conducted in four of the larger sites. All ceramic materials recovered are being coded and the data stored on tape. Various statistical and mapping programs can be run from these data. Tentative results from examining some of these data indicate that the trend in settlement size and location during late Preclassic into early Classic was one of reduction of settlement numbers and nucleation of population into fewer and larger sites. (23)

Fox, Anne A. (Texas-San Antonio) THE CERAMICS OF MISSION SAN BERNARDO, NORTHERN COAHUILA. Excavations of the Guerrero Project in 1975 and 1976 produced an interesting cross-section of mission-related ceramics. These include majolica and utility wares from various pottery centers in Mexico, as well as a number of hitherto unrecorded pottery types, some of which may be of local manufacture. The methods of pottery analysis utilized in this project are also discussed. (10)

Fox, John W. (SUNY Albany) LATE POSTCLASSIC HIGHLAND MAYA URBANISM. Four Late Postclassic highland Guatemalan sites (Utatlan, Iximche, Zaculeu, and Chulitnamit-Atitlan), the largest settlements in the highlands at the time of the Spanish Conquest, are clearly urban in nature. Their growth can be seen as a result of the centralistic tendencies of militaristic based archaic states, typical of the Late Postclassic period in Mesoamerica, rather than often cited environmental criteria (e.g., aridity-irrigation, navigable watercourses, land conscription). (12)

Freedman, Matthew S. (Brandeis) SPATIAL ORGANIZATION OF THE URBAN CENTER OF TEOTIHUACAN, MEXICO. This paper presents an approach to the problem of characterizing and identifying socially significant spatial subdivisions within the city of Teotihuacan. The objective is to define areas of significant homogeneity and to discern boundaries between these areas. The existence of different levels of organization (i.e., apartment compounds, barrios, districts, etc.) will also be considered. The results will be discussed in terms of their relevance to our understanding of pre-industrial urban society and compared with previous hypotheses about the social and economic organization of Teotihuacan. (44)

Freeman, Leslie G. (Chicago) 40,001 B.C.(±): A PALEOLITHIC SPACE ODYSSEY. Analysis of a Mousterian structural remnant and associated occupation residues at Cueva Morin is contrasted with interpretations of the structure and burial complex from an early Aurignacian level at the same site. The contrasts provide increased depth of understanding of articulations between these Paleolithic communities and their environments and strongly suggest that significant aspects of the "world views" of prehistoric communities may be directly inferred from the spatial organization and nature of reconstructed activities. (40)

Friedman, Edward I. (Washington State) MAKAH CAMPS AND VILLAGES. The Ozette site was a Makah village of major occupation. In order to see Ozette clearly in a meaningful framework, it has been necessary to study the total picture of resource utilization and environmental adaptation. This has been done through analysis of other villages and camps which were occupied by the Makah in their yearly cycle. This study has been an attempt, based upon test excavations to establish a model for camp versus village occupation, to determine the season of occupation and resource utilization, and to see if differences noted in the ethnographic literature can be documented from archaeological data. Major emphasis has been placed on the analysis of faunal material, including mammals, birds, fish, and shellfish, as well as the present-day environmental setting. (30)

Friedman, Janet P. (Washington State) OZETTE WOODWORKING: TYPES OF WOOD USED. The total preservation of wood at the Ozette site makes it possible to answer many questions about this important resource in the culture of the prehistoric Ozette. Studies have been conducted in the identification of wood through microscopic analysis. This work has shown that nearly all of the available wood species were used in the manufacture of a wide range of artifacts. Thousands of objects representing over thirty different categories of artifacts have been sampled thus far. This work has revealed that woods were used

selectively, and the special properties of particular woods were employed to meet the requirements of a given class of artifacts. Availability of resources also played an important part in their selection for a given task. Contrary to some ethnographic reports, the Makah depended almost exclusively upon locally available species for their wood. (30)

Frisbie, Theodore R. (see Mitchell, Robert) (29)

Fritz, Margaret C. (San Jose State) BONE ARTIFACT TYPOLOGY, DECORATIVE TREATMENT, AND SOURCES OF VARIABILITY AMONG CERTAIN PALEOLITHIC ASSEMBLAGES. This paper discusses the analysis of several thousand antler and bone artifacts from 27 sites (differentially represented) bearing Magdalenian deposits that occur today within the two Spanish Cantabrian provinces of Santander and Asturias. In the course of a study attempting to elucidate the design structure of the engravings on some of these artifacts, questions were asked concerning the correlation of certain design structural principles, design elements, and design motifs with certain "types" or shapes. It was predicted that if certain "designs" were different for different "types" or shapes, then where assemblages differ in typological composition, the design variability among such assemblages should reflect the differences and/or similarities of assemblage composition. Unfortunately, the extremely fragile and fragmentary nature of bone and antler artifacts impedes the identification of most pieces according to the idealized bone typologies currently available. There will be discussion of new directions toward workable bone-antler typology, and the results of the correlation analysis among "types" and design features will be presented. Hypotheses concerning functional sources of variability among Paleolithic assemblages will be tested. (40)

Fröhlich, Bruno (Connecticut) ALEUT SITE SURVEY: ADAK ISLAND AND ATTU ISLAND. A site survey conducted in 1975 on Adak Island and Attu Island in the Aleutian Chain found 39 definite sites and 32 possible sites. Definite sites are defined as those yielding occupational material along with clear house structure depressions. In order to land and make testpits the survey was carried out by using a 16 ft. inflatable boat. Enough supplies and equipment to sustain a two man team for 60 days were carried. Aleut settlements were located in areas having good shore landings, and traces of continuous water sources. By observing from the sea the presence of rich green vegetation on shore, initial identification was made in most cases. However, since thick vegetation may also be due to surface ground water, a location was not recorded as a site unless housepits were also observed. Testpits were made in 38 of the 39 definite sites. Testpits measuring approximately 100 x 100 x 75 cm., yielded occupational material in most cases. Testpits and ground surveys were also carried out in some areas previously recorded as sites by earlier investigators which failed to give evidence of human occupation. Our survey included the size, altitude, geographical position, and local geographical, geological, and biological phenomena in addition to extensive black/white and color photography. The testpits yielded approximately 250 artifacts, 25 carbon samples, and several samples of faunal remains from midden material. All samples are currently under investigation at the Laboratory of Biological Anthropology. The survey was sponsored by the Aleut Corporation in Anchorage where some of the data has been used in the Native Land Claim Act. (35)

Fry, Gary F. (Youngstown State) ECOLOGICAL DETERMINANTS OF PREHISTORIC DIETS REVEALED VIA PALEOFECAL ANALYSIS. Analysis of prehistoric coprolites (desiccated feces) from a number of archaeological sites in the United States and Northern Mexico representing diverse cultural systems and ranging over a period of more than 10,000 years, demonstrates the great influence of local biota on prehistoric diet. Archaic and Formative diets studied to date, indicate that broad spectrum resource utilization, dependent upon local weather conditions, biota and population pressures, was the prime determinant of diet. The possibilities for nutritional studies of paleodiets are discussed including chemical studies of food, water systems, and paleofeces as well as the possible effects of parasites. (5)

Fry, Robert E. (Purdue) FRONTIERS AND REFUGE ZONES IN THE MAYA LOWLANDS. Certain areas in Mesoamerica have been traditionally viewed as frontier or underdeveloped areas and refuge zones for "traditional" communities. The same regional patterns observed for the historic period also seem to apply when examining the prehistoric record of occupation and cultural contact. The major area where this seems to break down is in the Maya lowlands, in part due to the demographic and political regression of the Postclassic. In this paper I will show that portions of Quintana Roo show a similar pattern of occupation, during the Late Classic and Postclassic periods. (12)

Fuller, Michael J. (SMSU) AN ARCHAEOLOGICAL STUDY OF SETTLEMENT AND LAND USE IN THE JAMES RIVER BASIN. Archaeological survey and test excavations along approximately 60 miles of the James River and its tributaries have revealed evidence of human occupation spanning from the Paleo-Indian period to historic times. Research has concentrated on studying the site locations during the Dalton and Woodland periods. Site density does not radically decrease in the headwater area of the basin; there is evidence to suggest that some groups preferred occupational sites situated higher in the drainage basin. A transverse survey in the James River Basin suggests a greater amount of upland usage than had previously been recorded. The study cross-cuts areas of both prairie and forest ecological conditions. (45)

Gal, Robert (U. of Alaska) INTERIOR ALASKAN PREHISTORY ALONG THE PIPELINE. Several sites along the Trans-Alaska Pipeline have forced some new hypotheses regarding occupation in interior Alaska. Discussion of Denali, Tuktu, Fluted Point, and other complexes will be offered with a tentative synthesis of them all. (35)

Gandara V., Manuel (INAH) "INFLUENCES," TRADITION, INTERACTION: THE STUDY AND USE OF FORMAL-STYLISTIC SIMILARITIES. Formal-Stylistic similarities have been seen differently through the development of Mesoamerican archaeology. Likeness in traits have been diversely attributed to missionary tides, imperial states, influences, etc., for several periods and groups in our area (c.f. the "Olmec Problem," the Toltec invasion of Yucatan, or the Teotihuacan "Empire"). It is argued that such approaches tend to obscure variability in other parts of the systems studied, and since the "Influence" motif is rarely tested, its utility is limited. Concepts like "tradition" and "interaction sphere," which have proven useful in dealing with similar problems in other regions are explored, together with changes in strategy suggested to be helpful in the advancement of our understanding such problems. (37)

Ganzer, William D. (Southern Illinois) SCRAPED KNUCKLES, CUT FINGERS, AND BRUISED THUMBS: LEARNING THEORY AND FLINT KNAPPING. Flint knapping is a process of acquisition of knowledge which can only be studied using procedures developed in psychology. This does not mean that it is not applicable for archaeological interpretation. A flint knapper acquires his skill through motivation and trial-and-error. Usefulness for archaeological interpretation occurs after understanding the processes the knapper goes through to obtain his skill. A flint knapper must be conscious of the desired result, the flint knapping tools, and the physical properties of the material with which he is working before he can efficiently carry out his task. (38)

Gardner, Michael J. (California Edison Co.) THE ROLE OF BUSINESS AND THE CORPORATE ARCHAEOLOGIST IN CONSERVATION ARCHAEOLOGY. Over the last few years, large businesses, in meeting the permit requirements of federal agencies, have taken an increasingly larger share of the responsibility for determining the location and timing of archaeological research undertaken in this country. Corporations, whose business requires modification of the surface of the land, have a legal and ethical responsibility to protect archaeological resources. Corporations in general, and the corporate archaeologist in particular, can interface with federal agencies and institutional archaeologists to promote conservation rather than salvage archaeology in meeting permit requirements. (31)

Gaxiola, Margarita (see Winter, Marcus C.) (3)

Gehlert, S. (see Feldman, L. H.) (14)

Gibbon, Guy (Minnesota) MIDDLE-LATE WOODLAND TRANSITION IN EASTERN MINNESOTA. The paper summarizes the available data from archaeological sites dated to the general late Middle Woodland and early Late Woodland time span in eastern Minnesota. Data from Howard Lake, Malmo, and Sorg Middle Woodland phases are presented and contrasted with data from sites such as Altern and Stumme in the early Late Woodland St. Croix phase. A co-variation of environmental zones and cultural patterns has been previously suggested for the Middle Woodland period in eastern Minnesota. These studies have indicated that: (1) the Carolinian zone was inhabited primarily by cultural complexes peripheral to but integrated into the Havana-Hopewell cultural tradition, and that (2) Carolinian-Canadian zone complexes were more diverse, less integrated as a cultural group, and much less active participants in the Havana-Hopewell logistics system. In contrast, St. Croix archaeological material transcends environmental zones, even extending into the prairie zone in the southwestern corner of the state. Several alternative predictive models are generated that attempt to explain this transition in settlement patterning and are integration. (9)

Gilbert, Robert I., Jr. (South Florida) PALEONUTRITIONAL INSIGHTS DERIVED FROM SKELETAL TRACE ELEMENT PATTERNING. It is known that some trace elements are incorporated into bone matrix and vary to some extent by the amount available from dietary intake sources. The presence of certain trace elements in skeletal samples may reflect concentrations of these elements as derived from three groups of foodstuffs (animal protein, vegetative matter, and nuts). Some archaeological and paleopathological evidence suggests that maize agriculture may have become a substantial food producing activity of the Middle Mississippian inhabitants of the Dickson Mounds in southeastern Illinois in contrast to the hunting and gathering (Primary Forest Efficiency) subsistence pursued by their Late Woodland predecessors. If such a dietary alteration had occurred, then it should be apparent in differential concentrations of trace elements in the skeletal remains. The patterning of five trace elements (Zn, Cu, Sr, Mg, and Mn) was studied in tibial samples taken from the two culture horizons. It was found that Zn and Mg offered the best discrimination between the two groups and strongly suggests that the presumed adoption of maize (or certainly a decline in animal protein consumption) had occurred. The differences in the trace element content of the potential composition of diets predominately constituted of animal protein, vegetable matter, and nuts are examined and methods of differentiation among the variation in dietary intakes of these food sources discussed. (5)

Gilmore, Kathleen K. (North Texas State) ARCHAEOLOGICAL INVESTIGATIONS AT MISSION ROSARIO, SOUTHERN TEXAS. The site of Mission Rosario, established in 1754

to christianize the Karankawa Indians of the Texas Gulf Coast, was excavated recently during 1973 and 1974. It has also been excavated from 1940 to May 1941, and since few notes could be found, the first field season consisted of delineating 1940-41 excavations and resultant problems. Two field seasons during 1974 were spent in carrying out the research design based on documentary models and the first pilot season. Activity and use areas and a relative chronology for building periods and the use of the mission church were delineated. (10)

Gish, Jennifer W. (Arizona State) THE APPLICATION OF PALYNOLOGY TO ARCHAEOLOGY: LIMITATIONS AND SOME PRACTICAL SUGGESTIONS. This paper is intended to define and explain limitations in the application of pollen analysis to archaeology. Particular attention is paid to the information an archaeologist can and cannot expect to obtain from initial palynological investigations. The difficulties involved in continuing the process through successful, verifiable interpretations are emphasized. Finally, suggestions on pollen sampling design and sample collection techniques are provided. (32)

Gleason, Paul F. (Washington State) OZETTE WOODWORKING TECHNOLOGY. The Ozette site with its remarkable preservation of wood materials provides a startling insight into the relative importance of wooden artifacts on the Northwest Coast. For the first time, it is possible to study Northwest Coast woodworking technology on the basis of woodworking tools, detritus, preforms, and complete artifacts, all from the same time and place. The Ozette collections reflect a well developed woodworking technology. Stone mauls and a large number of various styles of wedges indicate that the Ozettes were gathering locally much of the needed raw material. The large woodworking tools, the straight adze and the D adze, are typical of the southern outer coast area. The large amount of fine detritus and small preforms indicate that completion of larger artifacts and the manufacture of smaller artifacts was done extensively within the house and appears to reflect various manufacture loci. The large amount of woodworking information gathered from Ozette has necessitated the development of a nomenclature for Northwest Coast woodworking technology. (30)

Goff, Linda (Washington-St. Louis) THE JEWEL PERSONAL NAME IN THE MIXTEC MANUSCRIPTS. This paper will present a general overview and descriptive stylistic analysis of the jewel personal name as it appears in the pre-Conquest Mixtec screenfolds. The jewel motif is one of the most commonly represented motifs in the manuscripts by appearing in association with 173 different personages, and is predominately a female name. Analyses of the manuscripts indicate one main stylistic category of the jewel motif with two substyles: the full disc and its variation in the half disc and tassel motifs. This stylistic representation furthermore reflects stylistic and thematic continuity throughout the manuscript histories. The subject of jewel personal names has potential for more detailed analyses and the significance of the jewel motif not only within the Mixtec manuscripts but also the social and kinship systems. (26, 27)

Goldstein, Lynne (Wisconsin-Milwaukee) CEMETERIES AND CORPORATE GROUPS: SOCIAL STRUCTURE IN RURAL MISSISSIPPIAN SOCIETY. Using lower Illinois Valley mortuary sites, a model for non-urban Mississippian society is generated. Outlying Mississippian mortuary sites are seen to reflect a generally egalitarian form of social organization with a communal rather than an individualized emphasis. This communal emphasis derives from the spatial organization of the site which, it is argued, reflects descent of corporate groups who control crucial but restricted resources. Given the nature of these specific rural communities, it is further suggested that Mississippian mortuary sites in general represent the operation of a similar set of organizational principles based on the corporate group premise, and are merely further elaborations on this structural base. (6)

Gonzalez Echegaray, R. P. J. (Santander Museum) THE CONCEPT OF "FACIES" APPLIED TO THE UPPER PALEOLITHIC. Thanks principally to F. Bordes, a series of "Facies" have been defined relative to the material culture of the Middle Paleolithic. The Mousterian does not so much present a vertical subdivision of chronological nature, as a horizontal subdivision of cultural nature. Interpretations vary, and the so-called "American School" seeks environmental and functional explanations for the different facies. Nevertheless, the Upper Paleolithic so far presents a vertical structure of chronological nature. It seems clear that the Magdalenian is not a facies of the Aurignacian, for example. However, within the Aurignacian sphere, some of the different techniques recognized, like Perigordian, classic Aurignacian, and Corzean, which have recently been found mutually interstratified in several sites, might also be interpreted neither as periods nor as cultures, but rather as facies with environmental and functional connotations. (40)

Goodyear, Albert C. (South Carolina) CURRENT AND FUTURE DEVELOPMENTS IN ARCHAEOLOGICAL THEORY BUILDING WITHIN THE CONTRACT FRAMEWORK. The concept of theory is defined and explored. The primacy of theory in archaeological research is stressed regardless of a contract or non-contract setting. The role theory should play in the conduction of research is discussed with particular reference to contract conditions. Examples of theory construction are cited and a brief analysis is made of why they were successful. Suggestions for more common and conscious uses of theory are provided. (1)

Gottscho, Rebecca S. (Brandeis) TOWARD MORE PRECISE STATUS CATEGORIES AT TEOTIHUACAN. On the basis of field judgments made during the Teotihuacan Mapping

Project's surface survey, it has proved feasible to code residences in terms of three very broad status categories; low, middle, and high. However, there is a great deal of evidence that Teotihuacan society was far more complex than this, and excavations in residences suggest that at least six status levels can be recognized. This paper reports work toward developing more precise criteria of status from surface data. Techniques include computer-generated maps and multivariate statistical methods. (44)

Grabert, G. F. (Western Washington State) CENTRAL NORTHWESTERN COAST PREHISTORY REVISITED: AN APPRAISAL. Archaeological studies of western Washington, including here the Fraser Delta region and the Straits of Georgia, have produced a sound culture sequence for the last 3,000-4,000 years in the latter two areas. While there are numerous sites and components that seem to precede this sequence, all but a few are poorly dated, and represented by sparse, unimpressive artifact assemblages. There have been few problem-oriented approaches. Yet the latter are significant to problems concerning the adaptive strategies and cultural developments of the predecessors of the climax cultures of the Northwest Coast. There have been few attempts to work out a post-glacial climatic sequence for the region, and these few have been limited in geographic scope. Problems that might profitably be explored include the nature, duration, and subsistence features of the Olcott complex, distribution and environmental correlates of flake and cobble tool assemblages in the region, and the role of sea level changes and forest successions in the maritime adaptation that characterizes the Northwest Coast cultures. There are other sorts of problems as well. Results of current investigations suggest that there is intensive mid-Holocene use of the Pacific slope region and that local cultural variants are explainable as parts of a larger pattern. It is further suggested that while an Old Cordilleran Culture concept may be applied, it can be no more than a generalized framework, unreflective of the dynamics of prehistoric cultures. Recent work in the Enumclaw area, and in and adjacent to the Straits of Georgia, suggests a protracted cultural sequence and possibly an older maritime subsistence pattern than has been supposed. (34)

Grady, Mark A. (Arizona State Museum) CONSERVATION ARCHAEOLOGY, RESEARCH, AND ENVIRONMENTAL LAW. An increasing concern for the conservation of cultural remains is leading to the establishment of guidelines directing implementation of archaeological research within the broader framework of land management priorities, and environmental law. A potential conflict exists in terms of reconciling the needs of this research with some interpretations of relevant legislation. In particular, the procedures now being employed for determining National Register site eligibility and allocating certain contracted archaeological funds do not follow the intent of the National Historic Preservation Act of the Archaeological and Historic Conservation Act. These procedures not only weaken the broad-based legislative support for archaeology, but seriously constrain archaeological research flexibility. A complementary approach, integrating the National Register evaluation process with National Environmental Policy Act decision-making, is proposed. Central to this alternative is the acceptance of a usable concept of significance, and some suggestions are made for defining archaeological significance to better fit research needs within the parameters defined by due process. (31)

Graham, Elizabeth A. (Cambridge) ARCHAEOLOGICAL RESEARCH IN THE STANN CREEK DISTRICT OF BELIZE. Summary of survey and excavation work in 1975-76 including the definition of a ceramic sequence, the discovery of an unusual stela-altar complex, and the delineation of ecological zones. (12)

Graybill, Donald A. (Georgia) NET ANALYTICAL STRATEGIES FOR SPATIAL ANALYSIS. A sequence of analytical strategies for the spatial analysis of time distributions is considered. A new statistical technique for testing hypotheses about non-random inter-class item distributions is presented as well as several methods for describing significant item patterns. The analyses are applicable to a broad range of archaeological problems. (33)

Grayson, Donald K. (Washington) A REVIEW OF RECENT ATTEMPTS TO PROSECUTE ANTIQUITIES ACT VIOLATIONS IN OREGON. Two recent attempts to prosecute Antiquities Act violations in Oregon have failed. A review of these cases shows that two reasons account for these failures: (1) the opinion of the U.S. Attorney for the District of Oregon that violations of this act are of little import, and that, as a result, prosecution of such violations are to be avoided whenever possible; and (2) the impact of the Diaz decision upon the Antiquities Act within the Ninth Circuit Court of Appeals. It is clear that clarifying regulations for the Antiquities Act must be drafted and enacted immediately if this act is to be of any value within the jurisdiction of the Ninth Circuit Court. (31)

Green, Dee F. (U.S. Forest Service) LOCATING ARCHAEOLOGICAL SITES USING AN INFRARED LINE SCANNER. A SINGER dual channel, three detector infrared line scanner (AAS-14/A) mounted in an OV-1 Mohawk aircraft was activated over several land surfaces in Arizona and New Mexico. The device is a 4 milliradian system capable of resolving a 2' x 2' target at 500' over terrain. The imagery produced was checked for the location of both known and unknown archaeological sites. A subsequent field check was made of the suspected site areas. Results show that infrared scanning holds promise for locating archaeological remains. (19, 20)

Green, Dee F. (see Smith, Landon D.) (24)

Gregg, Michael L. (Center for Great Lakes Archaeological Research) CONTINUITY AND CHANGE IN TERMINAL MIDDLE-EARLY LATE WOODLAND MATERIAL CULTURE

AND SUBSISTENCE AS SEEN FROM THE ALBANY SITE IN NORTHWESTERN ILLINOIS. In the northern portion of the region occupied by Middle Woodland societies with Havana Tradition ceramics, there evolved early Late Woodland societies characterized by Weaver Ware ceramics. Excavation reports from Weaver sites have produced a variety of data on Weaver material culture and subsistence practices. These data are compared and contrasted with recently recovered data from test excavations at the Albany site in northwestern Illinois. Comparisons indicate a variety of cultural continuities and discontinuities in the process of the evolution of Weaver out of Havana. (9)

Grennes, Ronald A. (see Haley, Harold B.) (18)

Grove, David C. (Illinois) CHALCATZINGO: THE RISE OF A MAJOR FORMATIVE CENTER. Three field seasons at Chalcatzingo have shown that the site, long known for its Olmec style bas-relief carvings, was a major highland Middle Formative Center, whose growth can be attributed to its access to important raw materials. Excavations, regional reconnaissance, and ecological studies suggest that the site was unimportant in the Early Formative, but quickly rose in importance in the Middle Formative. This paper discusses the site's growth as well as residential and ceremonial patterns on the site. (23)

Gumerman, George J. (Southern Illinois) ARCHAEOLOGY AND ULTRA-HIGH ALTITUDE IMAGERY. Imagery now available on a global basis has provided a new data base for ecologically oriented archaeologists. The data from the National Aeronautics and Space Administration's ERTS and Skylab programs is evaluated for its usefulness in environmental mapping and in site location and site predictability. A more detailed discussion of Skylab imagery in high resolution color, color infrared, and different types of black-and-white imagery will be based on the Central Arizona Ecotone Project. Sections on availability of data, as well as formats and imagery types most useful to the archaeologist, will be given. (19, 20)

Gunn, J. D. (Texas-San Antonio) ARCHAEOLOGY AND CHRONOLOGY AT MEADOWCROFT ROCKSHELTER. Ten of the eleven major strata (IIa-XI) isolated at Meadowcroft Rockshelter have yielded extensive evidence of human occupation in the form of artifactual remains and a variety of cultural features. The artifactual remains and cultural features are summarized and the radiocarbon chronology for the site is presented. Present data indicate that the site was occupied from at least the early fifteenth millennium B.C. through the Historic period. There are apparently no major hiatuses in the occupation and the radiocarbon column is entirely consistent with the observed stratigraphy. (2)

Gunn, J. D. (see Adovasio, James M.) (2)

Haas, Jonathan (Columbia) HUACA EXCAVATIONS AT PAMPA GRANDE, LAMBAYEQUE, PERU. Excavations were conducted on a number of structures on the large central platform mound at the site of Pampa Grande in the Lambayeque Valley on the Peruvian North Coast. The structures on the mound consisted of ceremonial rooms and a complex of elite residential architecture. In addition, the mound itself, one of the largest man-made structures in the New World, was mapped in detail. As a result of the excavations, some tentative statements can be made about the nature of state political organization during the Moche V period. (18)

Hackenberger, Steve (Tulsa) AN AREAL RECONNAISSANCE OF MCGEE AND PATAPO CREEKS. This paper presents a general report on the results of a reconnaissance survey of the proposed McGee Creek Reservoir and Natural Scenic Area in south-central Oklahoma. Special consideration is paid to an examination of the research design used to maximize results from a ten percent sample of the area. This design utilized an interdisciplinary approach and examined the relationship of site locations and areas of natural resource diversity. Suggestions are made for future contract supported research in the area, using a multistage, interdisciplinary research design. (45)

Haley, Harold B. (Virginia) "SPINDLE WHORLS" FROM COASTAL ECUADOR. In 1907, Saville published drawings of a number of "mullos" from Manabi and Puna, Ecuador which he identified as spindle whorls. These small beadlike objects with meticulous carvings laboriously incised after firing have characteristics that appear different from those of most Pre-Columbian spindle whorls. This raises the question of their true function. A review of several hundred mullos in a number of collections has resulted in a thematic-iconographic classification. (18)

Hall, Robert L. (Illinois-Chicago Circle) SOUL RELEASE AS AN HYPOTHESIS FOR EXPLAINING PERFORATED LONG BONES AND CRANIA IN GREAT LAKES AREA PREHISTORY. The practice of skeletal perforation as found in Woodland times from South Dakota through northern Minnesota and Wisconsin into Michigan and adjacent Ontario is examined. The practice is related to beliefs in the skeleton as a residence for the soul or souls and a particular lock of head hair as the locus of a personal spiritual presence or power. Skeletal perforation is found to correlate closely with the original distribution of historic tribes using the "spirit bundle" in mortuary practices, a custom involving the preservation of a lock of hair from the deceased and its use in a spirit adoption ritual at the termination of mourning. A variety of Middle and Late Woodland techniques for final disposal of the dead are tied to the concepts of water and underground animals or flames as soul bearers for the journey to the Afterworld with a basic structural continuity of related

mortuary practices from Middle Woodland into Late Woodland and Historic times. The basis is presented for reconstructing part of the ideological dimension of Middle Woodland mortuary ceremonialism by relating all of the above. (9)

Hammond, Norman (Cambridge) THE EARLY PRECLASSIC IN THE MAYA LOWLANDS. Recent excavations in Belize have yielded evidence of settled occupation with radiocarbon dates extending in 2000 B.C.; this material is placed in its Mesoamerican context. (12)

Hammond, Norman (see Oring, Duncan) (12)

Hancock, Patricia (Eastern New Mexico) SETTING UP A DATA PROCESSING LAB. Archaeology's new toy the computer has enabled large complex sites like Salmon Ruins in Farmington, New Mexico, to store and retrieve large amounts of data. While many believe the computer to be a miracle machine, those of us working in the data processing lab know otherwise. Two important factors should be kept in mind when setting up a data processing lab. First, the time involved in the actual completion of a run, and the storage and availability of the furnished printout. This paper will deal with the problems and some solutions in setting up a data processing laboratory. (43)

Hansen, Hans Ole (Historical-Arch. Res. Center-Lejere) A REVIEW OF THE LEJERE EXPERIMENT. The largest and oldest continuing experimental replicative center is reviewed in terms of its function as an educational resource, experiments that have been carried out, and new directions for the future. (21)

Harbottle, Garman (Brookhaven) NEUTRON ACTIVATION ANALYSIS IN STUDIES OF ARCHAEOLOGICAL CERAMICS: POWER AND PITFALL. The technique of neutron activation analysis in its application to the materials of archaeological research, potsherds, obsidian, glass, metals, semiprecious stones, etc., is now nearly 20 years of age, and it is time to examine critically the nature of the information generated, the impact of modern statistical-taxonomic data handling systems, and the value of this kind of "hard data" to the archaeologist. It will be shown that the technique has value in the systematic organization of archaeological ceramics into groups on the basis of chemical composition; that other kinds of physical examination (petrographic thin section, x-ray diffraction) yield data which merge with, reinforce or supplement, but do not replace, neutron activation analysis (and vice versa); and that in certain instances the techniques, when taken in conjunction with purely archaeological evidence, can lead to good indications, though hardly proof, of geographic origin. The pitfalls of the use of this technique will also be explored within the framework of the probabilistic arguments arising from the multivariate analysis of the analytical data. Additional, and severe, difficulties owing to non-comparability of data because of problems of standardization, will also be mentioned. Finally, the effect of admixture of temper on the analytical results will be described. (32)

Harbottle, Garman (see Rattray, Evelyn) (11)

Hatch, James W. (Pennsylvania State) "CHANGE" VERSUS "NOISE" IN CERAMIC FREQUENCY SERIATION. Frequency seriation as an ordering technique with possible chronological implications has had a long history of use in archaeology. Recent theoretical articles concerning its use with ceramics support the notion that the ordered sequence is effected by a large number of social and technological variables, most of which are unquantified and historically have not been taken into consideration. This paper will report on (1) a newly developed computer program (POTS) which dynamically simulates critical aspects of the manufacture, breakage, and accumulation of sherds in a ceramic using village whose data parameters are known; and (2) the results and implications of applying standard seriation techniques for a chronological ordering of these data. The nature and sufficiency of sherd samples will be discussed. (33)

Healan, Dan M. (Baylor) PATTERNS OF RESIDENCE IN A POSTCLASSIC CITY: TULA, HIDALGO. A series of residences have been excavated at Tula, a Postclassic Toltec city in central Mexico. Analysis of form, structure, and artifact content of these residences sheds light upon the nature of domestic units and activities in ancient Tula. (3)

Henn, Winfield (see Dumond, Don E.) (35)

Hennen, Gary W. (Rutgers) A PALEO-ECOLOGICAL LOCATIONAL ANALYSIS OF THE LOWER SCIOTO REGION OF OHIO. PART 1: DEMOGRAPHIC ANALYSIS. This paper introduces the concentric circle method of demographic analysis which is grounded in calculus theory and was devised by the author to demonstrate differential site distributions and locational preferences by different cultures using the same area. The most significant conclusions based upon this approach include: (A) demonstrating that site clustering increased progressively through Early, Middle, and Late Woodland periods despite evidence of population reduction and cultural simplification during the Late Woodland period; (B) demonstrating a difference in distribution pattern between Hopewellian ceremonial sites and occupational sites implying a hamlet-field-hamlet arrangement; (C) demonstrating that Hopewellian occupation site distribution very much resembles Late Woodland occupational site distribution. (24)

Hester, James J. (Colorado) SPECIALIZED AND GENERALIZED MODELS OF REGIONAL CENTERS. Two possible designs for regional centers are outlined. The Specialized

Center would feature a research laboratory providing ancillary research support for archaeological projects carried out within the region. These specialized laboratories include facilities and personnel for artifactual, cartographic, photographic, environmental, and lithic studies and/or services. The Generalized Center is envisioned as an administrative framework and facility to provide space for archaeologists to work full time on regional archaeological problems. Office and laboratory space, equipment, a specialized library, study collections, a storage facility, and a retrieval system for bulk collections are envisioned. Administrative functions of the Center would include coordination and stimulation of archaeological research on regional problems through symposia and publications. Sources of financial support and model budgets for the centers will be discussed. (22)

Hester, Thomas R. (Texas-San Antonio) THE LITHIC TECHNOLOGY OF MISSION INDIANS IN TEXAS AND NORTHEASTERN MEXICO. The Spanish missions of central and southern Texas, and northeastern Mexico, have yielded significant data on the lithic industries of the Mission Indian populations. These data are reviewed and the various systems of lithic technology utilized by these groups are defined. The ongoing archaeological studies at Missions San Bernardo and San Juan Bautista have provided important new information on changes and continuities in the patterns of stone tool manufacture and use in the early missionization period. (10)

Higginbotham, C. Dean (Purdue) EARLY WOODLAND SITES IN THE LOWER WABASH RIVER VALLEY. The Wabash River Valley lies midway between the Woodland Tradition "centers" in the Illinois River Valley and the Ohio-Scioto area. The conventional wisdom has regarded the Wabash Valley as being underexplored and as having the potential to contribute to the understanding of cultural exchange between Ohio and Illinois. A recent survey of Early Woodland and other sites in the Lower Wabash Valley indicate that the conventional wisdom has been correct. (24)

Hill, Frederick C. (Bloomsburg) ARCHAEOLOGICAL AQUATIC FAUNAL REMAINS AS AN AID TO THE RECONSTRUCTION OF THE PALEOENVIRONMENT. Fish and freshwater mussel remains found in archaeological sites can provide a wealth of ethnoecological data if carefully analyzed. Archaeologists should be aware of the types of data available from these two faunal resources and the methods which must be utilized to prepare the materials for analysis. Freshwater mussel shells from archaeological sites have long been neglected as a source of biological and cultural information. Gross habitat requirements of the various species found in a site are usually all that is discussed. Shell morphology, growth rate, and chemical composition, as well as ecological implications of the species assemblage all reveal certain facets of the stream environment from which the freshwater mussels originated. Season of site occupation is also determinable from certain freshwater mussel shells. Likewise, fish remains excavated from an archaeological site can provide seasonality and ecological data which can be invaluable in an environmental reconstruction of an archaeological site. However, in order to study these various parameters, the shells, bones, or scales must be well preserved and carefully excavated. Precautions necessary in excavating the aquatic faunal materials as well as specific studies which have been carried out in my lab are discussed. (25)

Hirth, Kenneth (INAH, Cuernavaca) THE EVOLUTION OF A GATEWAY COMMUNITY: CENTRAL MEXICAN SYMBIOSIS ALONG THE "OLMEC" TRADE ROUTE. In the past, archaeologists have stressed the importance of long distance status good exchange for the emergence of stratified society during the Formative phase of Mesoamerican prehistory. Although this type of commerce was certainly important, we know extremely little about its most salient characteristic, its developmental impact on the formation of regional redistributive economic systems. This is an especially critical gap in our understanding of Mesoamerican cultural evolution since we stress the importance of regional symbiosis and periodic regional markets for supporting later Classic and Postclassic civilization. It is the purpose of this paper to examine the function and importance of long distance trade for the emergence of regional symbiosis in the Central Mexican Highlands. A model is constructed within the theoretical embodiment of economic geography which accounts for the interplay of long distance and regional economies as well as the emergence of market centers and ports-of-trade. This model is then tested with data on the socio-economic evolution of Chalcatzingo in eastern Morelos, Mexico, a community which maintained an important position in both long-distance and regional market networks during the first half of the Mesoamerican Formative. (23)

Hirth, Kenneth (see Angulo, George) (37)

Hitchcock, Robert K. (New Mexico) THE ARCHAEOLOGY OF CENTRAL BOTSWANA, A PREVIOUSLY UNEXPLORED AREA OF THE EASTERN KALAHARI. The Kalahari Desert, today the home of the Bushmen, has been represented as devoid of prehistoric remains by most African archaeologists. Recent investigations by the University of New Mexico Kalahari Project reveal that, far from being a marginal "refuge area," the arid sandveldt and Makgadikgadi Depression of central Botswana hosted a relatively constant population of Middle and Late Stone Age peoples for perhaps 70,000-80,000 years. Data collected in the course of large-scale regional survey samples in these areas form the basis of a discussion of these peoples' technology, economy, and social life. (40)

Holmes, Douglas (SUNY Stony Brook) MAYAN AND AZTEC INTERDEPENDENCE IN THE LATE POST-CLASSIC. The economic and political relationship between the Northern

Yucatan and Central Mexico poses a number of complex problems. The collapse of Mayapan and the emergence of independent polities in Yucatan can be viewed in terms of the expansion of the Aztec empire. The Yucatecan slave trade is suggested as a central mechanism in this process. The function of slave labor, acquired in Yucatan, had important implications for the economic development of the Aztecs. (12)

Houart, Gail (Northwestern) MICRO-STYLE ANALYSIS OF CERAMICS AND THE IDENTIFICATION OF SOCIAL GROUPS FOR MIDDLE WOODLAND COMMUNITIES IN THE ILLINOIS VALLEY. During Middle Woodland times, communities within the Illinois Valley participated in the Hopewell Interaction Sphere. One aspect of this involvement is the movement of exotic trade goods and raw materials throughout much of the Midwest-Riverine area. It has been hypothesized that this interaction was mediated through a hierarchical series of sites (nodes). In the Illinois Valley, relatively stable groups of communities comprise the basic social unit which would have participated in the Interaction Sphere. Micro-style analysis of utilitarian ceramics from Middle Woodland sites in this area indicates that it may be possible to identify the geographic boundaries and constituent communities for these hypothesized social groups. (6)

Hunt, Eva (Boston) THE PROVENIENCE AND CONTENTS OF THE PORFIRIO DIAZ CODEX: NEW DATA AND ANALYSIS. The Porfirio Diaz Codex, and its mate the Fernandez Leal, have neither been satisfactorily analyzed as to content nor their origins explained. Some new data relevant to their history are presented, establishing the definite Cuicatec origin and topic of the two codices. They were utilized in a court case (ca. 1562) of Cacicazgo Succession rights. The historical sections of the Codex contain dates of foundation and conquest of Cuicatec towns. The toponymics written in hieroglyphics and in the Latin alphabet mark landscape features of the Cuicatec district still called by the same names. The document covers approximately a period of 260 years, and correlates with data written in an extant court case, which has the same places, the names of the same Cuicatec Lords, and other parallels with the Codices. Where, how and why the Codex was created (and mutilated) is discussed, presenting some evidence which contradicts all the (incomplete) previous analyses. (26, 27)

Hurley, William M. (Toronto) A STYLISTIC ANALYSIS OF CORDS AND FABRICS APPLIED TO LATE WOODLAND CERAMICS IN WISCONSIN. Late Woodland ceramics in Eastern North America are distinguished by their cord, cord-wrapped sticks, or fabric decorations. A decade and a half of research on macro- and micro-attribute analyses of these decorations has produced 270 varieties of cords/cord-wrapped sticks and 55 fabrics. A presentation of these varieties is of little significance unless types, wares, and sites can be stylistically linked through time and space. Accordingly, over 3,000 vessels from 42 sites spanning 1,300 years are typologically and stylistically analyzed to ascertain prehistoric associations and cultural patterning. (16)

Isbell, William H. (SUNY Binghamton) THE WARI EMPIRE: STATE AND CITY? In light of general definitions of states and cities, a series of hypotheses are presented which must be evaluated before the Wari Empire may be, without restriction, classified as an urban state. Current knowledge of the empire is reviewed in light of these hypotheses. Some relatively significant new data and the results of some recent analyses are presented which may be seen to lend support to at least a minimal extent, to the discussed hypotheses. In addition, various potentially useful lines of future research needed to support the hypotheses are suggested. (18)

Ives, David J. (Missouri) STURM UND DRANG: IN-THE-FIELD SAFETY. The concept of in-the-field safety has received little attention even though it is mandated, on most projects, by federal regulations. While certain of these regulations require either the purchase of special equipment or a departure in traditional research implementation, the examination of several indicates that there is indeed a method in such madness. Adherence to the applicable OSHA and COE rules and regulations will safeguard employee capability, employer accountability, and federal agency responsibility and will ensure efficient and timely project implementation. (31)

Ives, David J. (see Evans, David R.) (45)

Jacobs, Mike (NPS) CONSTRUCTING A THESAURUS OF TERMS FOR SOUTHWESTERN ARCHAEOLOGICAL AND ETHNOLOGICAL SPECIMENS. Development of a computerized inventory of the collections at the National Park Service's Western Archaeological Center has highlighted the need for terminological consistency in recording museum specimens. Such consistency is necessary in order to achieve high precision in retrieving information from registration and accession files. Construction of a dictionary-thesaurus of object terms for Southwestern archaeological and ethnological specimens is one means of achieving the needed consistency. Initial attempts at creating and maintaining such a thesaurus are discussed. (43)

Jansen, Maarten E. R. G. N., (Leiden) THE HEAVEN OF APOALA. For better understanding of the contents of Vindobonensis and Nuttall, the representations of heaven in these codices are very important. As result of a comparison between Vindobonensis and an origin-myth of the Mixteca, reported by Gregoria Garcia, it is possible to interpret this heaven as a mountain near Apoala. Vindobonensis (p. 15) is a parallel to Nuttall (p. 36), where the hieroglyph Hand Holding Feathers (identified by Caso As Apoala) occur in

combination with some other place-name signs. The snake rock can be identified as Yanui coo maa, the river of knotted grass as Yutza ndua nama, and the tzintli rock as Cahua quina. Very clear is the representation of the waterfall of Apoala. The mythical tree above it is no longer there, but the spot is still known as Tinuu, which could indicate that it was a ceiba. These details and the possibility of interpreting the scenes of Nuttall (pp. 15, 17, 18, 19) as taking place in Apoala give an indication as to the place of origin of this codex. (This paper will be given in Spanish.) (26, 27)

Jelinek, Arthur J. (Arizona) QUANTIFIABLE TRENDS IN FLAKE SHAPE IN THE LATE PLEISTOCENE OF THE LEVANT. A preliminary examination of the relationships between the length, width, and thickness of complete non-cortical flakes from a long (80,000 year) stratigraphic sequence of samples from the Tabun Cave on Mount Carmel indicates unidirectional trends in flake manufacturing patterns through the entire time span of occupation. These trends suggest major changes in motor behavior which led to greater precision and control in flake manufacture. Inasmuch as this is the first example of objectively quantifiable trends reflecting human behavior through a substantial period of the Late Pleistocene, it would consider it of primary importance in the interpretation of the later stages of human evolution. (40)

Jermann, Jerry V. (Washington) COMPUTER-AIDED MAPPING IN ARCHAEOLOGY: THE CASE FOR SYMAP. The past several years have witnessed a considerable growth in the profession's reliance on computer-aided analytic methods. This paper examines the uses and limitations of one such method, isopleth or contour mapping. Specific attention is focused on the SYMAP computer program as perhaps the most widely used and best known technique within this general analytic method. Both method-based and program-based constraints are outlined and then tested in actual archaeological situations. Guidelines are offered for the application of isopleth mapping in general and the SYMAP program in particular to archaeological problems. (19, 20)

Jewett, Roberta (Arizona State) LOCAL GROUP SIZE ESTIMATION PROCEDURES IN ARCHAEOLOGICAL CONTEXTS: AN EXAMPLE FROM THE AFRICAN BASAL PLEISTOCENE. Local group sizes are estimated for Basal Pleistocene populations responsible for the accumulation of 16 debris scatters in Beds I and II at Olduvai Gorge, Tanzania. Estimates are obtained using a modification of Nordbeck's (1971) allometric growth formula, a log/log regression of area on population ($Area = a \cdot population^b$ where a is a density function and b is a theoretically derived exponent based on the dimensions of the surface measured). Nordbeck transformed the law of allometric growth making estimation of populations of unknown size possible when density and area of occupation were known or could be approximated. Wiessner (1974) subsequently tested Nordbeck's formula with Yellen's !Kung Bushmen data. Her study confirmed that an allometric relationship also existed between settlement area and group size for Bushman bands. At Olduvai, total floor area had first to be estimated for each site, as excavation was seldom complete and no random sampling techniques were used. Conservative and liberal estimates were made, local group size computed and expressed as a range. Although plausible results were obtained, two assumptions built into the procedure limit its usefulness. They are: (1) the use of Wiessner's constants which, although empirically derived, have not been widely tested; and (2) the subjective element involved in the determination of floor areas for partially excavated sites. (40)

Jochim, Michael (California-Santa Barbara) HUNTER-GATHERER ECONOMIC PATTERNS: A PREDICTIVE MODEL FOR ARCHAEOLOGY. Analysis of lithic assemblages is often aimed at determining their activity correlates. Many factors in addition to activity differences, however, are important in determining assemblage structure. An independent method of predicting the distribution of settlements and their component activities in a region would provide a more controlled framework for such lithic analyses. Such a method has been developed for hunter-gatherers: a predictive model of decision-making systems related to (1) resource use schedule, (2) settlement location, and (3) demographic arrangements. The model has been operationalized for the Mesolithic of southwest Germany, and its predictions compared to the archaeological record. (40)

Johnson, Ann M. (Missouri-Columbia) MIDDLE MISSOURI CULTURAL DYNAMICS - A.D. 1100-1500. Taxa in the Middle Missouri area are differentiated largely on the basis of culture content and time; thus, the creation of a new taxon (the Modified Initial Middle Missouri variant of the Middle Missouri tradition) implies change within the Initial Middle Missouri variant—change which is implied but not documented. The objective of the present study is an examination of the validity of the new taxon. The analysis relies primarily on ceramics and architecture, supplemented by a new series of radiocarbon dates. These data are used to suggest new cultural relationships within the Middle Missouri Tradition. (45)

Johnson, Donald Lee (see Wood, W. Raymond) (41)

Johnson, Eileen (Texas Tech) RECONSTRUCTING HUMAN SOCIAL BEHAVIOR THROUGH FAUNAL ANALYSIS. Three major aspects of zooarchaeological research have been emerging over the last few years. Most prominent are the economic and environmental studies. However, archaeologists are becoming aware of a third area in zooarchaeological research, that of behavioral studies. Basic to archaeological interpretation is the theory that human behavior is patterned and that by studying cultural remains, at least some patterns of a culture can be reconstructed. Within zooarchaeology, the reconstruction of human

behavioral or social patterns is based on the integration and interpretation of data generated from the economic and environmental studies. The reconstructions (speculations) are attempts to understand why an activity area or utilization pattern is structured as it is. One of the most fruitful areas of analysis for reconstruction is the behavioral activities involved with bison kill and butchering sites, particularly during the Paleo-Indian period on the Plains. For at least the southern High Plains, size of kill, bone disposal, and butchering patterns change during this period which reflects a changing behavioral activity responding to a changing environment. (25)

Johnson, Jay K. (Southern Illinois) SITE HIERARCHY IN THE WESTERN MAYA PERIPHERY: A CORRELATION OF LITHIC, EPIGRAPHIC, ARCHITECTURAL, AND CERAMIC DATA. Several lines of evidence are combined to develop a three-level classification of the settlement surrounding the Classic Maya site of Palenque. The economic implications of this classification are outlined and tested by means of a detailed examination of the chipped stone industries from 27 sites in the region. (12)

Johnson, Jerald Jay (California State) SOUTHERN CASCADE MOUNTAIN RESEARCH PROJECT (1966-75). Since the fall of 1966, a major archaeological research project has been under development in the southern Cascade Mountains; 578 sites have been recorded, which include 238 villages, 128 temporary campsites, 170 rockshelters with habitation debris, and 42 petroglyphs. Ten sites have been partially excavated. The initial surveys and excavations were haphazard and, even though certain research topics were considered, no consistent program was followed. Prior to 1966 the Southern Cascade Mountains were virtually unknown archaeologically. Then 64 sites had been test excavated. An overview of the project will be presented. (34)

Johnson, Paddy C. (Eastern New Mexico) DATA STRUCTURES AND THE RECORDING OF ARCHAEOLOGICAL DATA. This paper discusses data structures for recording archaeological data. Areas considered include site survey data, excavational data, and various types of laboratory and field analysis. An attempt is made to explain various data structures and their impact on data recording. Special emphasis is placed on the difference between syntax and semantics and how different recording structures influence what data is recorded and how it is later utilized. Relevant examples are given from the San Juan Valley Archaeological Project. (43)

Jones, M. Katherine (Tallahassee) STRUCTURE OF AND RELATIONSHIPS AMONG THE SEVERAL COMPONENTS OF FIAHRM'S ARCHAEOLOGICAL DATA BANK. The intent of this paper is to delineate problems that arise in implementing a comprehensive computerization program for archaeological sites when all related data are considered, and to suggest ways of solving these problems. Sometimes it is necessary to recall data which relate to a particular research problem but are contained in separate files—for example, all photographs, artifacts, and sites that bear on the problem of, say, mound construction in a regional area of Florida. This retrieval, and data management in general, could be facilitated by indexing the separate data bases and linking them together using data common to all. This paper will concentrate on methods of data base indexing and linkage for efficient retrieval of information on any kind of problem that could be answered using the computerized data system. (43)

Jury, Wilfred (Western Ontario) FAIRFIELD: A CANADIAN DELAWARE MISSION. Excavations were conducted (1942-45) on the site of the Moravian Mission of Fairfield, in Kent County, Province of Ontario, some 65 miles east of Windsor-Detroit. The village was founded in 1792 by Moravian missionaries with 150 Delaware converts. It was destroyed and looted by American forces in 1813. The foundations of 40 buildings were uncovered, 22 facing on a street that paralleled the Thames River. Methods of construction and materials were studied in European-type and Indian-type dwellings and a school. European house cellars yielded considerable material objects and food remains. Finds in the Indian-type houses indicate interesting traits of a late contact community. (36)

Karttunen, Frances (Texas-Austin) THE CONTINUATION OF NAHUATL WRITING TRADITIONS: PROCEEDINGS PURSUANT TO A LAND CLAIM, AMECAMECA, 1746. This is a beautifully written document preserved in the Archivo General de la Nacion Tierras Collection (AGN Tierras 1596, exp. 7). It consists of seven folios including verbatim testimony of seven witnesses, each of whom signs his testimony for himself. The signatures of only two of the witnesses are awkward; those of the other witnesses and of all the officials, repeated after each testimony, are the signatures of persons accustomed to daily writing. Although the business is conducted entirely within the Indian community, there is mention of interethnic marriages with Spanish and mestiza women. Framed with Spanish legal conventions, the language is however fluent Nahuatl in a felicitous integration of full formalities with highly colloquial speech in the testimonies. This text is of serious linguistic interest because it demonstrates many aspects of the historical processes of language change: calques on Spanish, direct loans, reanalysis of Spanish morphemes, certain orthographic peculiarities, and early examples of Nahuatl's developing strategy for borrowing Spanish verbs. For ethnohistory it reveals an unexpectedly late example of a cohesive, sophisticated indigenous community carrying on its affairs without recourse to the Spanish community. (26, 27)

Kelly, John E. (Beloit) FORMATIVE DEVELOPMENTS AT CAHOKIA: A MERRELL TRACT PERSPECTIVE. Three seasons of fieldwork on the Merrell Tract at Cahokia

(11-Ms-2-3) by Beloit College have provided data relevant to the early developments at Cahokia. The analysis of this data and other available information from the site tends to suggest that a series of Late Bluff Villages initially occupied Cahokia. The data relevant to this interpretation of early Cahokia along with other plausible alternatives will be discussed. (24)

Kennedy, Cindy (see Hancock, Patricia) (43)

King, Frances B. (Illinois State Museum) MODELING PREHISTORIC PLANT FOOD RESOURCES OF THE WESTERN MISSOURI OZARKS. Reconstruction and quantification of plant resources, based on original Federal Land Survey records (1816-45), were correlated with topographic features (slope, aspect, elevation) and with environmental factors (drought, flooding, fire, climatic change) in order to predict spatial and temporal changes in plant food resources of the western Missouri Ozarks. The model of resource availability will be related to changing aboriginal exploitation strategies reflected in the ethnobotanical record from Rodgers Shelter (23Be125). (45)

King, Jaime Litvak (Universidad Nacional de Mexico) INTRA-SITE VARIATIONS IN CLASSIC MORELOS RESIDENCE PATTERNS. The Valley of Xochicalco offers a number of examples as to the patterns, within sites, that could be ascribed to different rank units in the general settlement pattern. These go from probable barrio-type locations at the main site of Xochicalco to very small, undifferentiated rancharia-type units. These settlements are analyzed as to their probable meaning in a locational ranking of the general pattern and conclusions are drawn in respect to habitational variables in the classic. (3)

King, Mary Elizabeth (Texas Tech) THE ARCHAEOLOGICAL TEXTILES OF NORTH AMERICA: AN OVERVIEW. When prehistoric North American textile production is surveyed, patterns begin to emerge and certain hypotheses are suggested. From about 8000 B.C. to the time of European contact, twining, knotted netting, looping, oblique interlacing and other non-woven, or non-heddle-loom, techniques are prevalent in all parts of North America except the Southwest. Clearly, weaving in the Southwest was introduced from Mexico, probably about A.D. 700, as has been previously suggested. Throughout the rest of the continent there is amazing uniformity, both geographically and temporally. At least some of the basic techniques used in the textile industry were almost certainly brought from the old world. (16)

King, Thomas F. (NPS) MOSS-BENNETT, THE NATIONAL REGISTER, AND ARCHAEOLOGICAL ADMINISTRATION: MUSINGS AND MISGIVINGS. Having urgently supported passage of the Archaeological Conservation Act, I now often find myself regretting its enactment—at least in its present, complex form. My misgivings arise largely from the facts that (a) the Act is used by some federal agencies as a smokescreen behind which noncompliance with historic preservation procedures can be hidden, and (b) the existence of the Act tempts some archaeologists to ignore and/or denigrate historic preservation procedures. This paper will compare the efficacy of the Archaeological Conservation Act and the pre-existing historic preservation statutes as they pertain to the administration of archaeological resource management programs; areas of conflict will be identified and suggestions will be offered for their resolution. (1)

King, Thomas F. (NPS) SOCIAL AND SETTLEMENT ORGANIZATION ON THE WEST COAST OF NORTH AMERICA. Non-agricultural ethnographic populations on the west coast of North America often lived in large, permanent villages, engaged in occupational specializations, and observed social controls interpreted by headpeople whose rank was ascribed on kinship bases. This paper outlines some constants and variables in west coast settlement and social organization, discusses their time-depth as indicated by current archaeological research, and proposes some reasons for their being that may be broadly applicable to other non-agricultural situations. (7)

King, Thomas J. (UCLA) LATE PLEISTOCENE-EARLY HOLOCENE HISTORY OF CONIFEROUS WOODLANDS IN THE LUCERNE VALLEY REGION OF THE MOHAVE DESERT. The composition of four radiocarbon dated, late Pleistocene woodrat middens is reported and analyzed. A date of 11,850±550 B.P. records the first reported macrofossil occurrence in this region of late Pleistocene Pinus monophylla-Juniperus osteosperma woodlands. A 7,800±350 B.P. date documents the most recent J. osteosperma woodlands in this presently coniferless desert area, while a date of 12,100±400 B.P. is the oldest record of Juniper woodlands among the four middens. Other Juniper and creosote bush desert flora radiocarbon dates along with six pollen profiles were obtained. The research suggests that as recently as 7,800 B.P. this part of the Mohave Desert was subject to a cooler, moister climate than at present, and that the aboriginal food resources of pinyon seeds and Juniper berries were probably available to early prehistoric man in this area. (25)

Klks, Michael (California-Berkeley) PALEODIETETIC STUDIES ON GREAT BASIN COPROLITES: ESTIMATION OF DIETARY FIBER INTAKE AND EVALUATION OF THE INGESTION OF ANTHELMINTIC PLANT SUBSTANCES. A re-examination of previously separated macro- and microfossil materials from 700 ancient human coprolites from Lovelock, Humboldt, and Hidden Caves in W. Nevada and original separations of an additional group of specimens from the above sites and from Danger and Hogup Caves in Utah confirmed the presence of large quantities of seeds of two species of Chenopodiaceae (*Suaeda depressa* and *Ailanthofolia occidentalis*), and the absence of ova of intestinal

helminths. Estimates of the mean weight of seeds excreted for these species and of *Chenopodium hybridum* (Salts Cave, Ky) ranged from 21 to 75 gm. per day based on a minimum mean stool output of 220 gm. The actual daily intake was estimated to be between six and eight times the amount excreted. Gas-liquid chromatography of seed extracts of three species of *Chenopodium* known to be used as food by Great Basin Indian groups revealed the presence of terpene fractions in all; an ascaridol fraction was present only in the oil of *Chenopodium* standard and in seed extracts of *C. ambrosioides* var. *anthelminticum* which was used medicinally, but not as food by aboriginal Americans. The possible anthelmintic activity of the terpene fractions was not determined. Estimated mean dietary fiber content of 3 populations of coprolites (Lovelock, Hogup, and Salts Caves sites) was 30%, 45%, and 58% of original dry sample weight respectively. Based on a mean daily fecal output of 450 gm., and a 30% fiber content, it was estimated that the daily intake of dietary fiber, as represented by the Lovelock Cave coprolites, was 130 (110 to 156) gm. (5)

Klymyshyn, Alexandra M. Ulaná (Harvard) THE INHABITANTS OF THE INTER-MEDIATE UNITS IN CHAN CHAN, PERU. The intermediate units in Chan Chan are those units which are neither monumental units nor SIAR (small irregular agglutinated rooms). Intermediate units are generally small enclosures containing features characteristic of the other two main groups of architectural remains in Chan Chan. The first part of the paper presents a classification of the intermediate units and an analysis of their relationship to other units on the site. Based on these data, the second part of the paper discusses the possible inhabitants of these structures, utilizing ethnohistoric data, and examines functional interpretations other than residential. (18)

Knudson, Ruthann (Idaho) THE ANTON RYGH SITE, SOUTH DAKOTA, AND ITS SALVAGED INFORMATION. The Anton Rygh site (39CA4), South Dakota, was a large Extended Coalescent village on the east bank of the Missouri River just above the mouth of the Grand River. The village was tested by William Duncan Strong in 1932, then more fully excavated by Alfred W. Bowers as a River Basin Survey salvage project in the late 1950s. The later excavations produced over 40,000 artifacts, most of which are ceramic but including extensive worked bone and lithic assemblages. A basic descriptive report of the excavations, and the artifacts and their distributions, is currently being completed. This report includes discussions of lithic raw material procurement and production patterns, and bone tool production systems, matters infrequently included in ceramically oriented Plains village studies. (45)

Kopjanski, D. (see Fröhlich, Bruno) (35)

Kraft, Herbert C. (Seton Hall) DELAWARE INDIANS ORIGINS IN THE DELAWARE VALLEY. Previous interpretations which characterize New Jersey sites in terms of New York State typologies as "Owasco" or "Iroquois-like" have deprived the Lenape Indians of any substantial heritage, and tended to show them as recipients of, rather than active contributors to, the prehistoric cultural diversity of the Northeast. A decade of intensive archaeological excavations of deeply stratified sites, coupled with numerous radiocarbon dates, have now demonstrated that the Lenape (Delaware Indians) and their ancestors had a long developmental history in the Upper Delaware Valley and contiguous areas. Moreover, this history is demonstrably different from that of the Owasco and/or Iroquois, although there are similarities in ceramics, masking complexes, and other phenomena in the two areas. (36)

Krinsley, D. H. (Queens, CUNY) APPLICATION OF SAND GRAIN SURFACE-TEXTURAL ANALYSIS TO ARCHAEOLOGY. Certain sediment analysis techniques which permit the recognition of ancient environments are or could be of use in archaeology. A relatively new technique, the analysis of the surface textures of quartz sand grains with the scanning electron microscope (SEM) is discussed with examples taken from geology and archaeology. The surface relief observed on quartz sand grains is either physical or chemical in nature; it may be the result of action by wind, running water, or glaciation if physical. Occasionally, more than one environment can be observed on a single grain of sand, permitting a great deal of information to be obtained. Quartz grains from a number of localities at the Meadowcroft archaeological site at Avella, Pennsylvania were studied and compared with grains collected from a cliff above the site. Radiocarbon dates at the site area were available and thus it was possible to study the changes with time that occurred on sand grain surfaces. Minute post-depositional changes in the sediment were therefore available for examination. None of the grains at the site was affected by wind, water, or glacial transport. The deposit is colluvial in nature. At the present time, chert artifacts are being studied with the SEM and compared with chert from various outcrops within a wide geographic area. It should be possible to determine the original location of many chert tools by observing surface variation at high magnification. (2)

Kroster, Paula Homberger (Universidad Veracruzana) THE POTTERS OF TEOTIHUACAN. The existence of a thriving ceramic industry in urban Teotihuacan is indicated by the identification of some two hundred sites of probable workshops, concentrated near the two principal sources of clay, and in areas where other craft workshops appear to have existed. Evidence for the workshops is based on the restudy of collections from sites from which the surface survey teams reported unusual concentrations of a single ware or vessel type, the presence of possible potter's tools, or the remains of defective vessels. (44)

Kubler, George (Yale) **THE PERPETUAL CALENDAR IN CODEX BORBONICUS ON PP. 21-22.** Since 1880 numerous unsuccessful efforts have been made to explain the joining of one apparent Calendar Round marked by 52 year-bearer days in regular sequence, with an enigmatic sequence among the Nine Night Lords. Caso has described these failures at length (1967:112-29), without offering a solution of his own. The connection that was intended by the Precolumbian scribe, however, is a simple one. It is best explained by supplying proof that the puzzling sequence of the Nine Night Lords becomes a repeating series after the completion of two periodic expansions of the apparent Calendar Round. All conditions of Mesoamerican calendrical computation are satisfied by this solution with the use of but one assumption of continuity (proven by J. E. S. Thompson in 1929 for the Maya series of Nine Night Lords). The solution proposed here for these two pages in Codex Borbonicus gives rise to no further problems intrinsic to the connection of the expanded Calendar Round with the Nine Night Lords, nor is the solution contradicted by any other primary source now known to students. (26, 27)

Kurjack, Edward B. (Western Illinois) **PRECOLUMBIAN POLITICS AND COMMUNITIES IN NORTHWEST YUCATAN.** Urbanism and state formation in the Precolumbian Maya lowlands can now be examined in light of new information on community form and distribution from northwest Yucatan, Mexico. Analysis of aerial photography has elucidated the nature of Maya community form and distribution, two traditional concerns of settlement and community pattern research. Changes in political structure through time can be studied by inspecting the spatial distribution of energy expended in ancient construction; this procedure is a departure from the usual strategy of settlement research. Small pyramids erected in late Formative times dot the landscape, but larger Classic architecture is concentrated in fewer locations. This evidence from Yucatan suggests that the crucial aspect of state formation involves increased centralization of authority, including development of mechanisms by which the resources of household units are marshaled for use at increasingly distant locations. (3)

Kuttruff, Carl (Vanderbilt) **LATE WOODLAND SETTLEMENT AND SUBSISTENCE SYSTEMS IN THE LOWER KASKASKIA RIVER VALLEY, ILLINOIS.** The focus of this paper is the study of the Late Woodland culture of the Lower Kaskaskia River Valley, Illinois. A reconstruction of the prehistoric natural environment is presented and utilized as a background for the discussions of settlement and subsistence systems. The settlement and subsistence data for the Late Woodland of the Kaskaskia are examined and models are presented to account for the observed patterns, their relationship to each other, as well as their articulation with the reconstructed environmental system of the valley. From the models of settlement and subsistence that are constructed, a proposed model of Late Woodland social organization is derived and presented. It is designed to account for the settlement pattern, its relationship to the natural environment, and the regulation and scheduling of the settlement and subsistence systems. (9)

Lafferty, Robert H., III (Southern Illinois) **THE BLACK BOTTOM IN RELATION TO MISSISSIPPIAN SETTLEMENT.** An analysis of large Mississippian sites indicates that their size is largely a function of their spacing with reference to each other. This is structured within the larger context of bottomlands and river junctions of the Mississippi drainage and adjacent river systems. This paper examines structural placement of large centers with reference to central place theory and the implications of this in terms of the possible structuring and size of Mississippian articulatory units. The analysis suggests that Kincaid was on the edge, but beyond the economic control of the Cahokia site. (42)

Lange, Frederick W. (Museo Nacional de Costa Rica) **PREHISTORIC ADAPTATIONS: COASTAL GUANACASTE, COSTA RICA.** Research since 1969 has focused on a comparison of coastal and adjacent inland settlement patterns in northern Guanacaste Province, Costa Rica. Sites range in date from 300 B.C. to ca. A.D. 1520, and in size from small, single component seasonal occupations to large, multi-component year-round occupations. Differences in settlement and subsistence patterns are presented, augmented by recently completed work in the Sardinal River Valley, which connects a coastal and inland area. (14)

Lange, John (see Carbone, Victor) (13)

Lavine-Lischka, Leslie (Colorado State) **DUALITY IN ANCIENT MAYAN ECONOMICS.** A dual economic system manifests itself in present-day Mesoamerica, especially in areas designated as Indian. This duality can be described as localized trade and long-distance trade. The localized trade areas consist of groups of villages each specializing in one or more products, interdependent on each other for specific products and interspersed with non-specialized villages all focusing on a local market center. The long distance trade exchanges a different set of items, necessary items not found locally, and exotics. The social units involved are larger than the village units. It is proposed that this duality of the economic system existed in Precolumbian times and can be substantiated and geographically specified by astute use of the archaeological record and future archaeological fieldwork. The work at hand is to identify local trade areas and the products exchanged and to determine the number of long-distance trade units and their social interactions. (12)

LeBlanc, Steven A. (UCLA) **INVESTIGATIONS IN THE MIMBRES AREA, NEW MEXICO.** The second season's work of the Mimbres Archeological Center in southwest New Mexico is discussed. A major revision in the time frame of the Mimbres Branch sequence is suggested

based on new tree-ring material. A summary of the post-Mimbres occupation of the area is considered in light of survey and excavation material. (29)

Lechtman, Heather (Massachusetts Inst. of Technology) **THE ARCHAEOLOGY OF METALLURGY.** A general discussion of some of the more important features of early metallurgical technologies (processes such as smelting and alloying), the field evidence likely to be encountered at sites where such metallurgical activities took place, and the laboratory analytical methods available for the interpretation of the archaeological remains. Examples will be cited of both the imaginative use of techniques of materials science to the investigation of ancient metallurgical industries and the pitfalls encountered by archaeologists and natural scientists in assembling and evaluating the field and laboratory data. (32)

Leehan, Kevin (Tulsa) **THE USE FOR A PROTON MAGNETOMETER AND AUGER SAMPLING IN AN ARCHAEOLOGICAL SETTING.** Ms32 is a site in eastern Oklahoma with large accumulations of burned sandstone. The site dates possibly to the Late Archaic. This report discusses efforts to establish the spatial limits and density of the cultural deposit at the site through the use of a proton magnetometer survey. A comparison of the magnetometry data with correlative data obtained through the use of a power auger is presented also. (41)

Lees, William B. (Tulsa) **A FUNCTIONAL ANALYSIS OF EIGHTEENTH AND NINETEENTH CENTURY OSAGE GUN BARREL SECTIONS.** Short sections of gun barrels are an integral part of the artifact assemblage of all pre-1850 historic Osage sites. No definite ethnohistoric references to the use of these sections is known to exist. A functional analysis of barrel sections from Osage sites in Oklahoma and Missouri is presented, with comparison between sites and time periods. Calibers and barrel types of the sections are examined also. (45)

Lipe, William D. (Northern Arizona) **TRAINING ARCHAEOLOGISTS IN RELATION TO CULTURAL RESOURCE MANAGEMENT PROGRAMS.** Cultural resource management programs are a major field of employment for professional archaeologists. Yet traditional graduate programs in archaeology do not provide the necessary training for this non-academic type of employment. Weaknesses in current existing programs are discussed and various changes and revisions in existing programs and procedures in the training of professional archaeologists are suggested. (8)

Lipe, William (see Grady, Mark A.) (31)

Little, John R. (Dept. of Interior) **FEDERAL PROCUREMENT REGULATIONS: ADVERTISED BID VERSUS NEGOTIATED PROCUREMENT.** This paper will address the various kinds of Federal procurement contracts emphasizing the favorable provisions of procurement by negotiation extended to educational institutions and other scientific houses. Such procedures, although ignored in the past, are required by the Code of Federal Regulations and thus are mandatory for all Department of Interior agencies. Significant favorable qualities of the negotiated form of procurement are the following: (1) acceptance of the best quality research for the money, (2) must be multiple offerers, (3) free and open market, (4) research requirements specified in the contract may be negotiated as the course of work progresses, (5) acceptance of lowest budget not required, and (6) the announcement must be widely circularized. (13)

Loose, Richard W. (NPS) **THE CHETRO KETL FIELD: APPLIED PHOTOGRAMMETRY IN CHACO CANYON NATIONAL MONUMENT.** Several exploratory remote sensing techniques have been applied to a prehistoric agricultural field in Chaco Canyon National Monument in northwestern New Mexico. These methods include nuclear densiometer and radar profile maps, thermal infrared line scan maps, and more conventional photogrammetric maps generated from controlled aerial stereo pairs. These maps were useful in defining a gridded field pattern which could not be seen on the ground, and were essential in planning excavations which were carried out in the summer of 1974. Final results showed that the prehistoric field was a carefully planned and "hydraulically engineered" feature. (19, 20)

Lord, K. (see Faignaert, D.) (2)

Lunt, Michael J. (see Green, Dee F.) (19, 20)

Lyons, Thomas (NPS) **PHOTOGRAMMETRIC MAPPING AND DIGITIZING OF PREHISTORIC PUEBLOAN ARCHITECTURE IN CHACO CANYON NATIONAL MONUMENT, NEW MEXICO.** Eighteen major Chacoan architectural sites have been mapped photogrammetrically. The purpose, procedures, results, and applications of the project are explained. The differences between this method and on-the-ground mapping in terms of quality and quantity of derived data are evaluated, and cost comparisons are presented. (19, 20)

Lyons, Thomas R. (see Schalk, Randall F.) (19, 20)

Lyons, Thomas R. (see Loose, Richard W.) (19, 20)

MacKay, Robert C. (see Sanger, David) (28)

Magers, Pamela C. (Arizona) NAVAJO SETTLEMENT IN CANYON DEL MUERTO. Using data from an intensive survey of Canyon del Muerto (Canyon de Chelly National Monument), this paper examines the changing relationship between the Navajo and their physical and social environment from the eighteenth to the middle twentieth century as reflected in inter- and intra-site settlement patterns. Emphasis is placed on the effects of increasing stress on the carrying capacity of the canyon environment as human and domestic animal populations increased dramatically since the initial settlement. (4)

Magnus, R. W. (Banco Central de Nicaragua) THE PRE- AND POST-CONQUEST CULTURAL ECOLOGY OF THE ATLANTIC COAST OF NICARAGUA: A CONTRAST. The presently available archaeological data for the Atlantic coastline of Nicaragua suggest an entirely different subsistence pattern than is seen in ethnohistorical documents and among the modern peoples of the zone. Rather than having a very strongly marine oriented economy, the pre-Conquest peoples were apparently poorly adapted to the rivers, sea, and lagoons and exploited them as a secondary food source. In fact, it appears that they lived somewhat inland and that their ecology was based primarily on agriculture. They seem to have traveled to the lagoons and sea irregularly for hunting and fishing. Cultural and ecological data will be presented to substantiate this hypothesis. Finally, some elements will be suggested which could have induced this change from agriculture to fishing as a primary food source. (14)

Majewski, Teresita (Missouri-Columbia) ETHNOHISTORIC DEMOGRAPHIC DATA AND ITS ARCHAEOLOGICAL APPLICATION: A GUATEMALAN EXAMPLE. Sixteenth-nineteenth century census data is examined for several "tierra caliente" communities in the Caribbean drainage system of Guatemala. A model is presented, based on the ethnohistoric data to relate demographic trends and settlement pattern to archaeological data for the same area. (12)

Malone, Marilyn (Forest Service) AN ANALYSIS OF CERAMIC ATTRIBUTES AND THEIR DENDROCHRONOLOGICAL DATING, ELK RIDGE, SOUTHEASTERN UTAH. Excavated sites from three areas in the Elk Ridge region, southeastern Utah, have yielded stratified ceramic materials in association with dendrochronological dates. These collections are examined for a set of attributes, including temper, type of paint, paste composition, design style, and surface treatment. Analysis includes the use of thin sections, kiln refiring, and X-ray fluoroscopy. The spatial and temporal variation in each attribute is discussed. Using this information, the validity of each attribute in defining ceramic types is analyzed, and modifications proposed for the existing typology of the area to produce types which have demonstrated cultural relevance. (29)

Manire, Larry (Arizona State) A COMPUTERIZED SURVEY RECORDING SYSTEM. A totally computerized system for comprehensive recording archaeological data for a survey of Canyon del Muerto, Arizona is discussed in terms of recording procedures, routine reports available from the data, and the utility of these data and reports for researchers, administrators, and planners within and without the National Park Service. The development of the system and the changes instituted on the basis of field and user experience are discussed. (43)

Markman, Charles W. (North Carolina) SURVEY OF SETTLEMENT PATTERNS IN THE MIAHUATLAN VALLEY, OAXACA, MEXICO. Investigations carried out this past year in the Miahuatlan Valley were aimed at understanding various factors governing the growth and distribution of human population in this region. Factors considered include: (1) the techniques and systems by which human groups derive subsistence and utilize resources from the environment, (2) the socio-political, economic, and ceremonial relationships between human communities in this region, and (3) the relationship between communities in this region and other areas of Mesoamerica. An investigation of present-day farming techniques and agricultural productivity was utilized to construct a predictive model of carrying capacity and population distribution. This model was tested with an actual surface survey of archaeological sites. (23)

Marmaduke, William S. (Texas-Austin) CULTURAL PATTERNS IN THE PREHISTORY OF TRANS-PECOS TEXAS. Supported by a grant from the Texas Historical Commission, a recent program of survey and limited testing of sites within an environmentally restricted area along Bear Creek in trans-Pecos Texas has suggested some new interpretations of chronology and settlement systems in Texas Chihuahuan desert prehistory. During Archaic and late Prehistoric times a trend toward an increasingly intensive and industrialized use of particular desert plant species present in the region today can be discerned. In light of this new data, several previously advanced concepts about desert cultural systems, their development, and their economies are examined critically. (45)

Marquardt, William H. (Missouri-Columbia) PROSPECTS FOR REGIONAL COMPUTER-ASSISTED ARCHAEOLOGICAL INFORMATION RETRIEVAL. Computers can be of unquestionable value in the areas of data processing, statistical analysis, simulation modeling, and information and data storage/retrieval (s/r). Examples of some successful s/r systems in archaeology are mentioned. Curation, a scholarly responsibility, includes proper storage, preservation, and accessibility. Although the notion of large-scale archaeological data banks should not be abandoned, efforts toward their implementation would be a poor investment at the present time. Data s/r and information s/r are distinguished. It is argued that computer-assisted information s/r is practical and necessary for the kind of curation that encourages continuing research on excavated materials. (22)

Marrinan, Rochelle A. (Florida State Museum) ARCHAEOLOGICAL INVESTIGATIONS ON CANNON'S POINT: THE LATE ARCHAIC ASPECT. Human dependence on the resources of the tidal creek and salt marsh biotopes characterizes the Late Archaic Period on the Georgia coast. Excavations on Cannon's point, St. Simon's Island, Glynn County, Georgia have provided a time range of 2240-1655 B.C. for two shell ring sites in the project area and provided information on subsistence base and cultural developments during this period. The material recovered posed questions regarding seasonality and extra-areal affiliations. Analysis has indicated that a spring-fall occupation is a distinct possibility based on floral and faunal materials. Ceramic analysis indicates early developments of Florida Orange Period decorative motifs. (28)

Matheny, Ray T. (Brigham Young) THE PROBLEMS OF TRAINING IN A UNIVERSITY THAT ONLY OFFERS A MASTER'S DEGREE. An M.A. program is often torn between a generalist approach and the need to provide professional level training. It is often stated that an M.A. only program cannot provide the necessary combination of academic training and field experiences to produce professional archaeologists. Yet these departments often compensate for the brevity of their programs by providing some type of special experience. The Brigham Young University program is discussed in detail. (8)

Matos Moctezuma, Eduardo (INAH) RELATIONSHIPS BETWEEN TEPEAPOLCO AND TEOTIHUACAN. The Department of Prehispanic Monuments is carrying out investigations in the region of Tepeapulco, Hidalgo. This site is important since it is one of the commercial routes to the Gulf Coast during the Teotihuacan era. Moreover, Tepeapulco presents interesting characteristics which preliminary salvage reconnaissance has indicated and they are: a ceremonial center similar to Teotihuacan; a habitation area; possible presence of lithic factories; water reservoirs, etc. (37)

Matson, Frederick R. (Pennsylvania State) WHAT IS THE QUESTION? QUAGMIRE IN CERAMIC TECHNOLOGY. Ceramic problems must be culturally defined before extensive technological effort is expended. The many treatments clays have suffered at the hands of potters and in their kilns produce a group of variable properties that can be physically or chemically analyzed. Those that may supply information useful in better understanding either past cultural activities, or the degree of technological ceramic control achieved at the time the wares were made, are worth studying. Examples will be cited of successful and of soggy studies. (32)

Mauger, Jeffrey E. (Washington State) THE PREHISTORIC HOUSES AT OZETTE. At Ozette, a winter village site of the Makah Indians on the Olympic Peninsula of Washington State, a series of mudslides buried a number of traditional shed roof houses. Waterlogging of the buried cultural materials has allowed the recovery of thousands of structural remains including boards, planks, timbers, sleeping benches, and associated architectural features. To date, two houses have been recovered and two others sampled in an earlier component of the site. These houses represent a segment of the village as it existed in late prehistoric times. The archaeological remains recovered at Ozette allow a detailed reconstruction of the houses and their architecture. Repair and rebuilding techniques can be defined and synchronic variation between the houses may be examined. Additionally, the early and late historic components of the site allow an examination of the innovations in this type of architecture through European contact. (30)

McCartney, Allen P. (Arkansas) INCREASING ARCHAEOLOGICAL AWARENESS IN ARCTIC CANADA. Amid land claim preparations, concern for mineral and petroleum extraction, and political independence, archaeological programs in the Canadian North must be particularly sensitive to native desires for cultural preservation. Museum functions and archaeological interpretation are becoming increasingly relevant as a predictable response to Westernization. Information collected from local, regional, and national Inuit organizations during 1975 has been used in formulating research designs and procedures for the Thule Archaeology Conservation Project. This multidisciplinary research program attempts to focus archaeological, ethnological, climatological, and ecological expertise on the cultural transition of the past millennium, but in consonance with Inuit participation, educational feedback, and whale bone recycling. (35)

McClung de Tapia, Emily S. (Brandeis) PALEOETHNOBOTANICAL INVESTIGATION AT TEOTIHUACAN, MEXICO. The separation and analysis of identifiable botanical specimens from 23 of the 26 Teotihuacan Mapping Project excavations at Teotihuacan, Mexico, has important applications to the study of prehistoric subsistence agriculture and economy. The importance of flotation techniques for the recovery of botanical material is stressed, and a selected sample of the botanical specimens which have so far been identified is discussed. The implications of these data for archaeological investigation at Teotihuacan, in the Central Highlands of Mexico, and in Mesoamerica in general are considered. (44)

McDowell-Louden, Eljis (SUNY College Cortland) DEGREES OF SEDENTISM: THE EASTERN WOODLANDS EXAMPLE. This paper seeks to analyze the accumulated data about segments of the Eastern Woodland in context of group relationships at particular times in prehistory. Related site clusters, nuclear settlements with outliers, occupational-functional areas within and between sites, and other possible seasonal round implications with central bases as a constant, all have implications for understanding of non-agricultural as well as agricultural settlement and social organization. Eastern Woodland examples, suggestions for diverse approaches to these, and the bridging of inferences derived from them, are offered. (7)

McManamon, Francis P. (see Sterud, Eugene L.) (41)

McNett, Charles (American) COMPUTER GRAPHICS IN THE ANALYSIS OF AN EASTERN PALEO-INDIAN SITE. Much attention has been given in archaeology recently to the problem of determining the significance of spatial groupings in archaeological data. Such locational analysis, while extremely useful, has failed to make use of recent advances in computer graphics to display the research results. Such workers as H. Martin Wobst and Jonathan O. Davis have recently prepared graphic programs, using either the line printer or the Calcomp plotter, which offer great promise in graphic display. Examples using data from the Shawnee Minisink Early Man site in Eastern Pennsylvania are given. (19, 20)

McVicker, Donald E. (North Central College) APPROACHES TO THE MURAL ART OF TEOTIHUACAN: A CRITICAL ESSAY. This paper will review a number of different approaches which have been used to analyze and interpret the mural paintings of Teotihuacan, Mexico. Four approaches have been somewhat arbitrarily designated for the purpose of discussion. These are: iconographic, formal, anthropological, and symbolic-cognitive. This review will point out some of the strengths and weaknesses of these approaches, and offer some suggestions and cautions for future research. (23)

Merwe, Nikolaas J. van der (see Vogel, J. C.) (28)

Miksicek, Charles H. (Arizona) ARCHAEOBOTANICAL INVESTIGATIONS FROM THE BLACK MESA PROJECT. Archaeobotanical investigations were a major focus of the Black Mesa Project in the eighth field season of its continuing work on Black Mesa, Arizona. Flotation samples from three sites (two Dinnebito phase sites—A.D. 875-1000, and one Wepo/Lomoki transitional site—A.D. 1000-1050) will be discussed in terms of seasonality, paleoenvironment, and differential cultural adaptations. An extensive survey of the modern vegetational regime will be utilized to provide input into the seasonal and spatial availability of various botanical resources and to reconstruct the environment of the Kayenta Anasazi. (29)

Milanich, Jerald T. (Florida State Museum) THE RADIOCARBON-DATED ABORIGINAL CULTURE SEQUENCE FROM ST. SIMONS ISLAND, GEORGIA—2240 B.C. TO A.D. 1650. The University of Florida has completed analysis of archaeological materials from its three-year project on the central Georgia coast. A detailed ceramic seriation has been correlated with thirteen radiocarbon dates (University of Miami Geochronology Laboratory). The resulting culture history is presented and comparisons are made with other Southeast Atlantic coastal strand sequences and with other regions in the Southeast. (28)

Minor, Rick (see Aikens, C. Melvin) (34)

Mitchell, Robert (Southern Illinois-Edwardsville) NEW PERSPECTIVES ON PUEBLO MINERAL UTILIZATION. Little attention has been focused on mineral utilization among the pueblos, particularly with respect to cultural interaction (i.e., gathering and/or mining and dispersal through trade or reciprocity). This study attempts to establish correlations between sites and known mineral deposits. Obviously, geologically known deposits and those that were aboriginally exploited do not necessarily correspond; some deposits may have been totally exploited while others may be presently unknown. Available information supports a number of positive conclusions concerning the data. Finally, the study affords suggestions for data collection techniques which will improve the potential for positive correlations in future studies. (29)

Moeller, Roger W. (American Indian Archeological Institute) "MUNSEE" SEASONALITY IN THE UPPER DELAWARE VALLEY OF PENNSYLVANIA. This paper presents new evidence on the seasonality and settlement pattern of the so-called Munsees of the Upper Delaware Valley of Pennsylvania during the Late Woodland period (ca. A.D. 1600). Data collected by flotation of soil from natural bands within features at the Faucett site in Bushkill provide evidence of a floodplain occupation commencing in mid-summer and terminating in late fall. These data suggest intensive processing of seasonally abundant wild plants and, to a lesser degree, animals. Possible causes of data skewing and the formulation of a modified research design for confirmatory evidence are also discussed. (36)

Montet-White, Anta (Kansas) VARIABILITY OF LATE PALEOLITHIC OF SOUTH CENTRAL EUROPE. The study includes assemblages from several sites located in and around the Panonian Basin of South-Central Europe. Among these sites are: a large campsite; several hilltop hunting camps occupied for several weeks or a few months; hunting stations occupied for no more than a few days; a probable workshop. A system model is used to analyze and display the variability within and between artifact assemblages from these sites. The system goals are (1) to determine patterns associated to "properties" or characteristics of the sites; (2) to recognize the elements characteristic to the late paleolithic tradition in the area. (40)

Morden, Pamela (Eastern New Mexico) THE DEVELOPMENT OF AN ARCHAEOLOGICAL DATA RECORDING SYSTEM. This paper traces the evolution of a data recording system—from preliminary rough draft of a form and compilation of a dictionary of terms, to use in a production environment, and finally the inception of a total systems approach. The form developed by the San Juan Valley Project Data Processing Lab for the New Mexico State Archaeological Council will be used as an example throughout in an attempt to

illustrate the procedures, problems, and possibilities of computerizing archaeological data. (43)

Morris, Don P. (Western Archaeological Center) THE COMPUTER IN MANAGERIALS AND RESEARCH: CANYON DEL MUERTO SURVEY. Applications of computer graphics and photographs to an archaeological survey in Canyon de Chelly are described. A technique for deriving and verifying site location utilizing aerial photography, ortho photo maps, and UTM coordinates is described and evaluated in terms of its particular utility for cultural resource management in a region in which it can be assumed that preservation of the resource will continue. A variety of outputs and graphic displays available from this data are briefly discussed. (19, 20)

Morris, Don P. (see Manire, Larry) (43)

Morris, Elizabeth Ann (Colorado State) ARCHAEOLOGICAL SURVEY OF THE ARGENTINE PASS ACROSS THE CONTINENTAL DIVIDE IN CENTRAL COLORADO. An archaeological survey of the right-of-way of a Public Service of Colorado transmission line indicated unusual site density in high mountain valleys on both approaches to Argentine Pass. Fifteen sites containing artifactual materials representing the Paleo-Indian, Archaic, and late prehistoric periods were found. Specimens were primarily flaked quartzite and chalcidony, with ground stone coming from one site and Plains affiliated ceramics from another. Some sites are interpreted to be short term, probably functionally specific sites for tool reworking and game preparation. Others are single component or multi-component occupation sites, reflecting seasonal harvesting of floral and faunal resources. (45)

Moure, Alfonso (see Cano, Mercedes) (40)

Mulinski, Thomas (Arizona) THE USE OF FETAL MATERIAL AS A MEASUREMENT OF STRESS AT GRASSHOPPER PUEBLO. While demographic investigations are becoming more prevalent in studying the dynamics of prehistoric society, it is also becoming clear that conceptually there are two ways of approaching population size, structure, and distribution, i.e., demographic variables can be viewed as either dependent or independent. This paper argues that demographic variables are indeed the result of environmental (physical, biological, and socio-cultural) factors and can serve indirectly as measures of environmental stress. Furthermore, a series of hypotheses concerning the aggregation and abandonment of a large prehistoric southwestern Pueblo, Grasshopper Ruin, in east central Arizona will be considered using data specifically on population composition. The major emphasis here is not to attempt a thorough examination of these hypotheses but to show the feasibility of using information of fetal individuals as well as other subadults and incidentally to point out the utility of other biological measures in assessing a population response to stress. With respect to Grasshopper Pueblo, of 530 individuals analyzed so far in preliminary fashion only, 37 (6.9%) of them are the remains of fetuses; another 20 (3.7%) are either late term fetuses or neonate; all of the subadults combined account for 64.1% of the skeletal sample. The percentage of fetal individuals present suggests rather adverse environmental conditions. However, these data alone do not seem to support the idea, as suggested by the floral and faunal evidence, that there was more stress earlier in the occupation of the site than later. (5)

Muller, Jon (Southern Illinois) KINCAID SITES AND SOUNDINGS: ARCHAEOLOGICAL RESEARCH, 1967-76. The research program of the Black Bottom Project of the Southern Illinois University Field School in Archaeology has resulted in an unusually complete picture of settlement during Mississippian times in the lower Ohio Valley. The first phase of the project, which still continues, is aimed at achieving virtually total site location survey for the Kincaid site environs. The survey is virtually complete for the Black Bottom surrounding Kincaid, but survey is being continued with a sampling of areas farther away from the central site. A second phase of research is beginning to test ideas about the nature of the relationships of the various sites around Kincaid to each other and to the central mound group inhabitants. Surface survey and test excavations at numerous small-to-medium size sites suggest that Mississippian population size in the Kincaid community was similar to the societies described by the first European explorers elsewhere in the Southeast. (42)

Munson, Patrick J. (Indiana) CHANGES IN AND RELATIONSHIPS OF SUBSISTENCE, SETTLEMENT, AND POPULATION IN THE CENTRAL ILLINOIS RIVER VALLEY. Changes in resource zone utilization and site densities in the central Illinois River valley from Middle Woodland through Late Woodland are examined within the larger framework of trends manifested from Late Archaic through Mississippian. The trends in this area, which seem to be paralleled throughout the Midwest and perhaps most of eastern North America, are marked by two major points of inflection in settlement, one occurring during Early Woodland and the other at the end of Late Woodland. This pattern has traditionally been assumed to correlate primarily or entirely with the appearance and role of food production. The role of food production in this area, plus certain technological innovations and facilities are examined and an alternative hypothesis encompassing a variety of factors is proposed to explain these changes. (9)

Neff, Jeffrey M. (Arizona State) PERSPECTIVES ON THE MANAGEMENT OF ARCHAEOLOGICAL DATA. The computer has opened new possibilities for the use of archaeological data. Data that has long lain dead and forgotten on a museum shelf or site survey file may

be made available to the archaeologist for his use through the use of computer techniques; indeed, this may extend to more than the mere computerization of the data but to the integration of the various sources of the data. A systems approach is taken in the analysis of this problem. Examples from the activities of the Arizona State Museum and other institutions in the Southwest are used to illustrate the points. Aspects of the Regional Archaeological Management Information System (RAMIS) proposal for the southwest are considered. (43)

Nelson, Sarah M. (Denver) A REEXAMINATION OF COLORADO WOODLAND POTTERY. Since the original "typology" of High Plains Woodland pottery was created on an intuitive basis it seems worthwhile to reexamine the pottery with the more sophisticated instrumentation now available. Details of the manufacture have been determined through microscopic analysis, X-ray spectrometry, and the electron scanning microscope. Statistical analysis of these traits and visible characteristics reveals a firmer based typology. (45)

Netherly, Patricia J. (SUNY College Fredonia) CHIMOR CONQUERED: THE INCA OCCUPATION OF THE CHIMU KINGDOM. The impact of the Inca occupation varied from valley to valley within the conquered Chimu state. Sixteenth century Spanish documents and field reconnaissance show certain trends consistent with Inca treatment of the smaller kingdoms of the Central Coast. A policy of containment and surveillance is particularly evident for the Moche valley, site of the Chimu capital of Chan Chan, while overt control is more common in the valleys to the north. (18)

O'Brien, Patricia J. (Kansas State) KANSAS CITY AREA SETTLEMENT PATTERNS. This paper compares the settlement patterns of two drainages of the Missouri River within the Kansas City area. Brush Creek, at present a tributary of the Missouri, has 50 prehistoric sites while Camp Branch, a tributary of the Little Platte River—20 miles in from the Missouri, has nine prehistoric sites. Brush Creek has occupations of Archaic (40%), Kansas City Hopewell (17%), Late Woodland (13%), and Steed-Kisker (30%). Camp Branch has Archaic (78%), Kansas City Hopewell (14%), and Steed-Kisker (7%) occupations. These data suggest the Camp Branch area—an extreme upland forest-prairie boundary zone—was occupied most densely by peoples who were thought to be hunters and gatherers. The later agricultural Steed-Kisker people seem to prefer the tributaries nearer to the Missouri River and its resources as did the Late Woodland populations. (45)

O'Connell, Barbara Heminger (Northwestern) ADAPTIVE EFFICIENCY IN THE LOWER ILLINOIS VALLEY: FLUCTUATING ASYMMETRY AS A MEASURE OF DEVELOPMENTAL HOMEOSTASIS. The fluctuating asymmetry of various bilaterally measurable metric and non-metric skeletal traits offers a potentially useful means for assessing the adaptive efficiency of paleopopulations. The use of fluctuating asymmetry as such a measure is adapted from developmental genetics research, where asymmetry is used as an indicator of developmental homeostasis. It has been demonstrated that fluctuating asymmetry is greatest and therefore development least stable during periods of environmental change with subsequent adaptation to the new environment resulting in a stabilization or canalization of development and corresponding symmetry. This study investigates the patterns of asymmetry in Woodland and Mississippian populations from the lower Illinois Valley. (6)

Olsen, Stanley J. (Arizona) DOMESTICATED ANIMALS IN PREHISTORIC SOUTHWESTERN UNITED STATES WITH EMPHASIS ON THE ORIGINS OF THE DOMESTIC DOG. Two animals were domesticated by inhabitants of the prehistoric southwestern United States. These were the turkey (*Meleagris gallopavo*) and the domestic dog (*Canis familiaris*). Three groupings of dogs of differing sizes and proportions are recognized from archaeological sites in the southwest. All of these are well defined domesticates and are in no way the ancestral types, as yet undiscovered. The possible ancestry of the domestic dog in the New World and the taxonomic position of these later more advanced forms are compared and discussed. The turkeys were well established as domesticates from at least early Basketmaker times. Eggshells, poult, and pens indicate the importance of this bird to the early inhabitants of North America. (25)

Osborn, Alan (New Mexico) ACONITE AND OLD SLATES: A SUGGESTED EXPLANATION FOR CHANGES IN LITHIC RESOURCE UTILIZATION. As early as 1871 Oluf Rygh pointed out the striking similarities between ground slate lithic assemblages of northeastern North America and Scandinavia—specifically Norway and Sweden. Since that time archaeologists have found similar slate implements in Labrador, Alaska, the Northwest Coast, the Aleutian Islands, Eastern Russia, China, and Lake Baikal in interior U.S.S.R. Most of the discussions concerning these slate tool assemblages have focused upon the problem of "origins" of the slate grinding technology and its subsequent diffusion throughout the Arctic. Relatively abrupt changes in lithic resources involving a shift from siliceous or igneous raw materials to slate have generally been attributed to either diffusion of technology, invasions of Eskimoan groups, or to exhaustion of local raw materials. The aim of this paper is to present an argument for the shift in lithic materials and assemblages based upon the exigencies of early sea mammal hunting by hunter-gatherers living between 40° and 70° north latitude and the use of plant alkaloid poisons such as aconite. (40)

Ossa, Paul P. (Skidmore) THE ILLUSTRATION OF CHIPPED STONE ARTIFACTS IN ARCHAEOLOGICAL REPORTS. The portrayal of chipped stone artifacts is unstandardized, often uncommunicative, in archaeological reports. Illustrations should be

diagrams, interpretations, of the piece portrayed. The stages involved in this interpretation are discussed. A comparison of various processes for the production of these diagrams is developed and some standard procedures proposed. (38)

Otero, Lorraine M. (Americas) OPHIDIAN CHARACTERISTICS AS A CLUE TO UNDERSTANDING OLMEC ICONOGRAPHY. This paper proposes that the general acceptance of an early based Jaguar Cult and its evolution into later serpent/feathered, serpent/rain cults obscures the role played by the reptile in Olmec iconography. By assigning a developmental sequence that begins with the jaguar and explaining later deviations from the basic jaguar form as progressive abstractions, we are oversimplifying the case. The appearance of various reptilian elements in contexts previously assigned to the jaguar suggests that further analysis is needed. It is therefore hypothesized that by isolating those elements which are purely ophidian in character and demonstrating their iconographic use, it can be shown that the reptile was an integral as well as a separate part of the Olmec belief system. The depiction of ophidian fangs, with the inclusion of the poison canal and poison duct, appear on monumental sculpture, reliefs, and portable objects. The assignment of fangs with poison canals or ducts to the jaguar repertoire is therefore erroneous, and limits our understanding of the significance of both the jaguar and the serpent motifs and their use in Olmec belief systems. (23)

Pailles, Richard A. (see Dirst, Victoria) (4)

Parmalee, Paul W. (Tennessee) THE AVIFAUNA FROM PREHISTORIC ARIKARA SITES IN SOUTH DAKOTA. During an approximate 15-year period from about 1950 to 1965, numerous anthropologists representing at least a dozen institutions were periodically involved in archaeological salvage of Plains sites in the Middle Missouri Valley. In most instances, the cultural aspects of subsistence and the utilization of native fauna in general were not of primary interest, and the vast quantities of then-available midden fauna were not adequately sampled. Nevertheless, some animal bones were salvaged, and this discussion involves the study of the avian remains from 42 prehistoric Arikara sites along the Missouri River in South Dakota. Approximately 2,700 bird elements, representing about 60 species, were identified. Although mammals, especially the bison, elk, deer, and pronghorn, provided the greatest quantity of meat in the diet of these people, birds were also of special significance as supplemental food (e.g., waterfowl, grouse) and because of the part they played in the cultural and ceremonial activities of the Plains Indian. The predominance of remains of such groups as eagles, hawks, falcons, owls, and ravens in these sites is indicative of their special cultural significance; in some instances, such as eagle trapping by the Hadatsa and Mandan, they can be correlated with ethnohistoric accounts dealing with the utilization of birds. (25)

Pearsall, Deborah M. (Urbana) PRELIMINARY REPORT OF THE BOTANICAL ANALYSIS OF REAL ALTO, ECUADOR. This paper presents the preliminary results of the analysis of botanical remains from site OGCH-12, a village settlement of Valdivia culture in the Chanduy Valley, Ecuador. Botanical evidence dealing with the presence of a developed maize agricultural system is discussed and a scheme of plant utilization presented. Special attention is focused on the technique of phytolith (silica skeleton) analysis as a valuable tool for the identification of domesticated cereals in archaeological situations of poor botanical preservations. (18)

Pierson, Lloyd M. (BLM, retired) WHAT'S WRONG WITH CULTURAL RESOURCE MANAGEMENT IN WASHINGTON? Many of the problems besetting cultural resource management today are due to the fact that very few of the land managing and property managing Federal agencies have any professional archaeological expertise on their Washington staffs. A recent survey of these agencies shows that we are not the masters of our own shop. (31)

Pippin, Lonnie C. (Washington State) ARCHAEOLOGICAL AND PALEOECOLOGICAL INVESTIGATIONS AT GUADALUPE PUEBLO, SANDOVAL COUNTY, NEW MEXICO. The initial occupation of Guadalupe Pueblo, a dual occupation site in the middle Rio Puerco Valley, represents a Chacoan satellite community. I propose this and other known outlying Chacoan "town" sites were probably preplanned communities which maintained networks of communication with Chaco Canyon while interacting with intruded populations. The initial configuration of Guadalupe Pueblo was later modified by a thirteenth century reoccupation. This reoccupation presents data relevant to previous hypotheses of Coalition Period cultural-historical relationships. Research includes exploration of potential environmental and/or sociopolitical forces responsible for twelfth and fourteenth century abandonments. (29)

Popelish, Linda (NPS) STYLES OF ROCK ART IN CANYON DEL MUERTO. Computerized data from the 1975 National Park Service survey of Canyon del Muerto, Canyon de Chelly, were used to investigate the distribution of rock art styles. Styles were defined by detailed analysis of elements of the content and of the technique of execution for a number of diagnostic motifs. The distribution of these styles was studied in relation to time period and spatial location of sites, in order to test hypotheses of social interaction in the Canyon system. (29)

Porter, James W. (Loyola) THIN SECTION ANALYSIS OF CANONIA AREA CERAMICS. The petrographic microscope is used to study the details of ophidianic paste features. The

precise identification of mineral and/or organic constituents found in the pottery allows the researcher to suggest various archaeological explanations for the variation observed. The presence of grog tempering in the Mississippi River valley provides a wealth of data for speculations regarding the reuse of pottery as temper. A shift to shell tempering is viewed in its functional aspects and points to a technological innovation by prehistoric potters; allowing them to utilize a wide variety of muds for paste with less fear of failure. Experimentation with fired test tiles of local mud sources has been useful in reconstructing the possible materials used by prehistoric potters of the St. Louis area. (11)

Pozorski, Sheila (Texas-Austin) LATE PREHISTORIC LLAMA REMAINS FROM THE MOCHE VALLEY, PERU. A study focusing on subsistence through time and space within the Moche Valley resulted in large collections of llama bone from sites dating to the Early Intermediate period, Middle Horizon, and the Late Intermediate period. Using contextual information available, distributions of specific bone types are evaluated both within and between sites studied. Cultural alteration of bone fragments is examined. Burned bone proportions are correlated with cooking practices. Specific information on butchering practices in the form of cut marks is explored in detail in an effort to reconstruct ancient methods and procedures for meat processing. (18)

Pozorski, Tom (Texas-Austin) CHRONOLOGY AND SOCIETY AT CABALLO MUERTO, PERU. Excavations during 1973 and 1974 shed new light on the early complex known as Caballo Muerto, located in the Moche Valley, Peru. Evidence indicates that the eight corporate labor mounds that make up the complex can be seriated in chronological order based on architectural and ceramic characteristics. A developed, ranked society is seen to have constructed the mounds. The time range for the whole complex is during the Initial period and Early Horizon, though it is noted that the distinction between the two time periods, as at many other sites in northern Peru, is not clear. (18)

Price, James E. (Missouri-Columbia) CURRENT RESEARCH ON THE POWERS PHASE SETTLEMENT SYSTEM. Recent field reconnaissance and excavation have yielded data on the distribution of Powers phase sites relative to elevation, landforms, soil types, and critical resources. Excavation of small limited activity sites has provided insight into the role of such sites in the Powers phase settlement system. (45)

Prindiville, Mary (see Storer, John H.) (26, 27)

Pring, Duncan (Cambridge) EXCAVATIONS IN NORTHERN BELIZE, 1975-76. Descriptive presentation of recent results of excavations on Preclassic and Classic Maya sites including Cuello, Colha, and Nohmul, in the third and fourth excavation seasons of the British Museum/Cambridge University Project. (12)

Puleston, Dennis E. (Minnesota) EXPERIMENTING WITH THE ECOLOGY OF A COMPLEX PREHISTORIC AGRICULTURAL SYSTEM. The archaeology of an irrigated flood plain agricultural system utilized by the ancient Maya provides us with a limited understanding of its mechanics and significance. Experimental reconstruction and use of a portion of this canal-field system suggest it was based on the manipulation of a complex ecological interrelationship among crops, soil composition, fish populations, variables of temperature and moisture, and the labor of the prehistoric population. In this case detailed study and understanding of the ecology of this system seems to provide major insights into the symbolic logic of the prehistoric civilization as reflected in the remnants of its mythology and iconography that are left to us. (21)

Purdy, Barbara A. (Florida) THE APPLICATION OF INSTRUMENTAL TECHNIQUES TO PREHISTORIC STONE REMAINS OF FLORIDA. In an effort to determine whether people in Florida were seasonal hunters or permanent residents during the Paleo-Indian period, artifacts from this time period were submitted to a number of analytical tests. Results from a limited sample indicate that the archaeological remains studied were manufactured of non-Florida materials. These investigations need to be expanded to ascertain if this situation is the rule or the exception. (38)

Rackerby, Frank (Southern Illinois) THE SELLING OF KINCAID: PUTTING THE SITE IN THE PUBLIC DOMAIN. During the 1930s the Kincaid site was excavated extensively; it was generally believed that this site rivaled only Cahokia in terms of prehistoric significance. Active interest ceased with World War II. During the late 1960s attempts were made to put this important site in the public domain. This has finally been achieved. The history of the attempts to acquire the site as well as its future development will be discussed. (42)

Ramsey, James R. (Vanderbilt) ILLUSTRATIONS OF PORTABLE ART IN THE MIXTEC MANUSCRIPTS. In previous research the author has attempted to characterize area styles within the corpus of Mixtec minor arts, including ceramic vessels and sculpture, gold, jade, and turquoise mosaic. Illustrations of art works in the Mixtec-style history and religious manuscripts may be compared with actual surviving works from the style areas. Relationships between individual manuscripts and specific areas may be noted a method already used to relate Codex Borgia to the Venta Salada Phase in the Tehuacan Valley. The limitations of this approach become apparent in the study of religious manuscripts which contain illustrations of art forms which do not correspond to surviving works. Proveniences may not be demonstrated in such cases, and one must conclude that the manuscript painters depicted forms not known through excavation, or that they enjoyed a high degree of artistic license. (26, 27)

Ranere, Anthony J. (Temple) A REAPPRAISAL OF THE MONAGRILLO SHELL-MIDDEN, AN EARLY CERAMIC SITE ON THE PACIFIC COAST OF PANAMA. Research reported by Willey and McGimsey in 1954 (The Monagrillo Culture of Panama. Peabody Museum Papers, vol. 49, no. 2) established the Monagrillo ceramic complex of central Panama as one of the earliest in the New World. Questions about the subsistence base associated with this early pottery prompted the re-excavation of the Monagrillo site during the summer of 1975. Emphasis was placed on (1) excavation by small stratigraphic units, (2) recovery of faunal and botanical remains, including charcoal, and (3) collection of sediment, pollen, and shell column samples. This paper reports the results of the research. (14)

Ratray, Evelyn (INAH) CULTURAL INTERACTION BETWEEN TEOTIHUACAN AND THE VALLEY OF OAXACA INDICATED BY CERAMIC PASTE ANALYSIS. No abstract received. (11)

Ratray, Evelyn, C. (INAH) THIN ORANGE: A TEOTIHUACAN TRADE WARE. A study of Thin Orange ceramics from recent surveys and stratigraphic excavations at Teotihuacan have yielded valuable information on the developmental sequence of Thin Orange Wares at Teotihuacan. The ware has great potential for precise cross-dating and for tracing Teotihuacan-controlled trade networks. (37)

Reaves, Roy W., III (NPS) COMPETITION IN THE ROLE OF CONTRACT AWARD. This paper will address the means of advertising contract work through the Commerce Business Daily and circularization of the Sopes-of-Work. Once the proposal responses are received, they will be evaluated in terms of four criteria: (1) comprehension of research problems and attendant methods, (2) qualifications of personnel, (3) organizational capability to conduct the research, and (4) feasibility of budget and work scheduling. The review procedure, once the research design proposals are received by the Interagency Archaeological office, involves a committee that will make inspection of the proposal; first the Research Designs and only secondarily the sealed and signed budget estimates. In special cases, non-Federal outside review consultants will be utilized but in all cases the final decision of award will be by the Contracting Officer. No prejudice to offerer will be shown by sex, age, race, or regional origin under the authority of the Equal Opportunity Act. Cronyism is out and individual merit in proposal formulation is to receive highest merit. (13)

Redman, Charles L. (Binghamton) MULTIVARIATE, NESTED APPROACH TO ARTIFACT ANALYSIS. Techniques of classification, methods of analysis, and conceptual foundations of artifact analysis are discussed in relation to two diverse sets of archaeological data, twelfth century pueblos and a medieval Moroccan town. Three basic principles are advocated to maximize potentially interpretable information. (1) The state of the archaeological record was caused by a series of semi-independent behavioral variables. Archaeological material exists in a form that can be recorded according to numerous semi-independent attributes. Consequently, information should be recorded and analysis proceed so as to maintain the diversity of information, i.e., patterning should be first sought at the attribute level and only subsequently should these attributes be clustered into types and the patterning of types delineated. (2) Wherever feasible, the attribute values should be organized into a nested system. (3) The various categories of information must be collected in a compatible format so that analysis can combine artifactual, architectural, and depositional data, as well as integrating unit by unit tallies with item by item attribute studies. (33)

Reed, Nelson (Washington-St. Louis) VERIFICATION AND STRATEGIES IN EXPERIMENTAL REPLICATION. It is argued that functional competency and duration of test period is more important than the elegance of preconceived research designs, in experimental replication. Various degrees of limitation must be accepted, depending on the complexity of the artifact or process under study, and these limitations are in inverse ratio to the level of verification that can be reached. An interaction with other subsystems of the material culture are a necessary but complicating factor. These arguments will be supported by examples of work done on digging tools, pottery, and basic resources. (21)

Reid, J. Jefferson (Arizona) ARCHAEOLOGY AS A SECOND LANGUAGE. Strictly speaking, archaeology will not be the death of the language. It may, however, be the death of our understanding of past human behavior. Old linguistic habits and current word-fads continue to impede more precise description and explanation. Improprieties in the many dialects of archaeology are discussed and illustrated. Directions for a post-Babel era are prophesied. (39)

Rueyman, Jonathan E. (Illinois State) TWO POSSIBLE SOLSTICE ALIGNMENTS AT PUEBLO BONITO, CHACO CANYON. Based on the ethnographic data, it is hypothesized that prehistoric Pueblo peoples incorporated astronomical alignments into their structures, the better to regulate their calendar and to play and implement their farming systems. Planning of foraging activities and the expansion and consolidation of priestly power and control are also discussed. (4)

Reynolds, Peter (Butser Farm) THE BUTSER ANCIENT FARM RESEARCH PROJECT. The aim of this unique project is to reconstruct and work an Iron Age farmstead dating to approximately 300 B.C. In effect the project is the first open-air scientific research laboratory in the United Kingdom. The initial three-year program has been devoted to establishing the farmstead and to the examination of the fundamental philosophy and

potential contribution of experimental work. The prime assessment underlines the inadequacy of both the initial excavated data and their acquisition. Preliminary results of several experimental programs argue the immediate need for a far more complex interpretation of prehistoric economy than has been yet proposed. (21)

Reynolds, William E. (Arizona State) DEFINING RESIDENCE PATTERNS IN PRE-HISTORIC PUEBLO SITES. The work reported in this paper investigates the question of residence patterning in prehistoric Pueblo Sites. A model of matrilocality is generated from ethnographic data focusing on the male-related activity of cutting secondary roof beams. This model is tested at the site of Red Rock House using the statistical technique of Discriminant Function Analysis. The classification of roof beams by the discriminant function technique strongly supports the model generated and the hypothesis of matrilocality. (4)

Reynolds, William E. (see Wittlessey, Stephanie) (41)

Rice, Don S. (Florida State Museum) MIDDLE PRECLASSIC MAYA OCCUPATION OF THE YAXHA AND SACNAB LAKE BASINS, EL PETEN, GUATEMALA. Recent archaeological settlement surveys around Lakes Yaxha and Sacnab, El Peten, Guatemala, have provided new data on the nature of Middle Preclassic (1000-250 B.C.) Maya populations in the Central Peten. Loci of apparent domestic and civic activities have been recovered and the Eb/Tzec phasing of Mamon horizon ceramics, defined on seriation grounds at the site of Tikal, has been confirmed stratigraphically. The settlement configuration and architectural remains identified for the period suggest certain institutional characteristics of the earliest inhabitants of the lake basins and lead to speculation on the initial migrations into the Central Peten. (12)

Rice, Prudence M. (Pennsylvania State) CERAMIC CONTINUITY IN THE VALLEY OF GUATEMALA: AN EXAMPLE OF RESOURCE UTILIZATION. Identification of prehistoric centers of pottery manufacture is a difficult task, but it may be facilitated in regions where contemporary potters work. One such region is the valley of Guatemala, where contemporary potters make distinctive "white wares," similar to a small component of Formative period pottery in the valley. The question of whether the same clays used today were used by Formative potters in the valley was explored by a variety of methods, including examination of physical properties, petrography, and neutron activation analysis. Results of the studies suggested a very long pattern of exploitation of these clay resources. (12)

Riordan, Robert V. (Maryland Historical Trust) CERAMICS AND SETTLEMENT: A MISSISSIPPIAN EXAMPLE FROM THE THIRTEENTH CENTURY A.D. Three partially-excavated Mississippian sites have been radiocarbon-dated to approximately A.D. 1200. No sites in the Black Bottom except Kincaid retain any surface evidence of large-scale construction, which at Kincaid is believed to postdate 1250. If nodal centers existed in the settlement system before monumental construction marked them, then it is hypothesized that the presence of significantly larger proportionate amounts of pottery fashioned along lines dictated by other than utilitarian needs will identify such nodal sites. Results of inter- and intra-site ceramic comparisons, employing the chi-square statistic, tend to confirm the hypothesis. (42)

Rock, James T. (Klamath National Forest) CONSERVATION ARCHAEOLOGY: A PRACTICAL EXAMPLE. The Klamath National Forest has developed a Cultural Resource Management Program that incorporates professionally-trained archaeologists and in-service-trained archaeological technicians. The utilization of professional and nonprofessional recorders is felt to minimize cost to the Forest while maximizing information gain. This paper outlines the duties and responsibilities of both parties, and documents the usefulness of team effort in a mini-max data recovery system. (31)

Rogers, Anne F. (Georgia) SURFACE COLLECTING AND SAMPLING: AN EMPIRICAL ANALYSIS. Simple random and stratified random sampling techniques are applied to artifacts obtained from controlled collecting of single sites in order to determine the efficiency of these techniques in providing representative samples of the available surface material. (41)

Rogge, A. E. (Arizona) SAMPLING SKEWED POPULATIONS: A COMMON ARCHAEOLOGICAL SAMPLING PROBLEM. The problem of making valid parameter estimates on the basis of small samples from highly skewed populations is being recognized as characteristic of many archaeological sampling situations. Statistical theory for such situations is poorly developed. The results of a computer-assisted, simulation sampling study based on skewed data from the completely surveyed proposed Orme Reservoir locality in central Arizona are presented. The paper discusses selecting appropriate sampling schemes and determining adequate size when skewed data are to be sampled. (33)

Roper, Donna C. (Missouri-Columbia) SETTLEMENT PATTERNS ON THE POMME DE TERRE RIVER, MISSOURI. Research at Rodgers Shelter, Missouri, has produced a cultural-environmental model for the shelter. However, broader subsistence-settlement pattern models must be based on more than a single site. Settlement patterns in the Pomme de Terre River Valley as a whole are considered, using data gathered from current survey work in the Harry S. Truman Reservoir, supplemented by data gathered previously in the

Pomme de Terre Reservoir. Particular emphasis is placed on the more prominently represented Late Archaic and Woodland periods. (45)

Rothchild, N. A. (New York) "STRANGER IN A STRANGE LAND": A CONSIDERATION OF SAMPLING AND TESTING. Archaeologists working in the northeastern United States have employed methods of sampling and testing based on models developed in the Near East, and the Southwest and western United States. These models should not necessarily be assumed to be applicable to the northeast. The latter area has its own characteristics of ground cover, terrain, and recent development, as well as unique settlement patterns. This paper reports on a number of sampling and testing techniques evaluated from a series of public archaeology surveys done recently in New York and New Jersey. Theoretical approaches applicable to this area are discussed. (24)

Rubertone, Patricia E. (SUNY Binghamton) INTERACTION IN A COMPLEX SOCIETY: INFERENCES FROM CERAMIC ATTRIBUTE ANALYSIS. The nature of interaction and ways of measuring these processes in artifact assemblages are critical to the explanation of cultural behavior. In its most general sense interaction involves an interchange of energy, information, goods, and services or the movement of people. These processes may take place on a variety of levels: between individuals; between multiple groups; between communities; or in other cases between regions. It is possible to identify the type of interaction and delimit the entities involved by focusing on the variability within classes of ceramic attributes—morphological, technological, decorative, and metrical, and their interrelationships. This analysis will focus on the medieval port-fortress of Qsar es-Seghir and examine patterns of interaction as they are reflective of the demographic and organizational variability within the population. Ceramic analysis includes detailed morphological attribute recording systems which along with alternate lines of data will be used to infer interaction processes. (33)

Sackett, James R. (UCLA) UPPER PALEOLITHIC ASSEMBLAGE VARIABILITY IN THE PERIGORD IN SOUTHWESTERN FRANCE. Excavation in more than 150 of the Perigord's rich cave and abri shelter sites has established the world's most elaborate and complex succession of Upper Paleolithic industries. This paper reviews the history of thought regarding the significance of assemblage variability in this regional succession, laying special emphasis upon recent evidence and argument concerning the apparent contemporaneity of certain assemblages which differ considerably from one another in terms of the established systematics. In addition, it summarizes the results of new excavations of open air sites in the region, which—aside from the valuable information of intra-site variability provided by their broad and highly structured occupation surfaces—are highly relevant because their many novelties indicate by contrast that an appreciation of Upper Paleolithic variability based upon the shelter evidence alone must inherently be skewed and incomplete. (40)

Sanger, David (Maine) MAN AND PALEO-ENVIRONMENTS IN CENTRAL MAINE. Man's access to and movements within Maine were primarily controlled by the distribution of glacial ice, land, and sea in early post-glacial times. By at least 12,000 B.P. the land was clear of ice and covered with a tundra vegetation. The few fluted points are presumed to be associated with the tundra. A dramatic shift in vegetation occurred at 10,000 B.P. with increasing amounts of pine, birch, and oak. Sea levels rose from -60 m. to -6 m. by 3000 B.P. with high tidal amplitudes in the Gulf of Maine after 4000 B.P. Following a long period of low human activity, there was an influx of a Laurentian-related culture about 5000 B.P., coincident with an increase in deciduous taxa. A shift in pollen to modern conditions was accompanied by a replacement of the indigenous cultures by a Susquehanna-related population by about 3700 B.P. From that point until the historic the cultural record suggests populations adapting to essentially modern coastal and interior environments. (28)

Santeford, Lawrence G. (Southern Illinois) CHERTING THE ISSUE: LITHIC STUDIES IN SOUTHERN ILLINOIS. In the preliminary report on Kincaid, prepared by Cole and others and published in 1951, description of chipped stone tools is based on morphological categorization. Since that time, new approaches to lithic studies, particularly functional analysis, have been introduced in archaeology. In view of recent work in the Black Bottoms of southern Illinois, and new methods of analysis, lithic studies of the Kincaid area are updated by re-examination of previously excavated material. Consideration is also given to material collected in recent years from other sites in the Bottoms. (42)

Santley, Robert S. (Pennsylvania State) FORM AND FUNCTION OF PRECLASSIC RESIDENTIAL GROUPS: LOMA TORREMOTE AS A TEST CASE. This paper proposes to show that prehistoric activity areas and the social groups responsible for their deposition in the archaeological record can be determined when relatively large, excavated materials are subjected to multivariate statistical analysis. In this particular case, the data came from the large Middle and Late Formative site of Loma Torremote, located approximately four kilometers west of the modern town of Cuautitlan in the State of Mexico, where a series of test excavations and a large lateral excavation were undertaken to determine the spatial extent and the behavioral character of the Preclassic occupations. (31)

Sauer, Norman J. (Michigan State) THE POSSIBLE EFFECTS OF EUROPEAN CONTACT UPON THE HEALTH OF A GROUP OF NATIVE AMERICANS. An analysis of over 100 eighteenth century skeletal specimens from the Saginaw Basin in lower Michigan has yielded clues about the interaction of culture change and health. The remains of the Central

Algonquian population represented at the Fletcher site were compared to several Late Woodland skeletal samples from Michigan and Southern Ontario with an emphasis upon nutrition-disease indicators. The Historic period group was found to be shorter, to have a higher frequency of gross linear enamel hypoplasia, and possibly a lower life expectancy than each of the Prehistoric groups. One factor which may account for many of these differences is the interaction between the Native Americans and European traders. Such an explanation is consistent with both historic and recent accounts of contact between industrialized peoples and non-industrialized populations around the world. In light of this evidence, a model is presented which attempts a general reconstruction of pre- and post-contact subsistence and some possible effects upon health. (5)

Sayadar, Steven (Cornell) QUANTITATIVE EXPERIMENTS IN ARCHAEOLOGY: NEW APPROACHES TO THE STUDY OF PREHISTORIC HUMAN ADAPTATIONS. A systematic quantitative approach to experimental archaeology is presented which focuses on bio-energetics for the reconstruction of energy use patterns in extinct cultures and the application of large scale models to analyze the comfort potential of prehistoric houses. This approach is seen to have significant value in a systematically oriented framework for archaeological explanation. (21)

Sayre, E. V. (see Rattray, Evelyn) (11)

Sayre, Edward V. (see Harbottle, Garman) (32)

Scarry, John F. (Case Western Reserve) SPATIAL ANALYSIS OF THE BOSTON LEDGES ROCK SHELTER B: A COMPARISON OF METHODS. The spatial distributions of five artifact classes from an Early Late Woodland occupation in northern Ohio were analyzed by several different methods to determine the nature of patterning in the distributions. Six methods were utilized: dimensional analysis of variance, mean crowding analysis, Morisita's index of aggregation, Poisson series analysis, and mean and median estimation nearest-neighbor analyses. The methods are compared on the basis of data requirements, ease of application, and information supplied. Finally, an interpretation of the spatial patterning and recommendations as to the use of the various analytical techniques are offered. (33)

Schalk, Randall F. (NPS) THE USE OF ORBITAL IMAGERY IN ARCHAEOLOGICAL RESEARCH. Application of orbital imagery (particularly LANDSAT imagery) to analysis of a regional economic system in the San Juan Basin, New Mexico, is discussed. It is suggested that Satellite imagery provides valuable classes of information about the environmental variables which impinge upon and constrain cultural systems. Utilization of such imagery offers archaeologists the scientific challenge of moving beyond the locating of the results of human behavior (i.e., archaeological sites, cultural features, etc.) to attempting to monitor the ecological determinants which produced those results. In this context, the authors maintain that satellite imagery will ultimately prove useful in ways quite distinctive to many previous applications of remote sensing in archaeology. (19, 20)

Scheick, Cherie (Arizona) A CASE OF THE BOSTON TEA PARTY: 1976. In an effort to ensure "professional standards," an archaeological register has been proposed. The authors suggest that the proposal is premature unless the senior members of the profession accept the responsibility of encouraging, promoting and guiding junior members in attaining those standards. As a representative body of the profession, the Society for American Archaeology has the potential for establishing a precedent along these lines by actively seeking junior member participation in Society affairs. Specific proposals for participation in the various functional levels are suggested. This paper is a call for legitimization of junior professionals through active involvement and for cooperation and communication between all facets of the profession for ensuring professional standards. (31)

Scheick, Cherie (see Van West, Carla) (31)

Schiffer, Michael B. (Arizona) ARRANGEMENT: A POSSIBLE TECHNIQUE FOR ESTABLISHING RELATIVE TEMPORAL RELATIONSHIPS OF MULTICOMPONENT SITES. Standard techniques of item seriation are based on the assumption that events are discrete and of short duration. This assumption is unrealistic in most actual cases of assemblage seriation. A preliminary technique (called "arrangement") is described which makes no such assumptions. (31)

Schmidt, Peter (Idaho State Historical Society) STRUCTURALISM AND ARCHAEOLOGY: CAN YOU DIG LEVI-STRAUSS? The oral traditions of the Haya people (Tanzania), when structurally analyzed indicate a political-ritual opposition between two major social groups. The structural opposition which are manifest in oral history are also expressed in the archaeological record. This paper argues that structural analysis leads to more complete explanation of archaeological remains and that it also leads to a more complete integration of archaeological data with other cultural phenomena such as indigenous systems of historiography. Finally, it is argued that this methodology may have cross-cultural applications. (39)

Schoenwetter, James (Arizona State) ARCHAEOLOGICAL POLLEN ANALYSIS OF CAHOKIA AND ENVIRONS. Palynological research initiated on the American Bottoms in the early 60s as an aspect of salvage studies has now been completed. The present work combines results of pollen records from stratified geological contexts and the fill of the

sub-Mound 51 pit with data from Mississippian house floors, wall trenches and midden deposits. Chronological control is provided through radiocarbon dates corrected for correlation with tree rings and the ceramic phases recently established for Mississippian developments at Cahokia. Five pollen zones dominated by NAP are recognized for the sequence, four of which relate to the Mississippian Period. Paleocological reconstructions are not provided as inadequate control data reduces any such reconstruction to something less than an educated guess. But correspondence with pollen data from Mill Creek and Powers Phase sites provides external substantiation of the American Bottoms pollen chronology. Arguments dating the initiation of the Moorehead phase before A.D. 1160 and initiation of the Sand Prairie phase at A.D. 1450 will be presented. (24)

Schoenwetter, James (see Gish, Jennifer) (32)

Scholtz, Sandra (Arkansas Archeological Survey) A COMPUTERIZED ARCHAEOLOGICAL PHOTOGRAPH AND SLIDE FILE. Information handling needs in archaeology can encompass peripherally related data, the use of which may be made more efficient by computerized data files. The Arkansas Archeological Survey has a large and continuously growing black and white photograph and color slide collection. A computerized file design is being planned to improve the efficiency and ease of utilization of the collection. The file design is characterized by the structuring of data to minimize clerical time for record preparation and space requirements for data storage. The file structure is largely internal to the design so that the casual user can process the file with minimal assistance. (43)

Schreiber, Katharina J. (see Isbell, William H.) (18)

Scoville, Douglas H. (NPS) REGIONAL CENTERS: OPPORTUNITIES FOR FEDERAL-INDUSTRIAL PARTNERSHIP IN CULTURAL RESOURCES MANAGEMENT. A synthesis of the comments and observations about regional centers by representatives of Federal land managing agencies is provided; a general statement of the scope, role, function, and relationship of Federal-institutional partnership is offered; the legal and policy basis for cooperative partnerships is highlighted; potential funding mechanisms are described; and potential barriers to cooperative efforts are noted. (22)

Secondine, Henry A. (Delaware Tribal Business Commission) REMINISCENCES OF GROWING UP AS A DELAWARE. Delaware life and culture in northeastern Oklahoma about the time of World War I are recalled. Special emphasis is placed on the nature of the Delaware Indian community in what was formerly the Cherokee Nation. (36)

Seeman, Mark (Indiana) STYLISTIC VARIATION IN MIDDLE WOODLAND PIPE STYLES: THE CHRONOLOGICAL IMPLICATIONS. This study tests Strüever and Houart's (1972) assumption that the major Middle Woodland mortuary sites in Ohio are contemporaneous. A typology of plain platform pipes is constructed, tested, and shown to have temporal significance. Factor analysis and discriminant analysis, two multivariate statistical techniques, are employed and the usefulness of each is discussed. Results do not support the initial hypothesis. (24)

Senter, Donovan (UNAM, Mexico) THE DEGREE OF AUTONOMY OF XOCHICALCO FROM TEOTIHUACAN DURING THE EARLY CLASSIC. "Since Xochicalco does not have many features that connect it to Teotihuacan, its role could very well have been that of a rival rather than a satellite," hypothesizes Litvak in 1970. He states, of course, that "during the Early Classic Xochicalco relations were grouped within the Teotihuacan sphere of influence." This paper will attempt to evaluate this hypothesis largely upon ceramic evidence derived from a survey of the literature and a ceramic survey of the Upper Temembe, north from Xochicalco to Cuentepec and beyond. (37)

Shafer, Harry J. (Texas A&M) THE ARCHAEOLOGY OF HINDS CAVE: A PRELIMINARY REPORT. During the summer of 1975, major excavations were begun in Hinds Cave, a large, dry rockshelter site in southwest Texas. The objectives during this first season were to obtain stratigraphically controlled samples of plant macrofossils and human coprolites from deposits dating back to at least the Early Archaic (ca. 5,000 B.P.) period. At the same time, a second objective was to recover an equally well-controlled sample of material culture elements from these same deposits. These objectives were more than met, since over 1,000 prehistoric human coprolites were collected from a stratified sequence of lenses dating from approximately 1,000 B.P. to older than 8,280±60 B.P. Excellent plant macrofossil and material culture samples were also secured. An intensive series of interdisciplinary studies is now in progress and we hope that through these efforts we will soon gain an excellent image of the culture of prehistoric human populations in the lower Pecos region of Texas. (17)

Sharp, Rosemary (Ripon) PILGRIMS AND PEDDLERS: THRESHOLD MEN IN POST-CLASSIC MEXICAN MANUSCRIPTS. Peddlers, pilgrims, and other pack-carriers illustrated in Post-Classic Mexican manuscripts and depicted in pottery from the same era are interpreted as "liminal" phenomena. These figures both reflect rapidly changing historical circumstances and suggest the presence of an important stabilizing system for Post-Classic peoples. The symbol of the supernatural-trader-traveler is examined as a model for the individual mortal of that day, and the journey, as a paradigm for ethical, political, and other behavior during a time of deconstruction and reconstruction of social life. (26, 27)

Shelton, Catherine N. (Temple) **VARIABILITY IN DIFFERENTIALLY HEAT TREATED LITHIC MATERIALS.** Recent studies in which lithic materials were heat treated have paid little attention to the variation in flaking improvement produced by varying the time and temperature in the heating experiments. A series of controlled experiments with chalcedony, chert, flint, and jasper indicate that a range of time-temperature combinations can be used to produce differential improvement in the way these materials respond to flaking. Such an experiment contributes to our knowledge of the degree of precision necessary in aboriginal heat treatment of lithics. (38)

Sidrys, Raymond (UCLA) **STANDARDIZATION OF MESOAMERICAN FIELD DATA.** The testing of processual cultural hypotheses in the Mesoamerican culture area is hindered by the lack of standardized methods for the description and comparison of archaeological field data. Standardized units of comparison are commonly used in the physical sciences. Without such units it is unlikely that significant intellectual progress can be achieved in a scientific discipline. A table is presented as a model for the reduction of Mesoamerican field data. As appendices in Mesoamerican site reports, such tables would facilitate the testing of statistically oriented processual hypotheses. (23)

Sisson, Edward B. (Harvard) **THE ARCHAEOLOGY OF RESIDENCE: COXCATLAN, PUEBLA.** During the course of the investigation of the late pre-Conquest/Early Colonial "cacicazgo" of Coxcatlan, Puebla, portions of fifteen residential complexes at four separate sites (Tr62, Tr65, Tr83, and Tr205) were excavated. Data from these excavations, site survey, and ethnohistoric documents are the basis for a discussion (1) of settlement location, (2) of intrasite distribution of residences, (3) of residential architecture, (4) of room function, (5) of domestic industries, and (6) of the composition of residential groups. (3)

Skinner, Elizabeth (Washington-St. Louis) **LITHIC ANALYSIS AND SOCIAL ORGANIZATION IN THE CIBOLA AREA OF NEW MEXICO.** It is hypothesized that chipped stone material from an archaeological site will reflect the social and political reorganization which takes place as a result of stress—especially environmental—upon a cultural system, in a manner analogous to that of ceramics. Chipped stone material—mostly debitage and by-products of manufacturing—sampled from four sites from the 1972-73 Cibola Archaeological Research Project in west central New Mexico is analyzed for attributes which should reflect these changes. (29)

Skirboll, E. (Pittsburgh) **FLORAL REMAINS FROM MEADOWCROFT ROCKSHELTER.** The floral assemblage from Meadowcroft Rockshelter, as derived from dry and wet screening procedures, includes thousands of plant remains ranging from tree branches and limbs, with and without bark, to minute seeds, seed coats, roots, and rootlets. The floral remains span nearly the entire occupation sequence and include both non-domesticated and domesticated plants. The character of this assemblage is detailed, and changing patterns of plant exploitation through time are discussed. By far the most common plant remains recovered at Meadowcroft (both in the screens and flotation samples) are charred and uncharred seeds of the hackberry (*Celtis occidentalis*) or dwarf hackberry (*Celtis tenuifolia*). Charred and uncharred nut shells, notably walnut (*Juglans* spp.) and hickory (*Carya* spp.), are common throughout the deposits as are seeds of *Chenopodium* (spp.), *Vaccinium* (spp.), and *Rubus* (spp.). Interestingly, some nut shells as well as charred chenopod seeds have been recovered from Stratum IIa, though not on the lowest occupational floor. Domesticated plants recovered at Meadowcroft include corn (*Zea mays*) from the latest levels and squash (*Cucurbita pepo*) from Stratum IV and above. The limited data currently at hand suggest that the principal materials exploited for consumption at Meadowcroft were hackberry, chenopods, and, to a somewhat lesser extent, nuts and other berries. (2)

Slaughter, Dale (Alaska) **NORTH SLOPE PREHISTORY.** There has been much discussion of the origin of Eskimo culture. A model, largely from pipeline data will be presented relating to the evolution of such entities as Denbigh, Choris, Norton, etc. Many of the ideas depart from the traditional scheme and will provide a target for future research and verification. (35)

Smith, Bruce D. (Georgia) **DETERMINING THE SELECTIVITY OF UTILIZATION OF ANIMAL SPECIES BY PREHISTORIC HUMAN POPULATIONS.** Determining the pattern of selectivity of utilization of animal species by prehistoric human populations involves first quantifying the relative importance of species of animals in the diet of prehistoric human groups through analysis of archaeologically recovered faunal samples, and then comparing these values with estimates of the relative availability of different species of animals in the environment. Such estimates of the relative availability of animal species in prehistoric habitat situations, usually quantified in terms of either potential annual productivity or standing crop biomass, are the result of projecting data from modern analog situations into the past. It is certainly both possible and necessary to employ such arguments by analogy to reconstruct prehistoric biotic communities in quantifiable terms. For such reconstructions to be accurate, however, it is necessary to be aware of a number of possible sources of bias, and to evaluate and employ modern wildlife data according to a set of interrelated principles. Sources of bias and criteria for selecting modern wildlife analog data will be discussed. (5)

Smith, Bruce D. (Georgia) **FAUNAL ANALYSIS: PROBLEMS AND POTENTIAL.** The

research design and problem orientation presently being employed by many researchers in the subdiscipline of faunal analysis is described and critically reviewed, and a set of interrelated general problem areas that should be utilized to form the framework of any research design in faunal analysis are identified and described. (3)

Smith, C. Earle, Jr. (Alabama) **PREHISTORIC CHANGES IN DIETARY PLANTS IN THE SOUTHEASTERN U.S. AND MEXICO: A COMPARISON.** Since the Second World War, evidences for plant usage in prehistoric diets has been accumulating at an accelerating rate. Similarly, a beginning has been made on an understanding of ethnonutrition, i.e., human physiological adaptations to available foods. Much of the southeastern U.S. was covered by a climax forest of hardwoods with an intermixture of softwoods which provided an adequate harvest of plant and animal foods for a limited population. Change to a diet incorporating cultivated foods occurred slowly and was not complete at the time of first European contact. Central Mexico, with a severe dry season, had a primary vegetation ranging from semi-open desert habitats to evergreen forests dispersed in an altitudinal banding. Change to a diet incorporating cultivated food plants and animals associated with cultivated plots was both early and complete. (5)

Smith, Landon D. (USDA Forest Service, Albuquerque) **PREDICTING CERAMIC FORM FROM SHERD WEIGHT IN MISSISSIPPIAN CERAMICS: A STATISTICAL MODEL.** The number of whole or potentially reconstructable vessels recovered from archaeological context is disappointingly small. This fact seriously hampers studies of variables that can provide a better understanding of social and cultural dynamics within and between prehistoric populations. Using the stochastic methods of correlation and Model II linear regression, a series of relationships were determined that allowed the mathematical prediction of culturally meaningful measures for partial or broken vessels such as volume, diameter, and height using only the known or estimated value of weight. (24)

Smith, Michael E. (Urbana) **A MULTIVARIATE ANALYSIS OF TEMPLES AND RESIDENCES OF CLASSIC TEOTIHUACAN, MEXICO.** Discriminant analysis is applied to four kinds of sites from classic Teotihuacan—low status residences, intermediate status residences, high status residences, and temples. It is found that it is possible to distinguish these kinds of sites on the basis of their artifactual remains alone. Relationships between site-types and the different artifacts are discussed, and architectural data is combined with artifactual data for a fuller understanding of Teotihuacan sites. The identification of a number of priests' residences is proposed, based on analogy with later Aztec patterns. (44)

Snow, Dean R. (SUNY Albany) **THE LAKE GEORGE PROJECT.** A program of archaeological research and training now enters its third season in the Lake George region of upstate New York. The project focuses upon the important frontier between the Hudson and Champlain drainages, and the resolution of a number of archaeological problems relating to each. The project emphasizes areal survey as well as excavation at a single large site which is programmed to continue for up to 15 years. The primary practical function of the program is to train students for work in public archaeology, a field for which properly trained personnel are presently in short supply. The inadequacy of current contract projects for student training is discussed. Difficulties generated by profound but usually ignored ethical differences between traditional and public archaeology are also discussed, in terms of the needs and goals of training in modern archaeology. (8)

Spence, Michael W. (Western Ontario) **OBSIDIAN DATING IN TEOTIHUACAN, MEXICO.** Hydration measurements have been made on 576 pieces of obsidian from the prehispanic city of Teotihuacan. The samples, selected from the many obsidian workshops there, were intended to form the basis for a hydration chronology in Teotihuacan and to solve some problems concerning the nature and development of the obsidian industry there. Discussion of the results will focus on some of the particular problems that were tested. (44)

Spiker, Charles J. (Advisory Council on Historical Preservation) **APPROPRIATE TREATMENT OF ARCHAEOLOGICAL RESOURCES.** The basis for a Federal agency's decision on appropriate treatment of archaeological resources and the relationship between significance of an archaeological resource and its appropriate treatment are discussed. Of the two kinds of treatment discussed, preservation is the preferred treatment. Salvage excavation is acceptable treatment only as a compromise when the goals of the Federal agency and the goals of the archaeologist are incompatible. Such a compromise research project requires a research design. (31)

Starbuck, David R. (Boston) **FAUNAL EVIDENCE FOR URBAN ADAPTATIONS AND THE TEOTIHUACAN SUPPORT AREA.** The analysis of faunal remains from the Classic period city of Teotihuacan has revealed a heavy reliance upon meat and a dependence upon a sizable support area, probably encompassing most of the Valley of Mexico. Although the white-tailed deer was the primary meat source, there was also a significant reliance upon birds, turtles, fish, and various small-sized mammals. It is argued that expanding the size of the support area and careful scheduling of procurement activities were highly effective in maintaining an adequate supply of meat as the city's population increased. (44)

Stark, Barbara L. (Arizona State) **ECONOMIC AND SETTLEMENT PATTERN MODELS FOR SOUTHERN VERACRUZ: THE ETHNOHISTORY AND CORE-BUFFER ALTERNATIVES.** Economic, environmental, and settlement pattern data from sixteenth century documents show evidence of economic specialization in native communities in the

Lower Papaloapan area, Veracruz, Mexico. From these data models for economic strategies, settlement patterns, and exchange are formulated, and some elements of the models are tested against archaeological data. Ethnohistoric models warrant further consideration as an alternative to a recent core-buffer zone model for the southern Gulf coast. (14)

Steinen, Karl T. (Florida) ECOLOGICAL RELATIONSHIPS AND SETTLEMENT PATTERNING ON THE GULF COAST OF FLORIDA: THE PASCO AREA. Archaeological survey in the area of Crystal River, Florida has revealed important aspects concerning the man-land relationships and settlement patterning in this little known area. A typology of settlement is offered and explained in cultural and ecological terms. Suggestions for future research in the area are presented. (28)

Stenholm, Nancy A. (William Patterson College) DEFLOCCULATION AND FLOTATION OF CLAY SOILS IN ARCHAEOLOGICAL DEPOSITS. Growing numbers of archaeologists are using soil flotation in botanical recovery. The method is still in its infancy—often air-dried soil samples are poured directly into water without prior chemical treatment. While simple methods are usually sufficient for some soils, they may be ineffective for soils which contain considerable amounts of clay. Clay colloids, in particular, adhere to botanical material, retard buoyancy, and complicate the recovery process. Clearly, a method which disperses clay aggregates without degrading botanical fabric would be of considerable utility for paleobotanical research. This report considers the use of chemical deflocculants, and presents a flotation schedule which gave good results at Kaminaljuyu, Guatemala. (41)

Sterud, Eugene L. (SUNY Binghamton) THE IDENTIFICATION OF ACTIVITY LOCI IN PLOUGH ZONES: AN EXAMPLE FROM NEW YORK STATE. It is often concluded without demonstration that prehistoric sites which exist entirely or predominantly in disturbed plough zones are of little value to the archaeologist. This notion is challenged and it is argued that there may exist information of value in the form of horizontal distributions of various categories of artifactual materials which, if investigated using appropriate field techniques, could be preserved. Single component sites, especially those which represent limited activity loci, should be systematically investigated. Several suggestions are made as to the method of investigation appropriate to such situations. An example is given of the successful identification of activity loci at an archaic Lomoki site, entirely in the plough zone, from central New York State. A discussion of the character of the individual loci is included. (41)

Stewart, Marilyn C. (Rollins College) A MODEL FOR SUBSISTENCE CHANGE IN A CENTRAL FLORIDA SHELL MOUND. The archaeology of Central Florida shell mounds is not well understood. Chronological difficulties due to a long lithic-poor preceramic and a subsequent slow-changing ceramic industry have discouraged efforts to illuminate cultural behavior per se, by prolonging interest in purely chronological problems. A way out of the dilemma would seem to involve a search for other parameters for measuring culture change. The writers suggest that close analysis of dietary patterns reveals changes in subsistence strategies that can be used to build chronologies, as well as providing invaluable data for subsistence settlement systems analysis. The method was tested by a combination of subsistence-oriented excavation and simulation experiments using an energy flow model to generate feasible hypotheses. (28)

Stoltman, James B. (Wisconsin-Madison) A NEW TEMPORAL MODEL FOR EASTERN NORTH AMERICA PREHISTORY. The basic thesis of this paper is that the traditional McKern system of nomenclature utilized in eastern North America, involving the concepts of Woodland and Mississippian plus the later additive Archaic, has become so burdened with multiple and often conflicting connotations that it now impedes as much as it facilitates interregional ambiguities of the McKern system are corrected: (1) the terms Archaic, Woodland, and Mississippian are restricted in usage only to cultural traditions so as to completely avoid confusion over whether these concepts apply to archaeological assemblages or to increments of time or to both, (2) a series of new pan-Eastern eras and periods (i.e., time units) are defined in order to give explicit recognition to what are considered to be significant "blind spots" in not only the McKern system, but also the alternate system proposed by Willey. (24)

Storer, John H. (Missouri-Columbia) A STRUCTURAL COMPARISON OF SIXTEENTH CENTURY AND CONTEMPORARY TZETZAL KINSHIP TERMINOLOGIES. The Copanaguastla manuscript provides unusually complete material for the analysis of sixteenth century Tzeltal kinship terminologies. This analysis will attempt to compare the changes and continuities of the sixteenth century terminological system with the systems of several modern-day Tzeltal communities. (25, 27)

Story, Dee Ann (Texas-Austin) THE PRESERVATION OF SEABED ANTIQUITIES. Most metal artifacts from underwater sites are fragile and require special treatment to insure that they do not continue to deteriorate after excavation. The preservation of a mid-sixteenth century Spanish shipwreck collection recovered off the Texas Gulf coast is used as a case history to illustrate the techniques of treatment and to emphasize the research potential of careful laboratory documentation. (10)

Stout, Sam D. (Washington-St. Louis) HISTOMORPHOMETRIC DETERMINATION OF BONE FORMATION RATES IN ARCHAEOLOGICAL SERIES. Frost and others have shown that cortical bone formation rates can be measured without the use of in vivo tissue

markers such as tetracycline. The application of these methods to archaeological bone provides a means by which a dynamic physiological parameter can be determined for extinct populations. Inter- and intra-population variation in bone formation rates for two archaeological populations from Illinois are discussed. It will be shown that bone formation rates for the two series do not differ significantly from those determined for modern populations, and that metabolic disturbances are easily detected on the basis of abnormal formation rates. (6)

Stoutamire, James W. (Florida State) A REPORT ON FLORIDA STATE UNIVERSITY'S CURATORIAL MAINTENANCE OF THE NATIONAL PARK SERVICE'S SOUTHEAST ARCHEOLOGICAL CENTER'S COLLECTIONS. For the past three years Florida State University has maintained, under a curatorial contract, the National Park Service's Southeast Archeological Center's collections. These collections span a period beginning with W.P.A. excavations in middle Georgia in the 1930s and extending to the present. This and other contracts have produced final reports on a number of important southeastern sites including: Lamar, Ocmulgee Bottoms, Mound D Macon Earthlodge, Macon North Plateau, Cowart's Landing, and Stubbs Mound. (22)

Strauss, Lawrence G. (New Mexico) NEW LIGHT ON THE UPPER PALEOLITHIC OF SOUTHWESTERN EUROPE. There is growing evidence that many traditional subdivisions of the European Upper Paleolithic are functional assemblage variants, and that their strictly temporal nature has been greatly exaggerated. Individual manifestations of the same subdivision are often radiometrically non-contemporaneous. Universalistic stage classifications based on single stratigraphic sequences are misleading, as demonstrated by new C-14 dates, detailed statistical comparison of assemblages, and new contradictory finds. There is considerable assemblage variability within single stages, but similarity among particular assemblages assigned to different stages. Some of this variation and similarity is related to patterns of faunal exploitation and site location, as suggested by data from Cantabrian Spain. (40)

Struever, Stuart (Northwestern) CLINICAL TRAINING IN ARCHAEOLOGY AS THE DISCIPLINE GROWS MORE COMPLEX. A hallmark of modern archaeology is the proliferation of new field and laboratory techniques. In addition, more and more archaeological research is conducted within an interdisciplinary framework. Added to these is the sharp increase in the number of long-term, large-scale archaeological projects that require careful research design and effective management of human and financial resources. Accordingly, the professional archaeologist today is required to know more things on more subjects than ever before and requires longer training in any specific methodological area before claiming competence. These developments have made the patron-client, tutorial relationship an inadequate basis for training archaeologists. This paper explores two programs of the Northwestern University Archeological Program as a means of meeting the new demands for clinical training in archaeology. (8)

Struever, Stuart (see Farnsworth, Kenneth) (22)

Stuckenrath, Robert (Smithsonian) RADIOCARBON: SOME DYSPEPTIC NOTES FROM MERLIN'S DIARY. Users of C-14 dating services must be aware of certain classes of problems ancillary to the technique, over which the laboratory has little or no control; solutions thereto are necessarily in the hands of the collector and/or interpreter alone. These include such matters as isotopic fractionation inherent in sample materials; admixture with samples as collected; and distortion of age in situ by environmental factors. Also to be considered are such potential felonies as appear in the interpretation of C-14 ages, and the "correction" of ages for secular variations. (32)

Stuckenrath, Robert (see Dumond, Don E.) (35)

Stuckenrath, R. (see Gunn, J. D.) (2)

Sugiura Yamamoto, Yoko (UNAM) CERAMICS OF OJO DE AGUA AND THEIR RELATIONSHIP WITH TEOTIHUACAN. The materials of this study come from Ojo de Agua, located at the north of Tetepetl hill, in the valley of Toluca, where the civic-religious centre Teotenango flourished. This study, based on ceramic analysis, concerns the relations, which reached a peak during the Metepec Phase, between the great urban center Teotihuacan and the rural populations of Ojo de Agua, clearly reflected in the ceramic materials, as much in the potsherds as the whole pieces found in association with burials. (37)

Swartz, B. K. (Ball State) A LOGICAL PATTERN OF ARCHAEOLOGICAL OPERATIONS: A POST-BINFORDIAN REFORMULATION. Fritz and Plog's 1970 distinction between empiricist and positivist as suitable terms for alternative archaeological research models is questioned. A trilineal pattern of archaeological operations, supplanting my 1967 rectilinear sequence, is then proposed—taxonomic, spatiotemporal, and cultural. The conventional distinctions of Traditional vs. "New" Archaeology, that is nomonymy-idiography and comparative-(culture) historical methods, are examined. The former dichotomy is considered invalid and the latter unclear. (35)

Taack, George H. (Minnesota-St. Paul) THE SEMANTIC AND LINGUISTIC DECIPHERMENT OF HIEROGLYPH T114.166:24 IN THE MAYA HIEROGLYPHIC

CODICES. Verbal hieroglyph T114.166:24 is limited to occurrence to the Madrid Codex, although morphologically similar glyphs appear in Codices Paris and Dresden. These linguistically related hieroglyphs are restricted to three clearly distinguishable semantic contexts within the manuscripts: (1) on Dresden 45b, in a divinatory almanac dealing with the problems of farmers; (2) on Madrid 40a, in a divinatory almanac devoted to the hunting of deer; (3) on Madrid 107c (six times), in a divinatory almanac concerned with an aspect of beekeeping. These diverse environments provide narrow semantic boundaries which are advantageous for the phonological decipherment of hieroglyph T114.166:24, since any hypothetical reading must meet the requirement that it be consistent with all of the contexts in which the glyph occurs. A reading of *h(a)* is proposed for grapheme T114 which—like *-el/hel* sign T188/612—may or may not be aspired. Grapheme T166, used to denote the syllable *iltz-* in the glyph for the Maya deity Itzamna (Knorozov 1967:85), is believed to correspond to the closed monosyllable *(x)ltz*, with the vowel *(x)* varying according to the principle of vocalic harmony. The reading of hieroglyph T114.166:24 seems to correspond to a form of the verbal root *hatz'*, meaning: (1) to clear a field in preparation to sow; (2) to wound; (3) to transfer [bees] from one hive to another. These significances are strongly supportive of the reading, for they are harmonious with the known semantic dimensions of hieroglyph T114.166:24. (26, 27)

Taylor, R. E. (see Drover, Christopher E.) (11)

Thomas, Prentice M. (Americas) THE PRODUCTION OF UTILITARIAN IMPLEMENTS AT BECAN, CAMPECHE. Recent attempts have been made to delineate craft specialties present among the Lowland Maya of the Classic period (cf. Adams 1970; Becker 1973). For example, it now seems clear that specialists, versed in the production of obsidian blades, were practicing their craft during the Classic period, and the same is true for the manufacturers of obsidian and chert eccentrics. It remains unclear, however, whether the production of utilitarian artifacts, fashioned from locally available chert, was a craft specialty or a home industry. Recent surveys at Becan in southeastern Campeche revealed the presence of numerous mounds composed predominantly of chert nodules, the native material from which utilitarian stone tools were chipped. These concentrations of nodular chert are not large workshop areas as would be expected if craft specialists were involved, but seem more like stockpiles of the raw material. In other sectors of the site small workshop areas have been tentatively identified on or adjacent to several residential plazas, and chipping debitage was common around most house units. On this basis, it is proposed that the manufacture of a large proportion of the utilitarian implements was a household task, and was not in the hands of a select group of specialists. (3)

Thompson, Raymond H. (Arizona) THE COMPLETE ARCHAEOLOGIST: A COMPREHENSIVE OR INTEGRATED APPROACH TO ARCHAEOLOGICAL TRAINING. Undergraduate, Master's, and Doctoral level training in the context of a four-field department of anthropology provides an opportunity for comprehensive training. Such a program involves a multidisciplinary approach to archaeology. Consideration is given to field schools, cultural resource management internships, the holistic view of archaeology, and the role of women in archaeology. The subject will be discussed both from the point of view of a faculty member and that of a graduate student. (8)

Thurman, Melburn D. (Princeton) SETTLEMENT PATTERNS AND MIGRATIONS OF THE DELAWARE INDIANS. This paper characterized Delaware Indian subsistence and settlement patterns in each of the major environmental zones occupied in the course of their migrations from the Delaware Valley to Oklahoma. Subsistence-settlement types discussed include a homogeneous "aboriginal" village cluster in the Philadelphia area in the seventeenth century, mixed tribal village clusters in the Ohio River Valley and Indiana, mission villages from Pennsylvania, Ohio, and Canada, and the nineteenth and early twentieth century Delaware community in northeastern Oklahoma. (36)

Tourtellot, Gair (Michigan State) PATTERNS OF DOMESTIC ARCHITECTURE IN A MAYA GARDEN CITY: SEIBAL. Following a description of the probability sampling design for small structure excavations at Seibal, this paper will summarize the locational, architectural, and artifactual evidence for distinguishing between houses and ancillary structures (kitchens, shrines, burial platforms, pens). Two explanations for the observed clustering of these houses into units ("plazuelas") will be examined, as a function of "wealth" or the "domestic cycle." (3)

Townsend, Richard (Texas-Austin) STATE AND COSMOS IN AZTEC SCULPTURE. The Borgia Codex frequently depicts anthropomorphic figures in abstracted cosmological settings—a pictorial convention that is also strikingly evident in key historical commemorative monuments of Tenochtitlan, such as the Dedication Stone of Tizoc and Ahuizotl and the Stone of Tizoc. Certain glyphic symbols that identify these cosmological settings—such as stylized earth-masks—also show clear affinities with the sacred masks and related articles of ritual attire represented on Aztec sculptures of ceremonial impersonators. Iconographic examination of the historical commemorative scenes in their cosmological contexts indicates that the inhabitants of Tenochtitlan not only held the universe as sacred, but also modeled their social order after the structure of the cosmos, and correspondingly validated the policies and procedures of their state by representing them in terms of ceremonial acts enacted in cosmic settings. (26, 27)

Van West, Carla (Arizona) PROFESSIONALISM: REGISTRY OR GRADUATE SCHOOLS?

In light of current antitrust legislation, alternative measures to the establishment of the Registry of Professional Archaeologists are suggested. Proposals are derived from two central questions: Who is a professional archaeologist? and How does one become a professional archaeologist? The authors propose that philosophical and circular changes in our graduate schools are necessary. A reevaluation of our position as academics, administrators, and resource managers is called for, as well as a reorganization of our vocational and academic objectives and methods within graduate programs of archaeology. Concrete examples and test cases are provided. (31)

Van West, Carla (see Scheick, Cherie) (31)

Vega Sosa, Constanza (INAH) A COMPARISON OF THE CERAMICS OF THE PUEBLA-TLAXCALA VALLEY—AND TEOTIHUACAN DURING THE TENANYECAC AND MICCAOTLI PHASES. This study consists of a comparison between the ceramics discovered among the offerings in a tomb located at the site "Los Teteles de Ocotitla," Tlaxcala (Early Tenanyecac Phase), and ceramics derived from stratigraphic pits (Miccaotli and Early Tlamimilolpa Phases ca. A.D. 100-250) at Teotihuacan. An attempt is made at an explanation of the cultural interaction between the two sites during the phases indicated, taking into consideration both the cultural situation in the two areas and data provided principally by comparison of vessels similar to those of Teotihuacan, together with Carbon-14 dates obtained for the offerings. (37)

Vehik, Rain (Wisconsin-LaCrosse) ARCHAEOLOGICAL EXCAVATIONS IN THE JAMES RIVER VALLEY, NORTH DAKOTA. The University of North Dakota under a contract from the Bureau of Reclamation continued an archaeological program initiated in 1974 in south-central North Dakota. Sixteen prehistoric sites (open sites, tipi rings, and rock carvings) were tested. Preliminary analyses indicate that many of the open sites are stratified, and range in time from the Woodland period to about A.D. 1300. This paper presents preliminary results of the fieldwork, and suggests hypotheses that should be tested in future work. (45)

Vehik, Susan C. (Wisconsin-LaCrosse) THE QUAST SITE (32LM234) AND ITS IMPLICATIONS FOR THE PREHISTORY OF THE JAMES RIVER VALLEY, NORTH DAKOTA. The Quast site, a single component site in the James River valley, La Moure County, North Dakota, was tested by the University of North Dakota as part of a contract with the Bureau of Reclamation. Archaeologically little is known regarding the James River valley in North Dakota. The Quast site, one of 15 sites tested in 1975, yielded in addition to lithics and pottery a variety of faunal and floral material. A series of intra-site differences and inter-site relationships based on this material are discussed. Finally, a series of hypotheses regarding the later prehistory of the James River valley are developed which are to be tested by future field research. (45)

Vickers, Roger S. (see Dolphin, Lambert T.) (19, 20)

Vogel, J. C. (Pretoria, South Africa) ISOTOPIC EVIDENCE FOR EARLY MAIZE CULTIVATION IN NEW YORK STATE. Plants metabolize carbon dioxide photosynthetically either through a 3-carbon (Calvin) or 4-carbon pathway. Most plants are of the C-3 type; C-4 plants are primarily grasses adapted to hot, arid environments. Since C-4 plants have a higher $^{13}\text{C}/^{12}\text{C}$ ratio than C-3 plants, animals and humans with a significant C-4 plant food-intake will have higher $^{13}\text{C}/^{12}\text{C}$ ratios as well. Maize is a C-4 plant, hence maize cultivators living in C-3 plant environments should show significant isotopic differences from hunter-gatherers in their skeletal remains; the importance of maize in their diet should also be measurable. The practicability of this method is demonstrated for New York State archaeological materials and wider implications are mentioned. (28)

Volman, Thomas P. (Chicago) SPATIAL ANALYSIS AT TORRALBA. Excavations at the Acheulean butchery site of Torralba, directed by Howell, uncovered ten major occupations. Statistical analyses of information provided by Freeman on the location and types of lithic and faunal remains have revealed dimensions of spatial patterning related to differences in activity performance. As a result of the most recent multivariate studies spatial patterning has been delineated in much greater detail than was hitherto possible. Hypotheses about the nature and location of activities performed at the site, first generated from the study of a few occupation floors, have now been tested on many other surfaces. (40)

Voorhies, Barbara (California-Santa Barbara) HUMAN ADAPTATIONS TO COASTAL RESOURCES: THE VIEW FROM MIDDLE AMERICA. Human adaptations to coastal environments have been long recognized as relevant to the study of Middle American culture history. Despite this, systematic study of these adaptations is relatively recent and limited in extent. In this paper I review previous study areas, the research objectives that have been pursued, and the results. The significance of the paper will be to assess the nature of previous studies in order to permit the formulation of appropriate research objectives on a regional basis. (14)

Vreeland, James M. (Texas-Austin) PATTERNS OF TEXTILE DEVELOPMENT AND FUNCTION AT HUANCAYO ALTO. A multidisciplinary study of the collection of fibers and fabrics recovered from the largest and most important archaeological site in the middle Chillon Valley (central Peruvian coast) is presented: (1) A general understanding of the textile tradition at Huancayo Alto is provided through the analysis of morphological and

qualitative criteria based upon fiber types, fabric components and structures, weave and color patterning, and evidence of cloth wear, mending, and re-use. (2) A statement on the relative positioning of this textile-making tradition in relation to those traditions established on the coast and in the sierra at both extremes of the Valley is offered, based upon data gathered from prehistoric and historic fabrics examined along this 120-km corridor. (3) The role of textiles and of textile production, distribution, and trade is evaluated using combined evidence produced through architectural and other archaeological artifact associations, ethnohistorical documents written during the Spanish subjugation of the region in the sixteenth century, and through the surviving patterns of economic exchange among certain villages from ecologically distinct zones in the valley. (18)

Wait, Walter K. (Southern Illinois) LATE ARCHAIC ALONG THE UPPER CHACO: THE STAR LAKE PROJECT. A 100% survey of a 22 mile area centering around Star Lake, New Mexico was conducted by Southern Illinois University at Carbondale for the Peabody Coal Company during the month of November 1975. Over 200 sites representing Paleoithic, Archaic, Basketmaker II and Navaho/historic components were recorded. There was an apparent withdrawal from the area during late BMII times and only very sparse evidence for Puebloid utilization. The majority of sites fall into either late Archaic/Basketmaker, En Medio phase (C. Irwin-Williams 1971), or recent Navaho/historic period components. A preliminary report of survey results will be discussed. (29)

Weaver, Donald E. (Arizona State) THE IMPACT OF THE ARCHAEOLOGICAL CONSERVATION ACT ON UNIVERSITIES IN THE WESTERN UNITED STATES. The passage of the Archaeological Conservation Act, Public Law 93-291, has caused considerable restructuring of graduate programs in archaeology at universities throughout the western United States. Citing the development of the cultural resource management concept at Arizona State University as an example, this paper deals with the problems and opportunities presented to the profession by the growing emphasis on a conservation philosophy, especially as related to resources on public lands. Procedures are discussed for coping with the anticipated increased work load which will be placed on universities with commitments to cultural resource management. Guidelines for incorporating such an operation into an archaeology graduate curriculum are also presented with special emphasis on producing professional archaeologists capable of supervising individual projects or overall cultural resource management programs. (1)

Weed, Carol S. (see Gumerman, George J.) (19, 20)

Weigand, Phil C. (see Holmes, Douglas) (12)

Whalen, Michael E. (Michigan) SOCIAL DIMENSIONS OF AN EARLY FORMATIVE CEMETERY FROM OAXACA, MEXICO. More than 70 burials from an Early Formative period cemetery in Oaxaca, Mexico provide insights into the dimensions of social status and social organization in a smaller community of the San Jose Phase (ca. 1200 B.C.). Age, sex, position, accompaniments, and associations of interments all combine to suggest a relatively -although not entirely-egalitarian society crosscut by at least one internally graded subgroup composed exclusively of adult males. It is further suggested that patrilineal descent may have prevailed. The significance of cemetery burial in territorial and social organizational terms is also briefly considered. (23)

Whitley, Bonnie L. (Northwestern) SUBSISTENCE PRACTICES IN THE WOODLAND PERIOD. Subsistence data from habitation sites in the lower Illinois River Valley supplements bioanthropological studies of environmental and nutritional stress. Analysis of botanical and faunal remains from Woodland sites permits characterization of the Woodland subsistence base, including clear evidence for change within the Woodland period. Against this background, resource exploitation data from early Late Woodland sites is described in detail. The diversity in proportional representation of species at early Late Woodland sites is seen to reflect localized exploitation, a pattern of crucial importance in explaining changing Woodland subsistence strategies. (6)

Whittaker, Gordon (Yale) ON THE DECIPHERMENT OF EARLY MONTE ALBAN INSCRIPTIONS. An analysis shall be made of the nature of the inscriptions of Monte Alban I and II, with a critique of Caso's methodology. A partial decipherment of the calendrics, along with readings of some phonetic elements and identification of certain deities, will be presented. (23)

Whittlesey, Stephanie M. (Arizona) PREHISTORIC PUEBLO PLAZAS: INTERPRETATIONS OF COMMUNITY ORGANIZATION. Research during the past two field seasons at the Grasshopper Ruin in east-central Arizona has investigated community activities via the excavation of Plazas I and II, enclosed areas at the ruin. Results of this work are compared with a previously excavated plaza underlying the Great Kiva. Differential use of these three outdoor activity constellations and changes in these activities through time are analyzed. Diachronic changes in the structure of community organization under conditions of aggregation are suggested on the basis of this analysis. (4)

Whittlesey, Stephanie M. (Arizona) "STRONGER THAN DIRT": THE CONCEPT OF AN ARCHAEOLOGICAL SOIL AND ITS APPLICATION. Previous soils studies are reviewed and found inadequate, primarily due to the failure of authors to consider archaeological soils as wholly cultural entities rather than natural bodies. The concept of an archaeological

soil is formulated. An experiment describing the application of this concept through experimental pedological techniques at the University of Arizona's Archaeological Field School is outlined. The results of the experiment are applied to interpret problematical stratigraphy from Plaza I at the Grasshopper Ruin. (41)

Whittlesey, Stephanie M. (see Ciolek-Torrello, Richard) (4)

Whittlesey, Stephanie M. (see Thompson, Raymond H.) (8)

Wicke, Charles R. (Oklahoma) INTERPRETATION OF THE PRECOLUMBIAN AZTEC TIZOC STONE FROM CODICES. Identification of place names on the Tizoc Stone has been attempted by several early investigators including Orozco y Berra, Saville, and Garcia Payon. The list of Tizoc's conquests in the Mendoza Codex served as their principal document. A direct correspondence is lacking, however, between the Stone and the Codex glyphs. Additional sources offer a more reasoned interpretation. The 15 gods shown beneath the place glyphs appear to be patron deities of the specific localities. They can be identified by comparison with the gods depicted in the Borgia Group, Duran's Atlas, and other codices. (26, 27)

Williams-Dean, Glenna (Texas A&M) PRELIMINARY ANALYSIS OF AN EARLY ARCHAIC LATRINE, HINDS CAVE, TEXAS. Preliminary investigations at Hinds Cave in the summer of 1974 indicated that a possible prehistoric latrine area was located in undisturbed sediments in a portion of the interior talus slope. It was hoped that desiccated feces (coprolites) recovered from such an area would provide a record of diet and health for the area over a long period of time. More extensive excavations in the summer of 1975 detailed different uses of this portion of the cave over time. Analysis of a portion of the hundreds of coprolites recovered from various strata revealed aspects of the lifeways of the Archaic inhabitants. (17)

Williams, Ken (Dept. of Transportation) THE FAI-255 PROJECT: A METHODOLOGICAL ASSESSMENT OF SOME TRADITIONAL AND EXPERIMENTAL SITE SURVEY TECHNIQUES. A host of archaeological survey techniques are applied to an 18 mile stretch of proposed highway right-of-way in the American Bottom area, near the Middle Mississippian site of Cahokia. The adequacy of these tests as aids in the discovery of sites, definition of "site limits," and discerning of internal village structure is discussed. The techniques used include pedestrian survey, controlled surface collections, artifact piece-plotting, shovel testing, phosphate testing, and magnetometer survey. The present project is the first to be conducted under a recently negotiated contract between the Illinois Department of Transportation and the Illinois Archaeological Survey. (24)

Wilson, Rex L. (NPS) CONTRACT PROPOSAL COMPETITION: ADVERSE REACTION VERSUS POSITIVE BENEFITS. Will address the various complaints regarding fears contractors have developed, often grossly exaggerated through the rumor mill, concerning imagined adverse effects which are often wrongly thought to be an outgrowth of competitive proposals. Some examples, which have been voiced in recently received letters are: (1) intrusion of outsiders into the state's domain, (2) dispersal of regional artifact collections, (3) regional expertise not capitalized upon, (4) loss of research continuity through use of many contractors during the life of a single project, (5) fear of low bids depressing standards of the profession, (6) more paper work due to National Science Foundation-like procedures of proposal review, and (7) interference by Federal Government in the state licensing process. By way of rebuttal, benefits of competitive proposal procedures will be cited including: (1) compliance with existing procurement regulations, (2) fresh approach to old problems through introduction of non-local researchers, (3) a call for local curation of collections to prevent dispersal outside of the region of origin and to maintain integrity of collections, (4) acceptance of the most creative research design which should upgrade the problem quality of contract work creating a convergence of salvage (applied) and pure problem (i.e., grant-supported) archaeological research, thereby revitalizing the entire field. (13)

Wing, Elizabeth S. (Florida State Museum) WAYS OF GETTING FROM A SLIVER OF BONE TO A CALORIE. The data base of zooarchaeological analysis is an assemblage of fragmentary bone remains with cultural association. A great number of different methods have been used to extrapolate from these identified and unidentified bone fragments to an interpretation of the relative importance of the represented animals to the prehistoric diet. Examples will be presented to illustrate and compare some of the proposed methods. (5)

Wing, Elizabeth S. (Florida State Museum) INTENSIVE USE OF DOGS FOR FOOD AS AN ADAPTATION TO THE COASTAL ENVIRONMENT. Dog remains are exceptionally abundant in faunal samples excavated from a number of Formative and Classic sites located along the Gulf coast of Mexico. We have evidence that these dogs were used for food. When their contribution to the prehistoric diet is calculated it is in many instances a quite important constituent replacing to a large extent the reliance on wild fish and game. The adaptive significance of this to coastal life will be discussed. (14)

Winter, Joseph C. (San Jose State) THE IDENTIFICATION OF ANASAZI FARM SITES AT HOVENWEEP. Prehistoric agricultural locations at Hovenweep are being identified through a program of structural analyses, palynology, modern floral studies, flotation, experimental gardening, and water control experiments. Ten types of possible water control

devices have been discovered, and the presence of corn, bean, and squash pollen has demonstrated that at least five of these were probable farm fields. Seven species of plants growing on these sites have been identified as probable indicators of past farming activities. (29)

Winter, Marcus C. (Centro Regional de Oaxaca) CLASSIC PERIOD HOUSEHOLDS IN THE VALLEY OF OAXACA AND THE MIXTECA ALTA. Excavations in residential areas, primarily at Monte Alban in the Valley of Oaxaca and at Huamelulpan in the Mixteca Alta, provide data on Classic period households. We describe and compare households in terms of composition, activities, and status variation, and show how the household can be used as an analytical unit for studying social organization. (3)

Wiseman, Fred M. (Arizona) THE MAXIMAL HABITAT MODEL OF MAYAN AGRICULTURE. Previous reconstructions of Mayan agriculture stress a single technique applicable throughout the Mayan lowlands, with alternative methods relegated only to more marginal environments. Analysis of vegetation and soil patterns indicates wide environmental diversity in the central Maya lowlands. Various agricultural models are arrayed along environmental gradients according to their zone of maximal applicability, or maximal habitat. Present-day ecological communities are likewise arrayed along the same gradients, indicating which agricultural methods are applicable in each community. Allowing maximum population pressure and total land use, the spatial extent of each agricultural system will be described for the central Peten of Guatemala. Implications of the maximal habitat model will be used to augment archaeological data to explain the distribution and size of late Classic sites. (12)

Wobst, H. Martin (Massachusetts) AN INTEGRATED SET OF COMPUTER PROGRAMS FOR STRATIGRAPHIC AND CONTEXTUAL ANALYSIS. Intensively occupied archaeological sites are problematic for the elucidation of past systemic context of artifacts and features because spatially overlapping events cannot be segregated with confidence. Single event sites, on the other hand, often lack sufficient artifactual density to recognize or differentiate occupation horizons in the field. The paper presents a set of computer programs to establish occupation horizons, if they are not visually apparent in the field, on the basis of the three-dimensional coordinates of artifacts and illustrating paleolithic open air sites in Yugoslavia. (19, 20)

Wood, W. Raymond (Missouri-Columbia) PEDOTURBATION (SOIL MIXING), CONTEXT, AND ARCHAEOLOGICAL SYSTEMICS. Soil is not a static body; it is a dynamic, open system, in which a variety of processes act to move not only soil matter, but objects (including artifacts) from one location to another. Two contrastive sets of processes operate in soil development: horizonation, where soil materials are organized into profiles having horizons; and haploidization, where soil materials may be mixed and homogenized. Processes of haploidization may have subtle or profound effects on archaeological context interpretations. Knowledge of these processes and recognition of their results in soils is essential to archaeological research. (41)

Wynn, Jack T. (Mississippi State) THE MARQUARDT SERIATION METHOD APPLIED TO TAIRONA CERAMICS FROM COLOMBIA. A seriation approach is applied to stratigraphic excavations at Buritaca, Colombia, to solve Tairona area chronological problems. The seriation is constructed using a method recently developed in the Cibola area of North America, and uses time-sensitive ratio variables derived from excavation data. In the Marquardt method, ratio scale variables are defined as time-sensitive elements, and constructed so as to avoid problems inherent in Ford's "battleship curve" method because each varies independently within its own strictly defined universe. Once established through the use of computer-assisted statistical analyses, these parametric variables are applied to seriation of excavation units from Buritaca, then checked against the stratigraphy and the literature for validity. (33)

Zeitlin, J. F. (Yale) COMMUNITY DISTRIBUTION AND LOCAL ECONOMY ON THE SOUTHERN ISTHMUS OF TEHUANTEPEC, MEXICO. The southern Isthmus of Tehuantepec is a coastal environment to which the local inhabitants have always had a varied economic adaptation, exploiting abundant marine and wildlife resources, planting milpas during the wet season, and engaging in long-distance trade. Based on excavations and a surface survey program focused on the Rio de los Perros zone of Tehuantepec, and on an examination of the ethnohistorical record, this paper will attempt to synthesize changing patterns of that economic adaptation from the Preclassic through the Colonial periods. It will relate differences in diet and the distribution of settlements to changes in population density, resource utilization, and the sociopolitical environment. (14)

Zeitlin, R. N. (Yale) PRECOLUMBIAN PROCUREMENT AND USE OF OBSIDIAN ON THE SOUTHERN ISTHMUS OF TEHUANTEPEC, MEXICO. Commercial relationships between a Pacific coastal region and distant parts of Mesoamerica are the subject of this paper. Focusing on the obsidian artifacts found in abundance at archaeological sites on the southern Isthmus of Tehuantepec, trace element analysis by x-ray fluorescence spectroscopy is employed to identify their original geologic procurement which sometimes extended over 500 miles. Changes in the network from Early Preclassic through Postclassic times are then examined and an attempt made to relate them to external economic developments and political events throughout Mesoamerica. Finally, some possible functional explanations for

an extensive obsidian importation despite local availability of other lithic materials are discussed. (14)

Zeph, Paul (see Stewart, Marilyn) (28)

Zurel, Richard L. (Georgia) TEMPORAL CHANGES IN OCCUPATION INTENSITY AND SETTLEMENT SYSTEMS ON THE GEORGIA COAST: EVIDENCE FOR THE ACQUISITION OF AGRICULTURE AND SUBSISTENCE VARIABILITY. The results of a recent survey on Skidaway Island by DePratter is examined in light of an extensive survey in the pine barrens region of the coastal plain. Prehistoric ceramic sites in the inland region are proposed to be seasonal settlements of coastal peoples. An occupational intensity index (sites/duration of phase) is computed for the two survey regions. There is a general trend of an increase in land use intensity and population after A.D. 650. The data are interpreted as representing hunting and gathering systems which exploit the pine barren region (Stallings Island and Deptford) which changes with the advent of maize agriculture during the Wilmington phase (A.D. 650-1150). The subsequent Savannah phase is a period of social and economic readjustment with the protohistoric Irene phase (A.D. 1475-1550) emerging with large settlements near the salt marsh cultivating maize and exploiting estuarine resources. (28)

GUIDE TO DEPARTMENTS OF ANTHROPOLOGY 1975-76

\$5.00 (paper)
(AAA individual members, \$3.00)

The issue for academic year 1975-76 is bigger than ever. Each year the *Guide* is expanded and updated to include the growing number of departments of anthropology in colleges, universities and museums, and, beginning this year, research. Entries of 315 academic and 65 museum departments, together with the new research unit, represent a growth of 50 departments over the 1974-75 edition; some 4200 anthropologists are included, nearly 500 more than were listed last year. For anthropologists and for prospective students of anthropology, this comprehensive listing is an invaluable source of specific information not available elsewhere.

address all orders to
AAA Publications Department
1703 New Hampshire Avenue NW / Washington, DC 20009
please enclose payment with orders

AMERICAN ANTIQUITY

Index 1935-1965

VOLUMES 1-30 . \$3.50 per copy to members
\$5.00 to non-members

address orders to SOCIETY FOR AMERICAN ARCHAEOLOGY
Publications Department • 1703 New Hampshire Ave., N.W. • Washington, D.C. 20009

— please enclose payment with orders —



ORDER FORM

PEABODY MUSEUM OF ARCHAEOLOGY AND ETHNOLOGY
Harvard University 11 Divinity Avenue Cambridge, Mass. 02138
Publications Department

SAA SALE

Special offers at the St. Louis Meeting of the Society of American Archaeology 1976

		LIST PRICE	SAA PRICE
PAPERS OF THE PEABODY MUSEUM			
—	Vol. 38 W. Smith: Awatovi Ceramics. 1971	\$35.00	\$28.00
—	Vol. 39-1 W. Smith: Prehistoric Kivas of Antelope Mesa. 1972	\$11.00	\$ 9.00
—	Vol. 39-2 W. Smith: Williams Site. 1973	\$ 5.00	\$ 4.00
—	Vol. 56-1 Olsen: Mammal Remains. 1964	\$10.00	\$ 8.00
—	Vol. 56-3&4 Olsen: Osteology for the Archaeologist. 1972	\$10.00	\$ 8.00
—	Vols. 62-64 7-volume set on Altar de Sacrificios. 1969-72	\$70.00	\$52.50
—	Vol. 67 Howells: Cranial Variation. 1973	\$15.00	\$12.00
MEMOIRS OF THE PEABODY MUSEUM			
—	Vol. 10-1 Proskouriakoff: Jades. 1974	\$35.00	\$28.00
—	Vol. 13-1&2 Willey, Sabloff: Excavations at Seibal. 1975	\$35.00	\$28.00
AMERICAN SCHOOL OF PREHISTORIC RESEARCH BULLETINS			
—	No. 27 Lamberg-Karlovsky: Excavations at Tepe Yahya. 1970	\$ 8.00	\$ 6.00
—	No. 29 Gilman: Later Prehistory of Tangier. 1975	\$15.00	\$12.00
—	No. 30 Movius: Excavation of the Abri Pataud. 1975	\$25.00	\$20.00
PEABODY MONOGRAPHS			
—	No. 1 Stoltman: Groton Plantation. 1974	\$ 7.50	\$ 6.00
—	No. 2 Hammond: Lubaantun. 1975	\$25.00	\$20.00
—	No. 3 Sabloff, Rathje: Cozumel. 1975	\$ 7.50	\$ 6.00
—	No. 4 Dincauze: Neville Site. 1976	\$10.00	\$ 8.00
PEABODY MUSEUM PRESS			
—	Graham: Corpus, Vol. 1. 1976	\$ 7.50	----
—	Graham, von Euw: Corpus, Vol. 2-1. 1976	\$ 7.50	----
—	Moseley, Mackey: 24 Plans of Chan Chan. 1974	\$24.00	\$19.00
—	Phillips, Brown: Shell Engravings, Vols. 1, 2, and 3. 1975-1976	\$180.00	----
—	Stone: Pre-Columbian Man. 1972	\$ 8.00	\$ 6.00

- Please send me the complete 1975 descriptive catalogue of publications.
 I have enclosed a check for this order, payable to Peabody Museum.
Postage will be paid by the Peabody Museum.

Name _____

Address _____

City _____ State _____ Zip _____