

Wing

Program and Abstracts



society for
american archaeology

FORTY-EIGHTH ANNUAL MEETING

Pittsburgh, Pennsylvania

April 27-30, 1983

Forty-Eighth Annual Meeting
SOCIETY FOR AMERICAN ARCHAEOLOGY

Program Co-chairs: James M Adovasio
Ronald C Carlisle

**OFFICERS
OF THE SOCIETY FOR AMERICAN ARCHAEOLOGY**

President: Richard E W Adams
President-elect: George C Frison
Secretary: Leslie E Wildesen
Treasurer: W James Judge
Treasurer-elect: Annetta Cheek
Editor: Dena F Dincauze
Executive Committee Members: Robert Whallon and John Speth
(to 1983); Dee F Green and Patty
Jo Watson (to 1984)

**PROGRAM AND ABSTRACTS
of the Forty-Eighth Annual Meeting
Pittsburgh, Pennsylvania
April 27-30, 1983**

CONTENTS

General Information.....	3
Program.....	5
Abstracts of Symposia.....	27
Abstracts of Papers.....	33

The Program Co-chairs wish to thank the following people at the University of Pittsburgh, Department of Anthropology, for their very kind assistance in assembling and proofing the program: Erica Gibson, Carol Robbins, Tom East and Nathan D Hamilton. The manuscript version of the program, correspondence, reservations for the Meadowcroft Tour and many other complex duties were administered with characteristic skill and endurance by Ginger Placone.

GENERAL INFORMATION

Abstracts Abstracts of papers presented at this meeting are included in the *Program*. Additional copies are available for \$5.00 per copy and may be ordered prepaid from the Society, 1703 New Hampshire Avenue, NW, Washington, DC 20009.

Business Meeting The Society's annual business meeting will begin at 5:30 pm on Friday in Ballrooms 3 and 4.

Special Business Meeting A special business meeting on the SAA reorganization will begin at 9:00 am on Friday in Ballrooms 3 and 4.

Convention Office Any problems or special requests during the meeting should be reported to Black Diamond F on the mezzanine level.

Exhibits Publishers' book exhibits will be displayed in Brigade G from 9 am to 6 pm on Thursday and Friday, and 9 am to noon on Saturday.

Membership Services and Publications SAA publications will be displayed, and membership information will be available in Brigade G during the exhibit hours.

Message and Information Center A self-service message center will be open on the Ballroom foyer from 5 pm to 8 pm Wednesday, and from 8 am to 6 pm Thursday through Saturday. To reach the message center, call the Pittsburgh Hilton main number (412) 391-4600 and ask for the SAA message center.

New Member Reception Officers of the Society will host a reception for all new SAA members and for members attending their first annual meeting on Friday at 8 pm in Le Bateau.

Open House Everyone is invited to an open reception (cashiered bar) on Thursday at 5:30 pm in the Ballroom Foyer.

Placement Service A placement service will be conducted in the Liberty Room from 5 pm to 8 pm on Wednesday, from 8 am to 5 pm Thursday and Friday, and from 8 am to noon on Saturday. Positions open or wanted may be listed with the service throughout the meeting. Message forms will be provided and box numbers will be assigned for use in the placement service message center.

Registration Registration, which includes a copy of the *Program and Abstracts*, is required for attendance at all sessions. Registration desks will be open from 5 pm to 8 pm on Wednesday, from 8 am to 4 pm on Thursday and Friday, and from 8 am to noon on Saturday. Members who preregistered by April 1 should claim their badges and programs at the *advance registration* desk.

Symposia and Session Chairs Please maintain the established schedule scrupulously in fairness to persons planning to attend sessions at specific times to hear particular speakers; please pause for the period allotted in the program if a scheduled speaker fails to appear.

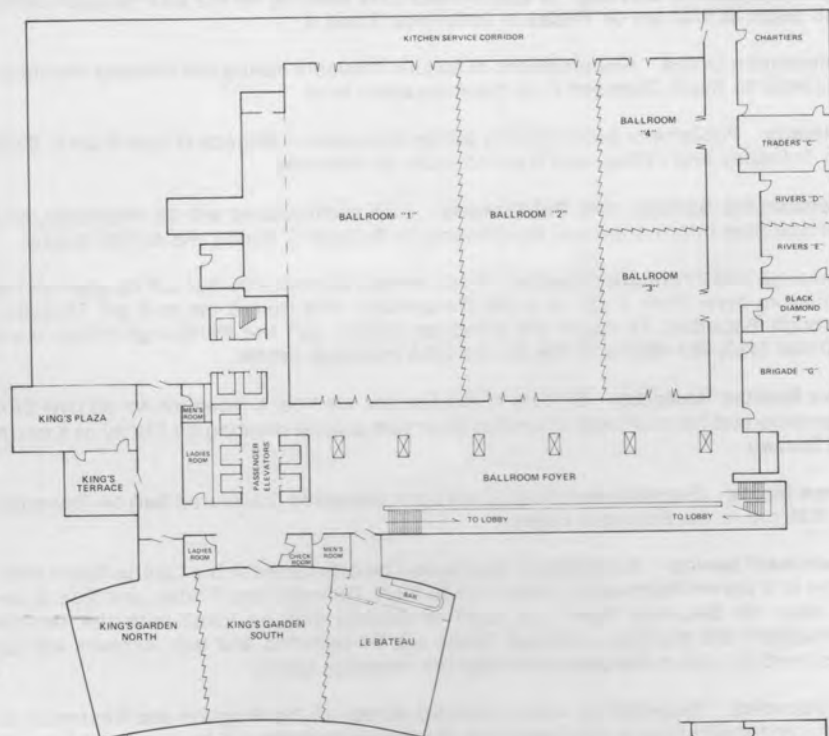
WEDNESDAY MORNING, APRIL 27, 1983

- 9:00 SOCIETY FOR AMERICAN ARCHAEOLOGY
Board Room
Meeting of the Executive Committee

THURSDAY MORNING, APRIL 28, 1983

The Pittsburgh Hilton
Meeting Rooms

MEZZANINE LEVEL



LOBBY LEVEL



- (1) Symposium: HUMAN EXPLOITATION OF COASTAL AND MARINE RESOURCES IN THE LOWER ATLANTIC AND CIRCUM-CARIBBEAN REGION

King's Plaza
Organizers and Chairpersons: D. Gentry Steele and Elizabeth S. Wing

Participants:

- 8:00 David L. Carlson, *Rangia cuneata* as a Seasonal Indicator for Coastal Archaeological Sites in Texas
8:20 H. Stephen Hale, Assessment of Live Meat Weights of Marine Mollusks Based upon the Measurements of the Size of the Valves
8:40 Elizabeth S. Wing and Irvy R. Quitmyer, Recovery of Animal Remains from Archaeological Contexts
9:00 Barry R. Lewis, Fire on the Bayou: Cultural Adaptations in the Mississippi Sound Region
9:20 Irvy R. Quitmyer, Prehistoric Adaptations to Estuarine Systems at King's Bay, Georgia
9:40 Elizabeth J. Reitz, Use of Estuarine Resources by Historic Peoples
10:00 Herman A. Smith, Archaeological Assessment of the Baffin Bay Region of the Lower Texas Coast
10:20 D. Gentry Steele, Utilization of Marine Resources by Inhabitants of the Texas Coast
10:40 Helen Sorayya Carr, Faunal Exploitation in a Preclassic Maya Coastal Community at Cerros, Belize
11:00 Nancy Lee Hamblin, Reef Fishes, Crabs, Sharks, Stingrays, and Sea Turtles: Basic Resources of the Cozumel Maya

- (2) Symposium: SUBSISTENCE, COMMUNITY AND COMPLEXITY IN PREHISTORIC MICRONESIA

King's Terrace
Organizer and Chairperson: Thomas F. King

Participants:

- 8:00 Thomas F. King, Introduction
8:05 George J. Gumerman, W. Bruce Masse and David Snyder, Palauan Community Archaeology
8:25 James Carucci and Thomas F. King, Mai Oh Mai: Breadfruit and Prehistoric Culture Change in Truk
8:45 Charles F. Streck, Prehistoric Coastal Settlement, Marine Subsistence and the Development of Complex Society in Eastern Micronesia
9:05 Takeshi Ueki and Ross Cordy, The Development of Complex Societies on Kosrae
9:25 Ross Cordy, The Development of Complex Societies in Micronesia: Conceptual, Theoretical and Methodological Problems in Archaeological Studies

- (3) Symposium: DEVELOPMENT OF SOCIETAL COMPLEXITY IN PREHISTORIC SOUTH-CENTRAL EUROPE

King's Garden North
Organizers and Chairpersons: Andrea Ferenci Fitting, Alan McPherron and Beth Prinz

Participants:

- 8:00 Alan McPherron, Introduction
8:05 Joni L. Manson, Stylistic Variability in Vinča Ceramics from Divostin, Yugoslavia
8:25 Ruth Tringham, The Development of the Household as the Primary Unit of Production in Neolithic and Eneolithic Southeast Europe

- 8:45 John Chapman, The Early Balkan Village: Pattern and Process
 9:05 Krisztina Kosse, Neolithic Land Use and Settlement in Eastern Hungary
 10:25 Katalin Hegedus, Indications of Social Differentiation in the Neolithic of the Carpathian Basin
 9:45 Timothy Kaiser, Specialization, Production and Social Change in the Balkan Neolithic
 10:05 Barbara Voytek, The Domestic Mode of Production in Neolithic Southeast Europe
 10:25 L. Ellis, Technology as a Reflection of Social Organization: A View from the Black Sea
 10:45 Dean J. Saitta, Theories of "Tribal" Social Process: Problems and Alternatives
 11:05 Discussants: D. Braun and R. Ehrich

(4) Symposium: RECENT CONTRIBUTIONS TO NEW ENGLAND PREHISTORY

- King's Garden South
 Organizers and Chairpersons: James B. Petersen and Nathan D. Hamilton
 Participants:
 8:00 Richard A. Doyle, Jr., Nathan D. Hamilton, James B. Petersen and David Sanger, Late Paleoindian Remains from Northwestern Maine: Lithic Technology and Environmental Adaptations
 8:20 William A. Turnbaugh, Probable Association of Man and *Bison* sp. from Narragansett Bay, Rhode Island
 8:40 Roger W. Moeller, The Templeton Site: 10,000 Years in the Shepaug Valley
 9:00 David R. Yesner and Nathan D. Hamilton, Early Holocene Lacustrine Adaptations in Southwestern Maine: Middle Archaic Assemblages from Sebago Lake
 9:20 James B. Richardson, III, Prehistory and Paleoenvironments of Martha's Vineyard: Some Preliminary Observations
 9:40 James B. Petersen and Marjory W. Power, A Middle Woodland Exchange Network in Northern New England
 10:00 Barbara E. Luedtke, New Perspectives on Massachusetts Ceramics
 10:20 Nathan D. Hamilton and David R. Yesner, Maritime Adaptations in Western Maine: The Great Diamond Island Site
 10:40 F. P. McManamon, Prehistoric Settlement Systems in Coastal New England
 11:00 Russell J. Barber, Demographic Models for Prehistoric New England
 11:20 Victoria B. Kenyon and Patricia F. McDowell, Environmental Setting of Prehistoric Sites in the Merrimack River Valley, Northern New England
 11:40 Kevin A. McBride and Nicholas E. Bellantoni, A Systems Approach to Late Woodland-Contact Period Culture Change in the Lower Connecticut River Valley
 12:00 Discussants: Dena F. Dincauze, David Sanger and Peter Thomas

(5) Symposium: THE EXPANSIONIST STATE IN THE ANDES

- Le Bateau
 Organizer and Chairperson: Terence N. D'Altroy
 Participants:
 8:00 Terence N. D'Altroy, Introduction
 8:05 William H. Isbell, New Symbols and New Thoughts: Ideology and the Rise of Andean Empire
 8:25 Katharina J. Schreiber, Huari Provincial Administration: A Perspective from the Carhuarazo Valley
 8:45 Izumi Shimada, The Sican Culture: Its Character and Extension
 9:05 Carol J. Mackey and Alexandra M. Ulana Klymyshyn, Expansion in the Andes: A Chimú and Inca Comparison
 9:25 Darrell E. La Lone and Mary La Lone, The Inca State in the Southern Highlands: The Question of the State Lands
 9:45 Frank Salomon, The North-Andean *Mindala* Complex Under Inca Rule
 10:05 Terence N. D'Altroy, State-Local Political and Economic Relations: The Inca Occupation of the Upper Mantaro Valley, Peru
 10:25 Discussant: Timothy K. Earle

(6) Symposium: MISSISSIPPIAN CULTURAL DEVELOPMENT AND VARIATION IN THE CENTRAL AND UPPER MISSISSIPPI RIVER DRAINAGE

- Ballroom 2
 Organizers and Chairpersons: Thomas E. Emerson and R. Barry Lewis
 Participants:
 8:00 Sidney G. Denny, William I. Woods and Brad Koldehoff, Upland Mississippian Settlement/Subsistence Systems in the Cahokia Region
 8:20 Mark W. Mehrer, Middle Mississippian Architecture in the American Bottom Area

- 8:40 Sissel Johannessen, Uniformity and Diversity in Mississippian Plant Use
 9:00 Paula G. Cross, Trends in Mississippian Animal Exploitation in the American Bottom Region of Illinois
 9:20 Dale McElrath, Mississippian Chert Exploitation: A Case Study from the American Bottom, Southwestern Illinois
 9:40 Richard W. Yerkes, Mississippian Craft Specialization on the American Bottom: A Functional Study of the Shell-Working Industry at Selected Sites in the Cahokia Settlement System
 10:00 John E. Kelly, Cahokia and Its Role as a Gateway Center in Interregional Exchange
 10:20 Patricia J. O'Brien, Cultural Taxonomy: Cahokia and the Chiefdom
 10:40 Lawrence A. Conrad, The Spoon River Mississippian Culture of the Central Illinois River Valley
 11:00 George R. Milner, Determinants of Variations in Health Among Selected Western Illinois Mississippian Populations
 11:20 Della Collins Cook, Paleoepidemiology of the Schild Cemetery: Health Consequences of Regional Integration

(7) Symposium: MESOAMERICAN HOUSES AND HOUSEHOLDS

- Ballroom 4
 Organizers and Chairpersons: Richard R. Wilk and Wendy Ashmore
 Participants:
 8:00 Maynard B. Cliff, Changes in Domestic Architecture and the Development of Complex Society at Cerros
 8:20 William M. Ringle and E. Wyllys Andrews, V, Formative Residences at Komchen
 8:40 Ellen R. Kintz, Neighborhood (China) and Ward (Cuchteel) in a Classic Maya Metropolis: Coba, Quintana Roo, Mexico
 9:00 Wendy Ashmore, Households of Classic Quirigua
 9:20 Richard M. Leventhal and Arthur A. Demarest, The Use of Artifact Distributions to Identify Copan Houses
 9:40 Don S. Rice, Classic to Postclassic Maya Demographic Transitions
 10:00 Richard R. Wilk, Houses as Artifacts
 10:20 Nancy M. Farris, Corporate Family Structure in Colonial Yucatan
 10:40 Livingston D. Sutro and Theodore E. Downing, Recent Architectural Responses to Population Growth in Rural Oaxaca
 11:00 John M. Weeks, Definition of Prehistoric Maya Household Groups at Mayapan, Yucatan, Mexico
 11:20 Gair Tourtellot, The Growth of Household Units and Family Development Cycles: Seibal as a Test Case
 11:40 William A. Haviland, Musical Hammocks at Tikal: Problems of Reconstructing Household Organization
 12:00 Discussants: Robert D. Drennan and David A. Freidel

(8) Symposium: ETHNOARCHAEOLOGY OF POLLEN, A SEARCH FOR ANALOGUES

- Traders "C"
 Organizer and Chairperson: Suzanne K. Fish
 Participants:
 8:00 Jennifer W. Gish and Linda J. Scott, Experimental Palynology: Garden Plots and Washes of Ethnobotanical Plants
 8:20 Gerald K. Kelso, Experiments in the Reliability of Coprolite Pollen Spectra
 8:40 Robert S. Thompson and Patricia L. Fall, Pollen Analysis of Alluvial Sediments in the Western United States
 9:00 Mary Kay O'Rourke, Adobe Brick: A Historic Source
 9:20 Suzanne K. Fish, Culture in Environment: Palynological Interactions

(9) General Session: ARCHAEOLOGICAL METHODS. IV PATTERNING AND SITE INTERPRETATION

- Rivers "D" and Rivers "E"
 Chairperson: Carole J. Robbins
 Participants:
 8:00 Ronald D. Anzalone, Models of Spatial Decision Making and Settlement Change
 8:20 Glenn Davis Stone, Material Correlates of the Developmental Cycle of the Household
 8:40 Catrien Van Waarden, Toward Detecting Intrasite Traffic Patterns: A Case Study from Botswana

- 9:00 Barton McCaul Brown, Population Estimation from Floor Area—A Restudy of "Naroll's Constant"
- 9:20 Gerald F. Schroedl, Refuse-filled Pits Reconsidered
- 9:40 Peter E. Siegel, A Quantitative Method for Describing and Analyzing Feature Morphology
- 9:50 Stuart J. Fiedel, Ornaments in Hunter-Gatherer Burials: Do They Imply Ranking?
- 10:10 Rosalind L. Hunter-Anderson, From Variety to Redundancy in House Types and Other Changes in the Use of Site Space Among Prehistoric Horticulturalists in the U.S. Southwest
- 10:30 Kathryn Maurer Trinkaus, Non-Typological Approaches to Artifact Variability
- 10:50 Christopher Carr, The Polythetic Organization of Archaeological "Toolkits": An Example from Pincevent, France
- 11:10 David V. M. Stephen and Donald East, Microcomputer Applications in Field Archaeology
- 11:20 Carole J. Robbins, Maximizing Spatial Information in Samples

(10) Symposium: PUBLIC PERCEPTIONS OF ARCHAEOLOGY: ON THE IMPORTANCE OF AN ARCHAEOLOGICALLY WELL INFORMED PUBLIC

Chartiers

Organizers and Chairpersons: Kenneth L. Feder and John R. Cole

Participants:

- 9:00 Dean Snow, Coping with Nonsense: Pseudoarchaeology and Professional Responsibility
- 9:20 John R. Cole, Archaeology, Antievolutionism and the Public: Facts, Artifacts and Aren'tifacts
- 9:40 Stuart Scott, Archaeological Science, Pseudoscience and the Public
- 10:00 Kenneth L. Feder, The Roots of Irrationality in Popular Archaeology
- 10:20 Duane C. Anderson, Approaches to Public Archaeology
- 10:40 Victoria Dirst, Some Observations Regarding Archaeological Education in Wisconsin
- 11:00 James J. Hester and James Grady, The Colorado Archaeological Awareness Year—An Experiment in Public Outreach
- 11:40 Dorothy Schlotthauer Krass, Resource Management is a Cultural Issue

(11) Symposium: LITHICS IN COMPLEX SOCIETIES: SESSION I—INDICATORS OF SOCIAL COMPLEXITY

Ballroom 3

Organizer and Chairperson: Jane Stone

Participants:

- 9:20 David L. Browman, Incaic Muanca Polity Lithic Indicators
- 9:40 Glenn S. Russell, The Organization of Huanca Lithic Production During the Late Intermediate Period and Late Horizon in the Central Highlands of Peru
- 10:00 Jane Stone, The Formation of Long-Distance Trade Infrastructures in Complex Societies
- 10:20 Joan M. Gero, Lithics and the Representation of Social Complexity
- 10:40 Phillip H. Shelley, Lithic Specialization at Salmon Ruin, San Juan County, New Mexico
- 11:00 Curtis Runnels, Lithics in Complex Societies: Stone Tool Use in the Ancient Mediterranean Empires
- 11:20 Robin Torrence, Prehistoric Obsidian Exchange in Greece: An Instructive Cautionary Tale
- 11:40 Discussants: William H. Isbell and George H. Odell

(12) General Session: CERAMIC ANALYSIS AND INTERPRETATION

King's Terrace

Chairperson: James A. Brown

Participants:

- 10:00 James A. Brown, On the Origin of Pottery
- 10:20 William A. Lucius, Anna O. Shepard and Current Technological Approaches to Ceramic Analysis
- 10:40 Shereen Lerner, The Utility of Plainware Ceramics in Studies of Time and Space
- 11:00 Emlen Myers, Inherent Production Rates of Pottery Manufacturing Techniques and Their Use in Social Inference

(13) Symposium: GOALS, METHODS AND ACCOMPLISHMENTS IN ARMY ARCHAEOLOGICAL RESOURCES MANAGEMENT

Traders "C"

Organizers and Chairpersons: Constance Ramirez and Glen D. DeGarmo

Participants:

- 10:00 Constance Werner Ramirez, The Army and Archaeology
- 10:20 Paul R. Green, The Army and Cultural Resources Management: A Macom Perspective
- 10:40 Margaret M. Lyneis, James H. Cleland and Claude N. Warren, Fort Irwin California: Research and Management in the Face of Massive Damage
- 11:00 Frederick L. Briuer, Problem-Oriented Research and Army Archaeological Resource Management Strategies
- 11:20 Glen D. DeGarmo, The Archaeological Program on Fort Bliss, Texas
- 11:40 Robert J. Hard, A Model of Hunter-Gatherer Adaptations in the Chihuahuan Desert
- 12:00 Discussants: Fred T. Plog and Bert Salwen

THURSDAY AFTERNOON, APRIL 28, 1983

12:00- NATIONAL ASSOCIATION OF STATE ARCHAEOLOGISTS

1:00

Rivers D and Rivers E

Business Meeting

Chair: Valerie Talmage

(3) Symposium: DEVELOPMENT OF SOCIETAL COMPLEXITY IN PREHISTORIC SOUTH-CENTRAL EUROPE (continued)

King's Garden North

Organizers and Chairpersons: Andrea Ferenci Fitting, Alan McPherron and Beth Prinz

Participants:

- 1:30 Colin Renfrew, The Social Context of Metallurgical Innovation
- 1:50 Susan N. Skomal, Artifactual Vs. Sociocultural Change: The Carpathian Basin Copper Age
- 2:10 Pál Patay, Social Structure of the Copper Age in the Carpathian Basin
- 2:30 Anthony F. Harding, Resources, Trade and Subsistence in the Southeast European Bronze Age
- 2:50 Peter S. Wells, Iron, Trade and the Growth of Towns in Early Iron Age Slovenia
- 3:10 Brad Bartel, Interaction and Acculturation in Roman Moesia
- 3:30 Janet E. Levy, Rank and Religion in Prehistoric Chiefdoms
- 3:50 Discussant: B. Wailes

(6) Symposium: MISSISSIPPIAN CULTURAL DEVELOPMENT AND VARIATION IN THE CENTRAL AND UPPER MISSISSIPPI RIVER DRAINAGE (continued)

Ballroom 2

Organizers and Chairpersons: Thomas E. Emerson and R. Barry Lewis

Participants:

- 1:30 Joseph A. Tiffany, Models of Mississippian Culture History in the Western Prairies: A Perspective from Iowa
- 1:50 Guy E. Gibbon, The "Mississippian" Presence in Minnesota
- 2:10 Lynne Goldstein, Middle and Upper Mississippian: A Question of Geography, Time or Organization?
- 2:30 Charles R. Moffat, Mississippians in the Upper Kaskaskia Drainage: The Shelbyville Reservoir Investigations
- 2:50 Richard Edging and R. Barry Lewis, The Mississippi Period in the Cairo Lowland, Southeast Missouri
- 3:10 Robert J. Barth, The Emergence of the Vincennes Culture in the Lower Wabash Drainage
- 3:30 Cheryl Ann Munson, Variation in Regional Settlement Organization and Community Behaviors: A Comparison of the Mississippian Angel and Caborn-Welborn Phases
- 3:50 Jon Muller and Jeanette Stephens, Mississippian and Its Frontiers
- 4:10 Discussants: James B. Griffin and Bruce Smith

(11) Symposium: LITHICS IN COMPLEX SOCIETIES: SESSION II—MESOAMERICAN STUDIES (continued)

Ballroom 3

Organizer and Chairperson: Jane Stone

Participants:

- 1:30 Rebecca McSwain, Lithic Artifacts and the Interpretation of Mixed Contexts in a Preclassic Maya Town
- 1:50 Thomas R. Hester and Harry J. Shafer, Production and Distribution Patterns in Ancient Maya Chert Tool Industries
- 2:10 Terry Stocker and Barbara Jackson, The Gulf Coast Shell and the Highland Sword
- 2:30 William J. Parry, Procurement, Production and Use of Chipped Stone Tools in an Early Formative Village
- 2:50 Michael W. Spence, Workshop Distribution in Teotihuacan, Mexico
- 3:10 Dan M. Healan, Janet M. Kerley and George J. Bey, III, Obsidian Exploitation in a Postclassic City: Tula, Mexico
- 3:30 John E. Clark, Obsidian, Chiefdoms and States: A Critical Review of Mesoamerican Obsidian Studies
- 3:50 Robert S. Santley and Janet M. Kerley, Obsidian Working, Long-Distance Exchange and the Politicoeconomic Organization of Early States in Central Mexico
- 4:10 Discussants: Jeffrey R. Parsons and Carl J. Phagan

(14) Symposium: GEOGRAPHICAL APPROACHES TO PROBLEMS IN ARCHAEOLOGY

King's Plaza

Organizers and Chairpersons: Larry J. Gorenflo and Dennis E. Lewarch

Participants:

- 1:30 Dennis E. Lewarch, The Unfulfilled Promise of Geographical Applications in Archaeology
- 1:50 K. W. Kintigh, But This Isn't a Point Pattern: Mosaic Analysis and the Structure of Hohokam Villages
- 2:10 V. P. Steponaitis, The Uses and Abuses of Christaller's Central Place Theory
- 2:30 Susan T. Evans, Central Place Theory and Basin of Mexico Settlement Reality: Approaches to Goodness of Fit
- 2:50 Larry J. Gorenflo and Nathan Gale, On the Use of Transformed Maps in Archaeological Inquiry: Some Examples from Central Mexico
- 3:10 Susan Gregg, Scheduling and Subsistence: A Structural Analysis of Swidden Farming
- 3:30 Richard L. Church, Thomas L. Bell and Larry J. Gorenflo, An Analysis of Late Horizon Settlement in the Basin of Mexico Using Location-Allocation Models
- 3:50 Discussants: Brian J. L. Berry and Peter Gould

(15) Symposium: PIECING TOGETHER THE PAST: APPLICATIONS OF REFITTING STUDIES IN ARCHAEOLOGY

King's Garden South

Organizer and Chairperson: Jack L. Hofman

Participants:

- 1:30 Paola Villa, Housekeeping in the Stone Age
- 1:50 Anthony E. Marks and Phillip Volkman, Core Reconstructions as a Means of Documenting Technological Change: The Middle to Upper Paleolithic Transition in the Levant
- 2:10 Marvin Kay, Clues to Lithic Technology, Site Activity and Geomorphology: Mended Stone Artifacts from Rodgers Shelter and Phillips Spring
- 2:30 Stanley A. Ahler, Use-Phase Classification and Manufacturing Technology in Plains Village Arrowpoints
- 2:50 Don G. Wyckoff, Refitting and Knapping Behavior: The Lowrance Example
- 3:10 George C. Frison, Cultural Inference from Reassembly of Clovis and Folsom Biface Manufacture Discards
- 3:30 Lawrence C. Todd, Reassembly of Bison Skeletons from the Horner Site: A Study in Anatomical Refitting
- 3:50 Jack L. Hofman, Contextual Analysis of an Artifact Aggregate in Mid-Holocene Terrace Sediments, Middle Tennessee
- 4:10 E. M. Kroll, J. W. K. Harris and H. T. Bunn, Refitting the Sequence of Site Formation Events at Archaeological Sites at Koobi Fora, Kenya
- 4:30 Jacques Tixier, Refitting: Its Place in Present Studies of Prehistoric Man

4:50 Discussants: Lewis R. Binford and Daniel Cahen

(16) Symposium: A COOPERATIVE PERSPECTIVE ON SOUTHWESTERN PREHISTORY: SARG

Le Bateau

Organizers and Chairpersons: Sylvia W. Gaines, Jill E. Neitzel and Rachel Most

Participants:

- 1:30 Sylvia W. Gaines, The SARG Model of Cooperative Research
- 1:50 Jeffrey S. Dean, Robert C. Euler and George J. Gumerman, Regional Environmental Models
- 2:10 Rachel Most and A. Trinkle Jones, Adaptation and Environmental Diversity
- 2:30 Jill E. Neitzel and Jeffrey Hantman, An Evaluation of Demographic Reconstructions on the Colorado Plateau
- 2:50 Linda S. Cordell and Shirley Powell, Prehistoric Subsistence Variability in the Northern Southwest
- 3:10 W. James Judge, John D. Scheiberg and Richard Effland, Organizational Variability
- 3:30 Fred Plog and Dee F. Green, Explaining Regional Variability in the Prehistoric Plateau Southwest
- 3:50 Discussants: Michael B. Schiffer and Patty Jo Watson

(17) General Session: ARCHAEOLOGICAL RESEARCH IN THE EASTERN MEDITERRANEAN, THE NEAR EAST AND AFRICA

Ballroom 4

Chairperson: Ralph S. Solecki

Participants:

- 1:30 Vicky A. Walsh, House Site Selection at Nichoria in Southwest Greece
- 1:40 P. Nick Kardulias, Ethnoarchaeology as Survey Supplement: An Example from the Southern Argolid, Greece
- 1:50 Tracey Cullen, The Reflection of Community Bonds and Boundaries in the Archaeological Record: Neolithic Urfirnis Pottery in Southern Greece
- 2:00 A. Bernard Knapp and Tamara Stech, Copper Production and International Exchange: The Rise of Complex Society on Cyprus
- 2:20 Steven A. Rosen, The Cultural Periphery: Intensive Archaeological Survey in the Negev Desert
- 2:40 Ralph S. Solecki and Rose L. Solecki, A Reappraisal of the Shemsian Industry of Yabroud, Syria
- 3:00 Michael J. Fuller, Abila: A City-State in Jordan
- 3:10 Perry L. Gniwecki, Spatial Organization in a Rural Early Akkadian Farmhouse
- 3:30 Elizabeth F. Henrickson, Multidimensional Scaling (MDS) of Stylistic Relationships Among Ceramics of the Greater Mesopotamian Chalcolithic
- 3:50 Alan H. Simmons, The Western Desert Expedition: A Case Study of a Cultural Resource Management Perspective in the United Egyptian Republic
- 4:00 K. M. Banks, The Development of Ceramic Technology in the Egyptian Western Desert and Northern Sudan
- 4:10 Preston S. Staley, Modes in the Patterning of Planform Morphology Among Hand-axes and Cleavers from Isimila, Tanzania
- 4:30 Diane P. Gifford, Faunal Evidence for Prehistoric Herding Practices in East Africa
- 4:50 J. W. K. Harris and J. D. Clark, Results of Archaeological Research in the Middle Awash, Ethiopia

(18) General Session: ETHNOBOTANY

Chartiers

Chairperson: Bruce F. Benz

Participants:

- 1:30 Bruce F. Benz, Racial Classification in Maize (*Zea mays* L.)
- 1:50 David L. Carmichael, Observations on Stratigraphy and a Sample of Early Maize at Fresno Shelter, New Mexico
- 2:10 Michael J. DeNiro and C. A. Hastorf, Identification of Prehistoric Carbonized Plant Remains Based on Stable Carbon and Nitrogen Isotope Ratios
- 2:30 Charlotte Gyllenhaal-Davis, Cultural and Environmental Factors Affecting Yields in Slash-and-Burn Agriculture: Experimental Analyses
- 2:40 David L. Lentz, Plant Macrofossils from the Archaeological Sites of the Lower Sulaco River Drainage, Honduras *Coccol palm*

Gentry at 3

(19) Symposium: RELATIONS OF INEQUALITY: THE VIEW FROM THE NORTHEASTERN UNITED STATES

Rivers "D" and Rivers "E"

Organizers and Chairpersons: Robert W. Paynter and Dolores Root

Participants:

- 1:30 Peter F. Thorbahn, Spatial Aspects of Economic Differentiation Among Hunter-Gatherers
- 1:50 John R. Cross, Organizational Options for Nonsubsistence Production in the Late Archaic
- 2:10 Kent G. Lightfoot, Residential Mobility and Organizational Change: An Example from Long Island
- 2:30 Dolores Root, Material Culture and Strategies of Social Inequality in Nonstratified Societies
- 2:50 Gerald F. Reid, "... To Cut Off the Arms of Our Enemies": Rethinking Native Participation in the Fur Trade
- 3:10 Russell G. Handsman, Social Inequality and Alienation: The Cultural Construction of Value and History
- 3:30 Mary Beaudry, Yeomen and Gentlemen: An Archaeological Perspective on Social Rank in 17th Century Massachusetts
- 3:50 Ellen-Rose Savulis, From Domestic to Industrial Production: A Reevaluation of Women's Work 1780-1830
- 4:10 Nan A. Rothschild, Spatial Organization, Architecture and Status in Colonial New York
- 4:30 Discussants: Barbara Bender and Thomas McGovern

(20) Symposium: THE CORPS CARES: ARCHAEOLOGY IN THE 1980s

Traders "C"

Organizers and Chairpersons: Sannie Kenton and Daphne Derven

Participants:

- 2:30 Barry Rought, A Management Perspective of an Archaeological Program in the Corps of Engineers
- 2:50 Patti J. Johnson, Fort Hunter Liggett and Archaeological Enlightenment
- 3:10 Sannie L. Kenton, Historic Preservation at Knights Ferry, California, and the National Historic Preservation Act Amendments of 1980
- 3:30 Jerald J. Johnson, Possible Criteria for Archaeologically Distinguishing a Cultural Boundary Between Two Closely Related Ethnographic Wintun Populations
- 3:50 Daphne Derven, Regional Assessment of Historic Preservation at Corps of Engineers' Projects
- 4:10 Nancy Farrell, Managing Cultural Resources for Military Construction
- 4:30 Discussant: Larry Banks

(20) General Session: ARCHAEOLOGICAL RESEARCH ON THE NORTHERN AND WESTERN PLAINS OF THE UNITED STATES

Chartiers

Chairperson: Jack Donahue

Participants:

- 3:10 Mary Lou Larson, The Early Plains Archaic: Drought Response on the Northwest Plains?
- 3:30 Alice B. Kehoe, Check-Stamped Ceramics and Checkered Interpretations on the Northern Plains
- 3:40 Charles A. Reher, Implications of a Ceramic Assemblage from the Powder River Basin
- 3:50 Michael G. Michlovic, The Canning Site and the Archaic on the Northeastern Plains
- 4:00 Thomas Jorstad, Jack Donahue, Thomas East and J. M. Adovasio, Distribution of Cultural Material within an Aeolian Sequence, Cinnamon Creek Ridge, North Dakota

5:30 OPEN HOUSE

Ballroom Foyer
Cashiered Bar

THURSDAY EVENING, APRIL 28, 1983

(22) General Session: BIOARCHAEOLOGY

King's Garden North

Chairperson: Susan Kent

Participants:

- 7:30 LuAnn Wandsnider, Culture Change and the Myth of Population Regulation
- 7:50 Mary L. Powell, The People of Nodena, a Late Mississippian Community in Northeast Arkansas
- 8:10 Ann F. Ramenofsky, The Introduction of European Disease and Aboriginal Population Collapse
- 8:30 Elizabeth Manion, Prehistoric Occurrence of Metastatic Carcinoma
- 8:50 Susan Kent, Culprits in Iron Deficient Anemia in Prehistoric Southwestern Populations—A Multivariate Approach

(23) Symposium: PRELIMINARY RESULTS OF THE FAP-405 HIGHWAY SALVAGE PROJECT AT THE RENCH SITE, PEORIA COUNTY, ILLINOIS

King's Garden South

Organizer and Chairperson: Mark A. McConaughy

Participants:

- 7:30 James P. Dwyer and Mark A. McConaughy, An Introduction to the Rench Village Salvage Project (FAP-405), Peoria County, Illinois
- 7:40 Frank J. Vento, The Geology and Geomorphology of the Rench Site, Peoria County, Illinois
- 7:50 Frances B. King, Archaeobotanical Remains from the Rench Site
- 8:00 Bonnie W. Styles, Scott S. Crye and J. R. Purdue, Analysis of Faunal Remains and Subsistence at the Rench Site: 1980-81
- 8:10 Roger A. Boydston, Two for One: The Rench Site Lithics and the Intensive Surface Collection at Rench
- 8:20 Claude V. Jackson and Mark A. McConaughy, Rench Site Structural Evidence and Associated Ceramic Remains
- 8:30 Jan D. Applegarth, Artifacts from the Rench Site: The Shoenbeck Collection
- 8:40 Mark A. McConaughy, Preliminary Assessment of the FAP-405 Highway Salvage Project at the Rench Site
- 8:50 Discussants: James A. Brown and James B. Griffin

(24) General Session: ARCHAEOLOGICAL RESEARCH IN COLORADO AND ARIZONA

Le Bateau

Chairperson: Phillip D. Neusius

Participants:

- 7:30 Deborah L. Nichols and Shirley Powell, Physical Environment, Technology and Cultural Change: The Black Mesa Anasazi
- 7:50 Robert D. Leonard, Catherine M. Cameron and F. E. Smiley, Diversification in Anasazi Lithic Assemblages: Implications for the Study of Social and Technological Change on Black Mesa
- 8:00 Margerie Green, Chipped Stone Raw Materials and the Study of Interaction: Black Mesa, Arizona
- 8:10 Richard F. Darsie, Mapping Agricultural Potential in the Dolores Project Area
- 8:30 Carolyn Raffensperger, Anasazi Ritual During Pueblo I: The Dolores Example
- 8:50 Phillip D. Neusius, Changing Use of Anasazi Pit Structures in the Dolores River Valley: A Microwear Perspective
- 9:10 Meredith H. Matthews and Bruce F. Benz, Inquiry into Behavioral and Ecological Models Through Intensive Analysis of Macrobotanical Remains
- 9:30 Kevin D. Black, Prehistoric Hunter-Gatherer High Altitude Adaptations in Central Colorado

(25) CONCURRENT POSTER SESSIONS

Ballroom 3

- 7:30- Thomas D. Burke: Reaching Out: Educating the Public About Archaeology

- 10:00 C. J. Clausen, Charles F. Merbs, J. A. Holman and J. A. Gifford: Human Response to Late Quaternary Environmental Change: Evidence from Little Salt Spring (LSS), Southwestern Florida
 Gayle J. Fritz: A New Look at Desiccated Plant Remains from the Ozarks
 Jeffrey Howard King: Results of Replicative Experiments in Pit House Construction at the Gila Heritage Park
 Lauren E. Talalay: Implications of an Early Canon in Neolithic Sculpture

(26) Symposium: GEOARCHAEOLOGICAL RESEARCH IN THREE RIVER VALLEYS OF THE SOUTHEAST

Ballroom 4

Organizer and Chairperson: Judith A. Bense

Participants:

- 7:30 G. R. Brackenridge and J. L. Hofman, Late Quaternary Stratigraphy and Archaeology of the Middle Duck River Valley, Tennessee
 7:50 Walter E. Klippel and William B. Turner, Prehistory and Holocene Land Surface Changes in the Nashville Basin
 8:10 Guy R. Muto, Geoscience Perspectives Along the Upper Tombigbee
 8:30 David E. Pettry, Paleosol/Cultural Relationships in the Tombigbee Flood Plain of Northeast Mississippi: A Pedological Perspective
 8:50 Judith A. Bense, Early Holocene Cultural Adaptations in the Upper Tombigbee Valley of Northeast Mississippi: Results of Geoarchaeology
 9:10 Joseph Schuldenrein and David G. Anderson, Human Ecology and Prehistory Along the Savannah River: A Geoarchaeological Perspective
 9:30 Discussant: Jefferson Chapman

(27) Symposium: TOWARD AN ARCHAEOLOGY OF THE SYMBOLIC ORDER

Chartiers

Organizers and Chairpersons: Russell G. Handsman and Mark P. Leone

Participants:

- 7:30 Russell G. Handsman, Introduction
 7:35 Margaret Conkey, Art and Design in the Upper Paleolithic
 7:55 Mark P. Leone, Early American Capitalism and Its Ideology
 8:15 Ian Hodder, House and Burial Symbolism as Social Strategies in the European Neolithic
 8:35 Dell Upton, Black and White Landscapes in 18th Century Virginia
 8:55 John M. Fritz, Vijayanagara, South India: The Structure and Symbolism of Ritual Kinship in a Preindustrial Hindu State (14th through 16th Centuries)
 9:15 Discussant: Henry Wright

(28) Symposium: ARCHAEOLOGICAL LEGISLATION: MANAGING OUR ARCHAEOLOGICAL HERITAGE

Rivers "D" and Rivers "E"

Organizers and Chairpersons: Gary Nurkin and A. Dan Tarlock

Participants:

- 7:30 Thomas F. King, An Overview of Archaeological Law at the Federal Level
 7:50 Mark Michels, The Protection of Archaeological Resources in New Mexico
 8:10 Gary H. Nurkin, The Conservation of Archaeological Resources in the Upper Mississippi River Valley
 8:30 Ronald H. Rosenberg, Archaeological Resource Preservation: The Role of State and Local Government
 8:50 A. Dan Tarlock, State and Local Land-Use Regulation to Preserve Archaeological Resources
 9:10 Michael R. Beckes and Dale Davidson, Archaeology and Energy Development: The Future of the Past in Western North Dakota
 9:30 Discussant: Mark Barnes

FRIDAY MORNING, APRIL 29, 1983

9:00- SOCIETY FOR AMERICAN ARCHAEOLOGY

12:00

Ballrooms 3 and 4

Special Business Meeting on SAA Reorganization

Chair: R. E. W. Adams

FRIDAY AFTERNOON, APRIL 29, 1983

12:00 SOCIETY OF PROFESSIONAL ARCHEOLOGISTS

King's Terrace

Meeting of the Board of Directors

(29) Symposium: PROBLEMS IN NORTHERN RIO GRANDE PREHISTORY

King's Plaza

Organizer and Chairperson: Anne I. Woosley

Participants:

- 1:30 Anne I. Woosley, Prehistoric Agriculture in the Northern Rio Grande
 1:50 Carol Kriebel, Northern Rio Grande Settlement Patterns
 2:10 Rebecca Proctor-Weiss, Northern Rio Grande Painted Wares: A Reevaluation
 2:30 Jay R. Newman, Northern Rio Grande Patterns of Lithic Procurement and Use
 2:50 Ruth L. Baker, Wild and Domestic Plant Utilization at Pot Creek Pueblo
 3:10 Kenneth W. Howell, Criteria for Using Remote Sensing Technologies on Archaeological Projects
 3:30 Mark C. Etheridge, Prehistoric to Historic Transitions in the Northern Rio Grande
 3:50 Discussants: Michael A. Glassow and Richard I. Ford

(30) Symposium: RECENT INVESTIGATIONS AT TLAJINGA 33:S3W1, TEOTIHUACAN

King's Garden North

Organizer and Chairperson: Randolph J. Widmer

Participants:

- 1:30 Randolph J. Widmer, Craft Specialization at Tlajinga 33, Teotihuacan
 1:50 Warren Barbour, Analysis of Figurines from Tlajinga 33, Teotihuacan
 2:10 David J. Rue, An Analysis of Microfossils from Teotihuacan
 2:30 Evelyn C. Rattray, Burial Practice at Tlajinga 33, Teotihuacan
 2:50 Rebecca Storey, Mortality and Health at Tlajinga 33, Teotihuacan
 3:10 George L. Cowgill, Meanings and Buildings at Teotihuacan: Political Inferences from Prehistoric Architectural Complexes
 3:30 Martha L. Sempowski, Some Social Implications of Mortuary Behavior at Teotihuacan, Mexico
 3:50 Margaret H. Turner, The Lapidary Industry at Teotihuacan, Mexico
 4:10 Discussant: George L. Cowgill

(31) Symposium: THE STATUS OF ARCHAEOBOTANICAL RESEARCH IN THE AMERICAS

King's Garden South

Organizer and Chairperson: C. Earle Smith, Jr.

Participants:

- 1:30 C. Earle Smith, Jr., Introduction
 1:35 Christine Ann Hastorf, New Directions in Andean Archaeobotany
 1:55 C. Earle Smith, Jr., Why Not the Lowlands?
 2:15 Emily S. McClung de Tapia, Archaeobotanical Research in Tropical North America
 2:35 Richard A. Yarnell, Prehistoric Plant Foods and Husbandry in Eastern North America
 2:55 Robert E. Gasser, Current Research Orientations in the Archaeobotany of the Southwestern United States

(32) Symposium: THE PROSPECTS FOR A PHILOSOPHY OF ARCHAEOLOGY

Le Bateau

Organizer and Chairperson: M. Alison Wylie

Participants:

- 1:30 P. J. Watson and M. Alison Wylie, The Prospects for Philosophical Analysis in Archaeology
 1:50 Guy E. Gibbon, Realism: A Better Metaphysics for Archaeology?
 2:10 Valerie Pinsky, Archaeology and Critique: Implications for Understanding Disciplinary Change in American Archaeology
 2:30 George C. Knight, Missing Persons, Archaeology and Functionalism
 2:50 Merrilee H. Salmon, The Principle of Efficiency
 3:10 M. Alison Wylie, The Dilemma of Interpretation: Inuit Ethnography and the Archaeological Record
 3:30 Marsha Hanen and Jane Kelley, Inference to the Best Explanation in Archaeology

- 3:50 Wesley C. Salmon, The Formulation of Why-Questions
 4:10 Norbert L. Bartochowski, Positivism, Archaeology and Ethnohistory: Problems in Synthesis
 4:20 Lester Embree, Archaeology Without a Capital P
 4:40 Michael B. Schiffer, Who Needs a Philosophy of Archaeology?
 5:00 Discussant: Robert C. Dunnell

(33) General Session ARCHAEOLOGICAL RESEARCH IN THE MIDWESTERN UNITED STATES

Ballroom 3

Chairperson: Kent D. Vickery

Participants:

- 1:30 Donald A. Richardson, Status and Ritual Items: The Distribution of Hopewellian Artifacts
 1:50 Robert L. Thunen, Social and Ritual Correlates of Ceremonial Centers
 2:00 Kent D. Vickery, Harness and Mound City: A Flint Raw Material Comparison
 2:10 Robert V. Riordan, Problems and Perspectives of Enclosed Ohio Hilltops
 2:30 Jonathan E. Bowen, Recent Excavations at Pearson Village I in Northern Ohio
 2:40 Patrice A. Telster, Extending Fort Ancient into Peripheral Areas: Problems and Prospects
 3:00 Edward M. Schortman and Patricia A. Urban, Survey Along Indianfield Run, Knox County, Ohio
 3:10 Ronald Hicks, Jeanette E. Buehrig, Donald R. Cochran, William R. Wepler and Alan Samuelson, Excavation and Survey in Mounds State Park, Indiana
 3:20 Diane E. Beynon and P. J. Provost, A Preliminary Report on the Excavation of Fox Island (12AL121)
 3:30 Guy Prentice and George R. Milner, Household Production for Trade in the Archaeological Record: Evidence for Cottage Industries in Southwestern Illinois
 3:50 Michael Hargrave, D. Billings, N. Lopinot and G. Oetelaar, The Bridges Site: A Small Mississippian Village in Interior Southern Illinois
 4:00 Richard W. Jefferies and William I. Woods, Soil Analysis as a Means of Investigating Changing Patterns of Site Utilization
 4:10 James P. Gallagher, Robert F. Boszhardt and Katherine P. Stevenson, Oneota Ridged Field Agriculture in Southwestern Wisconsin

(34) General Session: ARCHAEOLOGICAL RESEARCH IN THE EASTERN AND SOUTHEASTERN UNITED STATES

Ballroom 4

Chairperson: Barbara A. Purdy

Participants:

- 1:30 David W. Anthony, M. Rushing and W. Rust, Prehistoric Settlement Patterns in the Potomac Piedmont Lowlands
 1:40 Robert A. Verrey, Paleoindian and Early Archaic Bifacial Stone Tool Manufacturing at the Thunderbird Site, Virginia
 1:50 Lathel F. Duffield and Richard A. Boisvert, The Adams Mastodon Site
 2:00 Kenneth B. Tankersley, The Clovis Potential and Geoarchaeology of Big Bone Lick, Kentucky
 2:10 Sharon I. Goad, Poverty Point: A Ground-Level View
 2:20 H. Edwin Jackson, Subsistence Strategies of a Poverty Point Community
 2:30 Gloria G. Cole, Structural Analysis of a Middle Woodland Copena Mound
 2:50 Ann M. Early, Standridge: Caddoan Adaptation in a Mountain Environment
 3:00 Lawrence S. Alexander, C. Davis, D. Lenhardt and R. Skrivan, Archaeological Excavations at 22TS954, Tishomingo County, Mississippi
 3:10 J. Richard Shenkel, Seriation, A Question of Chronology or Differences in Site Function
 3:20 Barbara A. Purdy, Responsibilities of Excavating Archaeological Wet Sites

(35) Symposium: DUSTY ARCHIVES: THE RESEARCH POTENTIAL OF EXISTING ARCHAEOLOGICAL SITE AND SURVEY DATA

Chartiers

Organizers and Chairpersons: Douglas B. Bamforth and David F. Stone

Participants:

- 1:30 Douglas B. Bamforth and David F. Stone, Dusty Folders: The Research Potential of Existing Site and Survey Data

- 1:50 J. F. Custer, Late Archaic and Delmarva Adena Settlement Patterns of Central Delaware: Implications for the Origins of Ranked Societies
 2:10 David F. Stone, Cultural Resource Management as Science: Spatial Analysis and Prediction of Prehistoric Archaeological Sites in Santa Barbara County, California
 2:30 Mitchell T. Mulholland, Computer Enhancement of Extant Archaeological Site Records
 2:50 Robert J. Hasenstab, The Application of Geographic Information Systems to the Analysis of Archaeological Site Definitions
 3:10 Dwight W. Read, Global Features of the Spatial Distribution of Great Basin Sites in the MX Project Area
 3:30 Douglas B. Bamforth, Adaptive Process on the Mixed Grass Plains: Paleoindian Subsistence and Settlement on the Llano Estacado
 3:50 Daniel O. Larson, Settlement Pattern Variability in the Southern Great Basin
 4:10 Eric S. Johnson and Thomas F. Mahlstet, Collections Analysis and Cultural Resource Management: An Example from Southeastern Massachusetts
 4:30 Discussant: Robert L. Bettinger

(36) Symposium: THE JOY AND TORMENT OF LARGE-SCALE CONTRACT ARCHAEOLOGY: THE CHIEF JOSEPH DAM CULTURAL RESOURCES PROJECT

Rivers "D" and Rivers "E"

Organizers and Chairpersons: M. E. W. Jaehning and Ernest S. Lohse

Participants:

- 2:00 M. E. W. Jaehning, An Introduction to the Chief Joseph Dam Cultural Resources Project: 1977-83
 2:10 D. A. Munsell and L. V. Salo, You Bet the Rent on a 0.2 Percent Sample?
 2:20 Ernest S. Lohse, Typology and Chronology: A Methodological Imperative
 2:35 S. D. Livingston, Multisite Faunal Analysis: The CJDRCR Data Base
 2:45 N. A. Stenholm, Botanical Recovery and Analysis: A Beginning
 3:00 S. K. Campbell, Contract Archaeology: A Case Study of Changing Policies and Their Impact on Research Potential

(37) Symposium: CULTURE CHANGE AND CLIMATIC CHANGE IN THE CIRCUM-CARIBBEAN AND ATLANTIC COAST

Traders "C"

Organizers and Chairpersons: Joel D. Gunn and Victor A. Carbone

Participants:

- 3:00 Joel Gunn, Climatic Change Processes During the Holocene in the Circum-Caribbean and Atlantic Coast
 3:20 Fred Valdez, Jr., and Victor A. Carbone, Holocene Climate and the Caribbean Culture Chronology
 3:40 Richard E. W. Adams and Eric C. Gibson, Holocene Climate and Culture Change in the Maya Lowlands
 4:00 Elton R. Prewitt and Joel Gunn, Holocene Climate and the Central Texas Chronology
 4:20 Charles H. Fairbanks, Holocene Climate and Culture Change in Florida
 4:40 William M. Gardner and Victor A. Carbone, Holocene Climate and Culture Change on the Atlantic Coast of Southeastern United States

(38) Symposium: MISSISSIPPIAN/LATE WOODLAND FARMSTEADS AND FOOD PRODUCTION

King's Garden South

Organizers and Chairpersons: Neathery B. Fuller and David L. Browman

Participants:

- 3:30 Dale R. Henning, Attenuated Mississippian Sites Near Downtown Cahokia
 3:50 Neathery Batsell Fuller, A Little Garden and a Houseful of Corn
 4:10 Richard A. Marshall, A Reuse of Specific House Location in Mississippian Culture: A Southeast Missouri Example
 4:30 Duncan C. Wilkie, A Shell Gorget in a Small Village Context

5:30 SOCIETY FOR AMERICAN ARCHAEOLOGY

Ballrooms 3 and 4

Annual Business Meeting
 Chair: R. E. W. Adams

FRIDAY EVENING, APRIL 29, 1983

7:30- SOCIETY OF PROFESSIONAL ARCHEOLOGISTS

9:30 Chartiers
Business Meeting
Chair: David L. Browman

7:30- SOCIETY FOR ARCHAEOLOGICAL SCIENCES

9:30 Rivers D and Rivers E
Business Meeting
Chair: John Weymouth

8:00 RECEPTION FOR NEW MEMBERS

Le Bateau
All new members and members attending their first annual meeting are invited to this reception hosted by present and past Society officers.

SATURDAY MORNING, APRIL 30, 1983

(39) Symposium: ARCHAEOLOGICAL USES OF PLANT OPAL PHYTOLITH ANALYSIS: CURRENT RESEARCH

King's Plaza
Organizer and Chairperson: Irwin Rovner

Participants:

- 8:00 M. J. Andrejko and Arthur D. Cohen, Differentiation of Sedge Phytoliths Through Use of Scanning Electron Microscopy
- 8:20 William A. Starna, Phytoliths, Archaeology and Caveats: A Case Study from New York State
- 8:40 Douglas Connor, Phytolith Analysis in East-Central Texas Prehistory
- 9:00 Ralph L. Robinson, Biosilica Analysis of 40 New World Archaeological Sites: A Summary
- 9:20 Arlene Miller Rosen, Phytoliths and Marginal Agriculture in the Chalcolithic of Southern Israel
- 9:40 Dolores R. Piperno, A Comparison and Differentiation of Maize and Wild Grass Phytoliths: Use of Morphological Criteria
- 10:00 Deborah M. Pearsall, The Peñon Del Rio Project: Application of Phytolith Analysis to the Study of Raised Field Agriculture in the Guayas Basin, Ecuador
- 10:20 Irwin Rovner, Phytolith Strategies in Cultural Resource Management, Site Survey, Testing and Determination of Significance

(40) Symposium: MUNSUNGUN LAKE ARCHAEOLOGICAL RESEARCH PROJECT

King's Garden North
Organizer and Chairperson: Robson Bonnichsen

Participants:

- 8:00 Robson Bonnichsen, An Introduction to the Munsungun Lake Archaeological Research Project
- 8:10 H. W. Borns, Jr., The Late Wisconsin History of the Chase Munsungun Lake Basins, Northern Maine
- 8:30 S. G. Pollock, Distribution and Origin of Chert in the Munsungun Lake Formation, Northern Maine
- 8:50 R. B. Davis and C. M. Kuhns, Carbon-14 Dated Vegetational Reconstruction from Chase Lake, Maine
- 9:10 Vickie Clay, Geoarchaeology of Four Sites at the Munsungun-Chase Lakes Thoroughfare, Northern Maine
- 9:25 W. G. Stead and J. McMahon, Phytolith Analysis at Munsungun Lake, Maine
- 9:40 Victor A. Konrad and Robert Black, Comparative Soil Chemical Identification of Human Activity Areas at Norway Bluff and Munsungun Lake, Maine
- 10:00 David E. Young and Robson Bonnichsen, The Role of Stone Tool Replication Experiments in the Munsungun Lake Archaeological Research Project
- 10:20 E. Lahti, Venus of Munsungun: A Ceramic Period Site at the Munsungun-Chase Lakes Thoroughfare, Northern Maine

- 10:30 R. Low and S. G. Oliver, The Blue Ribbon Site: A Middle Archaic Component at the Munsungun-Chase Lakes Thoroughfare, Northern Maine
- 10:40 Wayne Bartholomew, The Knob Site: An Early Archaic or Paleoindian Component at the Munsungun-Chase Lakes Thoroughfare, Northern Maine
- 10:50 R. Reinhart and S. G. Oliver, The Bathtub Site: An Early or Middle Archaic Component at the Munsungun-Chase Lakes Thoroughfare, Northern Maine
- 11:00 Bradford T. Lepper and J. McMahon, Fluted Point Sites at the Munsungun-Chase Lakes Thoroughfare, Northern Maine
- 11:15 P. M. Seeber, Lithic Procurement Patterns of Two Ceramic Period Sites at Munsungun Lake, Northern Maine
- 11:30 David S. Cook, Ancient Canoe Routes and Munsungun Cherts
- 11:45 Robson Bonnichsen, Summary

(41) General Session: ARCHAEOLOGICAL RESEARCH IN MESOAMERICA

King's Garden South
Chairperson: Norman Hammond

Participants:

- 8:00 Leoncio A. Garza-Valdes, Specific Iconography of Olmec Rulers
- 8:10 Veronica M. Kann and Tom Sussenbach, Ecological and Ideological Perspectives on the Evolution of Power among the Gulf Coast Olmec in Formative Mesoamerica
- 8:30 William J. Folan and Román Piña Chán, The Calakmul Project: 1982-83
- 8:40 Phil C. Weigand, The Character of Classic Period Civilization in Western Mexico
- 9:00 Michael E. Smith, Economic Regions in Postclassic Central Mexico: A Trial Formulation
- 9:20 Kenneth G. Hirth, Epiclassic Urban Development at Xochicalco, Mexico
- 9:30 Charles C. Kolb, Commercial Aspects of Classic Period "Thin Orange" Ware
- 9:50 Louana M. Lackey, No Deposit, No Return: Thick Thin Orange Amphorae as One-Way Shipping Containers
- 10:10 Patricia A. Urban and Edward M. Schortman, A Study of Ceramics from El Nispero and Mariposa, Department of Santa Barbara, West-Central Honduras
- 10:20 James F. Garber, An Analysis of Artifact Context Configurations from the Site of Cerros, Northern Belize
- 10:30 Norman Hammond, Investigations at Nohmul, Belize, 1982-83
- 10:40 Vernon L. Scarborough, Civic and Residential Settlement at a Late Preclassic Maya Center
- 10:50 Christian J. Zier, Implications for Growth and Development of Classic Maya Communities in Western El Salvador
- 11:10 Howard H. Earnest, Jr. and William R. Fowler, Jr., Cultural Ecology and Prehistory in the Central Basin of El Salvador
- 11:30 Daniel Schavelzon, Archaeological Cartography of Middle America

(42) Symposium: COMPUTER SIMULATION AND TESTING OF PREHISTORIC ECONOMIC DECISION MAKING ON THE NORTHWEST COAST: HOKO RIVER ROCKSHELTER SITE

Le Bateau
Organizers and Chairpersons: Dale R. Croes and Barbara R. Stucki

Participants:

- 8:00 Dale R. Croes and Steven Hackenberger, Predictive Modeling of Prehistoric Economic Patterns in the Hoko River Region
- 8:20 Kevin J. Peter, Multiphase Sampling and Determination of Economic Activities: An Example from the Hoko River Rockshelter
- 8:40 Barbara R. Stucki, Geoarchaeology at the Hoko River Rockshelter: The Anatomy of a Shell Midden
- 9:00 Rebecca Wigen, Hoko River Rockshelter Faunal Resources

(43) General Session: LITHIC TOOL MANUFACTURE, ANALYSIS AND INTERPRETATION

Ballroom 2
Chairperson: Arthur J. Jelinek

Participants:

- 8:00 Harold L. Dibble, The Role of Controlled Experiments in Lithic Research
- 8:20 John C. Whittaker and Kathryn A. Kamp, The Ethnoarchaeological Study of Stone Tools
- 8:40 Beth Prinz, Using Lithics to Recognize Cultural Continuity: An Application to the Balkan Mesolithic-Neolithic
- 9:00 Michael A. Malpass, Stylistic Variation in the Preceramic Lithics of Peru

- 9:20 Arthur J. Jelinek, The Role of Typology in Lithic Analysis: Some Examples from the Middle Paleolithic
 9:40 Harvey M. Bricker and Stephen Sieracki, Specialized Blank-Detachment Hammers from the Early Upper Paleolithic
 10:00 Christopher Nagle, Lithic Raw Materials Procurement and Exchange in Dorset Culture Along the Labrador Coast
 10:20 Patricia E. Miller, Jasper Sourcing Methodology and Research Design
 10:40 Rochelle Lurie, Koster Site Lithic Tool Categories and Subsistence-Settlement Change
 11:00 Robert Joslin-Jeske and Rochelle Lurie, The Bipolar Mystique
 11:20 Brian M. Butler, Patterns of Chert Source Utilization in Southern Illinois

(44) Symposium: NEW WORLD MARITIME ADAPTATIONS

Ballroom 3

Organizers and Chairpersons: James B. Richardson, III and David R. Watters

Participants:

- 8:50 David R. Watters and James B. Richardson, III, Introduction
 9:00 Robert McGhee, Prehistoric Maritime Adaptations in Arctic Canada
 9:20 David Sanger, Recent Research on Maritime Adaptations in Northeastern North America
 9:40 R. Michael Stewart and Jay F. Custer, Maritime Adaptations in the Middle Atlantic Region of the Eastern United States
 10:00 Chester B. DePratter, Primary Swamp Stomping or Marsh/Lagoon Efficiency on the Southeastern U.S. Coast
 10:20 Sherwood M. Gagliano, Prehistoric Maritime Adaptations, Northern Gulf of Mexico
 10:40 Clement W. Meighan, Prehistoric Use of the Ocean in the Californias
 11:00 Donald W. Clark and William B. Workman, Maritime Adaptations of Northwestern North America
 11:20 Discussant: David R. Yesner

(45) Symposium: RIPPLES IN THE CHICHIMEC SEA: NEW CONSIDERATIONS OF SOUTHWESTERN U.S.A. AND MESOAMERICAN INTERACTION

Ballroom 4

Organizers and Chairpersons: Frances Joan Mathien and Randall H. McGuire

Participants:

- 8:00 Carroll L. Riley, An Overview of the Greater Southwest in the Protohistoric Period
 8:20 J. Charles Kelley, The Mobile Merchants of Molinos
 8:40 Michael S. Foster, Mesoamerica in the Southwest United States: A View from the Northwest Coast of Mexico
 9:00 David R. Wilcox, The Tepiman Connection
 9:20 Theodore R. Frisbie, Franciscan Missions and the Chacoan Phenomenon: Commonality through Paucity
 9:40 Frances Joan Mathien, External Contact and the Chaco Anasazi
 10:00 Phil C. Weigand, Emil Veakis, Ronald Bishop and Garman Harbottle, Economic Importance of Turquoise Mining in Northwest Mesoamerica
 10:20 Steven A. LeBlanc, Southwestern Regional Dynamics Between AD 900-1300
 10:40 Steadman Upham, Imperialists, Isolationists, World Systems and Political Realities: Perspectives on Mesoamerican-Southwestern Interaction
 11:00 Joseph W. Whitecotton and Richard A. Pailles, New World Precolumbian World Systems
 11:20 Randall H. McGuire, What a World Systems Model Will Never Tell Us About Mesoamerican-Southwestern Interaction
 11:40 Discussants: Stephen Plog and B. Stark

(46) General Session: ARCHAEOLOGICAL RESEARCH IN CENTRAL AMERICA AND NORTHERN SOUTH AMERICA

Chartiers

Chairperson: William J. Mayer-Oakes

Participants:

- 8:00 Esther Skirboll, Costa Rican Burial Tripods and Social Complexity in the Highlands
 8:20 Winifred Creamer, Subsistence Strategies in the Gulf of Nicoya, Costa Rica: A Comparison Between Sites on Small and Large Islands
 8:30 William J. Mayer-Oakes, Fluted Projectile Points in the Americas as Seen from the Ecuadorian Andes

- 8:50 Thomas F. Aleto, Recent Culture Historical Data from La Puna, Ecuador
 9:00 Patricia J. Netherly, Wandering Shellfish: New Insights into Intraregional Distribution Networks from Southeastern Coastal Ecuador
 9:20 Harold B. Haley, Iconography of Manteño Spindle Whorls
 9:30 Kathryn M. Cleland and Izumi Shimada, Excavations at Huaca Del Pueblo Batan Grande and Implications for the Sicán Culture
 9:50 Stephen M. Epstein, Intensity and Continuity in Metallurgical Production in Batan Grande, Peru
 10:10 Jeffrey Quilter, Cerro Media Luna and Cultural Processes in the Lower Chillón Valley, Peru
 10:20 Catherine J. LeBlanc, Archaeological and Ethnohistorical Data on the Sociopolitical Organization of the Late Intermediate Period Huanca
 10:40 Jane C. Wheeler and Elias Mujica, Prehistoric Pastoralism in the Lake Titicaca Basin, Peru

(47) General Session: ARCHAEOLOGICAL RESEARCH IN EUROPE

Rivers "D" and Rivers "E"

Chairperson: Andrea Ferenci Fitting

Participants:

- 8:00 Paula F. Bienenfeld, Patterns of Stone Tool Use in the Early Neolithic of the Netherlands
 8:15 J. Chapman and S. Batović, Prehistoric Survey on the Dalmatian Coast
 8:30 J. Rasson, Development of an Interaction Sphere in Central Yugoslavia
 8:45 Sylvia Chappell, Alternative Sources in Regional Exchange Systems: A Gravity Model Approach
 9:00 Andrea Ferenci Fitting, The Neolithic Ground Stone Tool Industry from Eastern Hungary
 9:15 David Anthony and Petar Glumac, Transition in the Southeast European Copper Trade
 9:30 Nerissa Russell, The Treatment of Bone as a Raw Material in Neolithic Southeast Europe
 9:45 C. Schwartz and N. Efstratiou, An Island Site in the Northern Sporades
 10:00 Gary D. Shaffer, Some Interpretations of Neolithic Building Remains from Southern Italy
 10:15 P. Glumac, On the Origins of Southeast European Copper Metallurgy
 10:30 Milenko Bogdanović, The Transition from Neolithic to Bronze Age in Central Serbia
 10:45 H. J. Greenfield, Changing Animal Exploitation in Later Balkan Prehistory
 11:00 A. Sherratt, The Secondary Products Revolution and the Interpretation of Settlement Patterns in East-Central Europe 4000-2000 BC
 11:15 A. Choyke, Changes in Raw Material Choices for Bone/Antler Tools in the Hungarian Bronze Age
 11:30 Dimitrije Madas, Social Statuses in Rural Medieval Serbia

9:00 SOCIETY FOR AMERICAN ARCHAEOLOGY

Board Room

Meeting of the Executive Committee

(48) Symposium: EVOLUTIONARY THEORY AND ARCHAEOLOGY: ISSUES AND APPLICATIONS

King's Terrace

Organizers and Chairpersons: Steven R. Simms and Kenneth W. Russell

Participants:

- 9:00 David Rindos, Fitness and Adaptation in Evolutionary Theory
 9:20 Eric L. Charnov, Natural Selection and Behavioral Ecology
 9:40 Steven R. Simms, The Evolution of Hunter-Gatherer Foraging Strategies: A Great Basin Case
 10:00 William B. Fawcett, Jr., The Exploitation of Bison by Plains Indians
 10:20 Kevin T. Jones, Evolutionary Ecology and the Forager-Collector Continuum
 10:40 Richard W. Redding, Optimal Foraging Models and the Analysis of Food Producing Groups
 11:00 Kenneth W. Russell, The Units of Selection and the Archaeology of Complex Societies
 11:20 Sarah J. Stuenkel, Trait Transmission, Cultural Drift and Archaeological Seriation
 11:40 Discussants: Richard Alexander, Donald L. Hardesty and Eric A. Smith

(49) General Session: HISTORIC SITES ARCHAEOLOGY, ETHNOARCHAEOLOGY AND CONTACT STUDIES

Traders "C"

Chairperson: Vergil E. Noble

Participants:

- 9:20 Wendy H. Arundale, Historic Settlement and Subsistence on the Meade and Chippikpuk River Systems, Northwest Alaska
- 9:40 Claudia Chang, The Ethnoarchaeology of an Eskimo Fish Camp: An Analysis of Activity Loci and Behavioral Processes
- 10:00 Michele Seme, An Ethnoarchaeological Test of a Model of Hunting Selectivity
- 10:10 Emily H. Garber, Herding, Mobility and the Archaeological Record
- 10:30 David Pollack and A. Gwynn Henderson, Contact Period Developments in the Middle Ohio Valley
- 10:40 Timothy G. Baugh and Richard R. Drass, The Duncan Site (34WA2): Wichita Adaptations During the Protohistoric Period
- 10:50 Vergil E. Noble, Functional Classification and Intrasite Research in Historical Archaeology
- 11:10 Parker B. Potter, Text and Context: The Meaning of Ceramics in 19th Century Rockbridge County, Virginia
- 11:30 J. Stephen Alexandrowicz and Susan R. Alexandrowicz, The Market Street Sites, Pittsburgh, Pennsylvania: A Study in Historical Urban Archaeology 1981-82
- 11:40 William A. Bayreuther, III, Tool Mark Analysis of the Hull of the Continental Gondola Philadelphia

(50) Symposium: ARCHAEOLOGICAL SITE LOCATION PREDICTION MODELS: DERIVATIONS AND APPLICATIONS

Le Bateau

Organizers and Chairpersons: Sandra Scholtz Parker and Bruce D. Louthan

Participants:

- 10:00 Timothy A. Kohler, The History and Practice of Predictive Modeling
- 10:20 Steve E. James, Ruth Ann Knudson, David Breternitz and Allen E. Kane, Predicting Site Significance: Management Applications of High-Resolution Modeling
- 10:40 C. Roger Nance, Harry Holstein and David C. Hurst, Evaluation of Multiple Regression Models Predicting Archaeological Site Distributions at Fort McClellan, Alabama
- 11:00 T. C. Peebles and Anne G. Hummer, Discriminant Analysis in Site Predictive Models: Problems and Prospects
- 11:20 Susan M. Chandler and Paul R. Nickens, Regional Sampling and Predictive Modeling in Cultural Resource Management: Some Examples from the Northern Colorado Plateau
- 11:40 George Sabo and David Waddell, Adaptation Type Models and Site Prediction in the Arkansas Ozarks

(51) Panel Discussion: PROBLEMS OF THE APPLICATION OF PHYTOLITH ANALYSES TO ARCHAEOLOGY: A PANEL DISCUSSION (Society for Archaeological Sciences)

King's Plaza

Organizer and Chairperson: George Rapp, Jr.

Participants:

- 11:00- George Rapp, Jr., Susan Mulholland, Lawrence Kaplan, Deborah Pearsall, Elizabeth
12:00 Coughlin and Irwin Rovner

SATURDAY AFTERNOON, APRIL 30, 1983

(52) Symposium: THE COPAN PROJECT: PHASE TWO, RESULTS OF THE FIRST TWO YEARS

King's Plaza

Organizers and Chairpersons: William T. Sanders and David L. Webster

Participants:

- 1:30 Ricardo Agurcia Fasquelle, The Copan Project: Phase II
- 1:50 Charles D. Cheek, The Architectural Sequence at the Main Group, Copan
- 2:10 James J. Sheehy, Excavations at CV-26: A Late Classic Patio Group at Copan
- 2:30 Elliot M. Abrams, Economic Specialization in Late Classic Copan
- 2:50 John K. Mallory, Obsidian Production and Use at Copan

- 3:10 Mary L. Spink, Metates as Socioeconomic Indicators at Classic Period Copan, Honduras
- 3:30 William T. Sanders, Social Class at Copan: A Quantitative and Functional Analysis
- 3:50 David L. Webster, Rural Settlement Survey in the Copan Valley
- 4:10 James W. Hatch and Rebecca Storey, Mortuary Research Methodology for the Phase II Excavations at Copan, Honduras

(53) General Session: ARCHAEOLOGICAL RESEARCH IN THE SOUTHWESTERN UNITED STATES

King's Garden North

Chairperson: J. M. Adovasio

Participants:

- 1:30 J. M. Adovasio, Artifacts and Ethnicity: Basketry as an Indicator of Territoriality and Population Movements in the Prehistoric Great Basin
- 1:50 Laurie E. Warner, The Carrizo Flats Survey: Settlement and Subsistence in the Red Rock Valley During the Basketmaker III Period
- 2:00 Craig F. Woodman, Organization and Behavior at a Basketmaker III Hamlet, Yellow Jacket, Colorado
- 2:10 Alan H. Simmons and William B. Gillespie, Paleoecology and Paleoenvironments of the Chaco Canyon Region During the Archaic: The Chaco Shelters Project
- 2:20 David E. Doyel, Hohokam Paleoecology in the Middle New River Area, Central Arizona
- 2:40 Ann Valdo Howard and Douglas B. Craig, The Organization of Interregional Shell Production and Exchange in Southern Arizona
- 3:00 Michael E. Whalen, Reconstruction of a Pueblo Period Exchange System in Southern New Mexico
- 3:20 William R. Haase, Facility Investment at Anasazi Field Stations in Southeastern Utah
- 3:30 Alexander J. Lindsay, Jr., Explaining an Anasazi Migration to East-Central Arizona
- 3:50 A. Trinkle Jones, Agricultural Community Structure on Walhalla Glades, Grand Canyon, Arizona
- 4:00 Cory Dale Breternitz and David E. Doyel, The Bis Sa'Ani Community Study: Investigations into a Late Bonito Phase Chacoan Community in the San Juan Basin
- 4:10 Melissa B. Hagstrum, Prehistoric Ceramic Craft Specialization in the American Southwest: A Test Case in the Upper Rio Grande Valley, New Mexico

(54) Symposium: PALEOINDIAN IN EASTERN NORTH AMERICA: NEW LOOKS AT AN OLD PROBLEM

King's Garden South

Organizers and Chairpersons: David J. Meltzer and Albert C. Goodyear

Participants:

- 1:30 Russell W. Graham, Paleoenvironmental Gradients, Faunal Resources and Clovis Adaptations
- 1:50 Dena F. Dincauze and Mary Lou Curran, Paleoindians as Generalists: An Ecological Perspective
- 2:10 David J. Meltzer, Variation in Eastern Fluted Projectile Points
- 2:30 Chris J. Ellis, Paleoindian Lithic Technological Organization in the Lower Great Lakes Area
- 2:50 Peter L. Storck, Fluted Point Technology at the Fisher Site, Ontario, and Early Paleoindian Cultural Relationships
- 3:10 Albert C. Goodyear, *Picècs Esquillées* or Bipolar Cores? Looking at Toolkit Entropy Among Paleoindian Lithic Assemblages
- 3:30 William M. Gardner, The Flint Run Paleoindian Complex Revisited
- 3:50 D. Brian Deller, Crowfield AfHj-31: A Paleoindian Ritual Feature in Southwestern Ontario
- 4:10 Don Simons, Michael Shott and Henry T. Wright, The Gainey Site (1979-82): Variability in a Great Lakes Paleoindian Assemblage
- 4:30 R. Esmee Webb, An Old World Approach to Paleoindian Problems

(50) Symposium: ARCHAEOLOGICAL SITE LOCATION PREDICTION MODELS: DERIVATIONS AND APPLICATIONS (continued)

Le Bateau

Organizers and Chairpersons: Sandra Scholtz Parker and Bruce D. Louthan

Participants:

- 1:30 E. Pierre Morenon, Environmental Diversity and Prehistoric Site Locations: Rhode Island Case Studies

- 1:50 Anthony L. Klesert, A Predictive Model of Site Potential in the Rio Grande National Forest, Colorado
- 2:10 Joe Alan Artz and Kenneth C. Reid, Modeling the Location of Buried Archaic Sites in Northeastern Oklahoma: A Geomorphic Perspective
- 2:30 David B. Waddell, An Analysis of the Selection of Attributes for Predictive Modeling of Site Location
- 2:50 Kenneth L. Kvamme, A Computer Approach for Wide-Area Probability Surface Mapping of Archaeological Site Presence
- 3:10 Sandra Parker, A Comparison of Statistical Methods Used in Predictive Site Location Models
- 3:30 W. Frederick Limp, Location Choice and Settlement Prediction
- 3:50 Bruce D. Louthan, A Caveat for Land-Use Applications of Site Prediction Models
- 4:10 Discussants: George L. Cowgill and Christopher Peebles

(44) Symposium: NEW WORLD MARITIME ADAPTATIONS (continued)

Ballroom 3

Organizers and Chairpersons: James B. Richardson, III and David R. Watters

Participants:

- 1:30 Barbara L. Stark, Coastal Adaptations on the Gulf and Caribbean Coasts of Mesoamerica
- 1:50 Barbara Voorhies, Costeños Del Pacifico: Lifeways of the Ancient Inhabitants of the Pacific Lowlands of Mesoamerica
- 2:10 Paul F. Healy, Ancient Maritime Adaptations of the Intermediate Area
- 2:30 Irving Rouse and David R. Watters, Environmental Diversity and Maritime Adaptations in the Caribbean Area
- 2:50 Wesley R. Hurt, Maritime Adaptations in Brazil
- 3:10 Luis Orquera and Ernesto Piana, Prehistoric Maritime Adaptation at the Magallanic-Fueguian Litoral
- 3:30 Alan K. Craig, Chilean Coastal Nomads: Maritime Adaptations Along 5000 Kilometers Between Fire and Ice
- 3:50 Michael Moseley and James B. Richardson, III, Fishing Versus Farming in the Peruvian Preceramic
- 4:10 Karen E. Stothert, Maritime Adaptations of the Ecuadorian Area, 10,000 BP to Present
- 4:30 Discussants: Robert D. Drennan and Thomas C. Patterson

(55) Symposium: ARCHAEOLOGY AND THE PUBLIC

Ballroom 4

Organizers and Chairpersons: Glenn Davis Stone and William L. Rathje

Participants:

- 1:30 Stuart Struever, A Case History of Archaeology and the Public: The Kampsville Experience and Where We Go From Here
- 1:50 Michael Roberts, Public Education in Archaeology: A Multidisciplinary Approach
- 2:10 Brian M. Fagan, Making Archaeology Interesting
- 2:30 Edward Staski, Giving the Tourists More than a Tour: Remarks on the Utility of Archaeology in the Modern World
- 2:50 W. L. Rathje and Glenn Davis Stone, Dilution Is Not the Solution: Comments on Archaeological Theory and the Public
- 3:10 Clark Hinsdale, Public Participation in Archaeology
- 3:30 Elizabeth F. Knappman, What Publishers Look for in Archaeology Books
- 3:50 Boyce Rensberger, What Makes Archaeology News?
- 4:10 John Dancy, Past Time on Prime Time: Getting Archaeology on Television
- 4:30 Col. R. F. B. Driftwood and W. L. Rathje, Off-the-Record Rules for Dealing with the Media
- 4:50 Discussant: Jeremy Sabloff

(56) Symposium: CULTURE AND ENVIRONMENT IN THE SOUTHEASTERN PIEDMONT

Chartiers

Organizers and Chairpersons: Victor A. Carbone, James E. Cobb and Paul Rubenstein

Participants:

- 1:30 James E. Cobb, Management of the Cultural Resources in the Richard B. Russell Dam and Lake Project
- 1:50 Edwin A. Hession, Survey and Data Management of Cultural Resources in the Richard B. Russell Dam and Lake Project
- 2:10 Victor A. Carbone, A. V. Segovia, J. E. Foss, M. C. Sheehan, D. R. Whitehead and

- S. T. Jackson, The Changing Piedmont Landscape from Late Glacial to Recent Times
- 2:30 V. Ann Tippitt and Albert C. Goodyear, Interassemblage Variation at a Stratified Site in the Georgia Piedmont
- 2:50 W. Dean Wood and Dan T. Elliott, A Functional Interpretation of Two Late Archaic Sites on the Upper Savannah River
- 3:10 Michael L. Alterman, An Evaluation of the Piedmont Late Archaic Along the Upper Savannah River Valley
- 3:30 James L. Rudolph, Earth Lodges and Platform Mounds: Changing Public Architecture in the Southeastern Piedmont
- 3:50 David J. Hally, Vessel Assemblages and Food Habits: A Formal and Functional Analysis of Two Prehistoric Vessel Assemblages
- 4:10 David G. Anderson and Joseph Schuldenrein, Mississippian Period Settlement in the Southern Piedmont: Evidence from the Rucker's Bottom Site
- 4:30 Discussants: Roy S. Dickens, Jr., James B. Griffin and Robert L. Stephenson

(57) General Session: FAUNAL ANALYSIS, ZOOARCHAEOLOGY AND HUMAN DIET

Traders "C"

Chairperson: Stanley J. Olsen

Participants:

- 1:30 Stanley J. Olsen, The Horse in Ancient China
- 1:50 James A. Knight, Toward an Understanding of Calcined Bone Assemblages: An Experimental Approach
- 2:00 Pat Shipman, Ashes to Ashes: Experimental Studies of Burnt Bones and Teeth
- 2:20 Margaret J. Schoeninger, Michael J. DeNiro and Henrik Tauber, Marine and Terrestrial Components of Prehistoric Human Diet Estimated by $^{15}\text{N}/^{14}\text{N}$ Ratios in Bone Collagen
- 2:40 R. Lee Lyman, Mortality Profile Analysis in Zooarchaeology: Implications of the 18 May, 1980 Mount St. Helens Eruption Killed Cervids for Sample Adequacy
- 3:00 John D. Speth and Katherine A. Spielmann, Animal Physiology and Hunting Strategies
- 3:20 Arlene Fradkin, The Use of Linguistic Data in Predicting the Zooarchaeological Record: The Cherokee Indians as a Case Study
- 3:40 T. Douglas Price and Melissa Connor, Strontium Discrimination in White-Tailed Deer
- 4:00 Terrance J. Martin, An Osteometric Analysis of White-Tailed Deer and a New Method for Estimating MNI Values
- 4:20 James L. Theler, Woodland Subsistence Patterns and the Dietary Importance of Freshwater Mussels
- 4:30 Marcel Kornfeld and Stephen A. Chomko, Pre-Shoshonean Rodent Utilization
- 4:50 James S. Oliver, Shield Trap Cave: An Analogue for the Interpretation of Cave Faunas

(58) Symposium: AMERICAN CONTRIBUTIONS TO PALEOLITHIC METHODOLOGY

Rivers "D" and Rivers "E"

Organizers and Chairpersons: Randall White and Linda L. Grimm

Participants:

- 1:30 James R. Sackett, An Alternative Approach to Burin Systematics
- 1:50 Francis B. Harrold, Chatelperron and Gravette Points: A Comparative Analysis
- 2:10 Linda L. Grimm, The Comparative Study of Technological Patterns in Two Upper Paleolithic Industries
- 2:30 E. C. Gibson, Hunter-Gatherer Adaptations of the Late Perigordian
- 2:50 O. Soffer, Faunal Demographics and Mammoth Hunting Strategies
- 3:10 G. A. Clark and Seonbok Yi, Resource Diversity in Cantabrian Archaeofaunas
- 3:30 Randall White, Toward Regional Studies in the European Paleolithic: The Complex Case of the Perigord
- 3:50 Seonbok Yi and G. A. Clark, On the "Dyuktai Culture" and New World Origins

(59) General Session: LITHIC TOOL MANUFACTURE, ANALYSIS AND INTERPRETATION (continued)

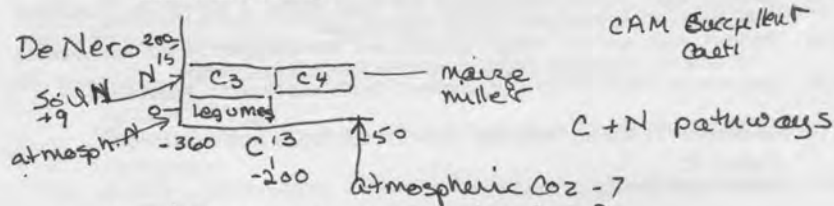
Ballroom 2

Chairperson: Donald K. Grayson

Participants:

- 3:10 Anne Frazer Rogers, Ground, Pecked and Use-Modified Stone Tools and Late Archaic Resource Utilization

- 3:30 Carl J. Phagan and Edward R. Maloney, Flaked Lithic Toolkit Cost: A Method for Relative Measurement
- 3:50 William A. McCormack and Raymond J. Dezzani, A Comparative Analysis of an Assemblage of Handaxe-Like Artifacts from the Pitchilingue Site Near La Paz, Baja California
- 4:00 George T. Jones, Donald K. Grayson and Charlotte Beck, Functional Tool Diversity and Sample Size in Surface Assemblages from the Steens Mountain Region, South-eastern Oregon
- 4:20 Marcia K. Kelly, Morphological Variation in Microblades from the Narvestad Site, Southwest Washington



material must be carbonized

diagenesis - mineralization
collegen-peptide intact

Hartog - aboriginal land use
evidence for early agriculture
exchange of crops - verticality
Vege site - early corn Parí site
maize phytoliths
achue + canavalia
earliest agriculture in Andes than coast
Wier + Blewett - Lomas, littoral, valley flanks
riverine

Yarnell ± 20 garden crop plants in S. US
independent no crop complex
no cultigens earlier than Archaic 2000 BC
Corn no sooner than AD N Amer.
pale seeds of America indicative of domest.

Carbone - get paper
Crab zone - Salasido

(7) HUMAN EXPLOITATION OF COASTAL AND MARINE RESOURCES IN THE LOWER ATLANTIC AND CIRCUM-CARIBBEAN REGION. Tropical and subtropical coastal environments of the lower Atlantic and circum-Caribbean region are extremely productive and many resources amenable to exploitation are habitat-specific, seasonally abundant, and most easily harvested by specific techniques. Thus, analysis of faunal remains from the region's sites provides opportunities and challenges for understanding human adaptations to coastal margins. This symposium is concerned with man's utilization of these environmental resources. Contributors will discuss past human adaptations to selected environments, techniques of recovery, analysis and interpretation of biological remains and theoretical problems concerning resource exploitation by coastal inhabitants of the region.

(8) SUBSISTENCE, COMMUNITY, AND COMPLEXITY IN PREHISTORIC MICRONESIA. Micronesia, the small islands of the Marshall, Caroline, and Mariana groups, east of the Philippines and southwest of Hawaii, had, until 1977, seen relatively little archaeological research. Accelerating research during the last five years has emphasized the study of the rise of complex political organization in small-scale island environments, with significant subemphases on community organization, settlement and subsistence patterns, and ethnoarchaeology. This session will summarize work in progress, preliminary conclusions and directions for future study.

(9) DEVELOPMENT OF SOCIETAL COMPLEXITY IN PREHISTORIC SOUTH-CENTRAL EUROPE. Despite proximity to the Near East, the Balkans and Hungary followed a largely independent trajectory after the initial introduction of farming. The morning session is devoted to the nature of Neolithic society. The high level of technical competency in such domains as housing, ceramics and figurines has led some authors to describe settlements as "proto-urban" (although the term is seldom defined). Yet it may be questioned whether other classes of data point to nonegalitarian society. The papers address this issue. The afternoon session deals with the question of societal complexity attendant upon the shift to metals-based economies (copper, bronze, iron), the rise of towns and the impact of imperialist Mediterranean states.

(10) RECENT CONTRIBUTIONS TO NEW ENGLAND PREHISTORY. This symposium presents varied contributions to New England prehistory, including both recent and ongoing research in coastal and noncoastal settings. The papers represent a combination of substantive, methodological and theoretical perspectives from a wide geographic and temporal span. Topics range from the results of Paleolithic research to lithic ceramics, archaeological analyses and models of regional exchange, environmental adaptation, demographic structure and settlement systems. These studies are expected to contribute individually, and collectively, to a better understanding of New England prehistory.

(11) THE EXPANSIONIST STATE IN THE ANDES. The rise and subsequent development of state societies is often characterized by their expansion into regions not incorporated within the core state territory. The papers in this symposium are intended to examine the transformations which occurred both in the expanding states and in the societies assimilated during the process of state expansion in Andean South America. Topics include shifts in settlement systems catalyzed by state expansion, political and economic organization of state and subject polities, and the role of ideology in integrating core and subject populations. The states within which these issues are addressed include the Huan, Tiwanaku, Sican, Chimu and Inca polities.

(12) MISSISSIPPIAN CULTURAL DEVELOPMENT AND VARIATION IN THE CENTRAL AND UPPER MISSISSIPPI RIVER DRAINAGE. This symposium presents a series of papers detailing new research that has been performed on the topics of Middle Mississippian cultural development and variation in the upper and central Mississippi River drainage. The symposium is divided into two sections, the first deals with the major Mississippian populations of the Cahokia area, the second with the "frontier" populations to the north and south. The first group of papers focus in some detail on the extensive information on the paleobotany, human biology, resource exploitation, architecture and settlement systems of the Cahokia Mississippian peoples. The second set of papers, in general, take more of an overview approach and emphasize the local development and variation in Mississippian populations of Wisconsin, Minnesota, Iowa, Missouri, southern Illinois and Indiana.

(13) MESOAMERICAN HOUSES AND HOUSEHOLDS. The capacity to interpret and understand archaeological households and their aggregates has tended to lag the rate at which they have been excavated in Mesoamerica. These units offer a potentially very rich source of information on prehistoric demography, social organization and culture change, but problems remain in relating physical structures to social groups and their activities. The papers in this symposium draw on abundant Mesoamerican historical, archaeological and ethnographic data to attack these and related problems.

(8) **ETHNOARCHAEOLOGY OF POLLEN, A SEARCH FOR ANALOGUES.** Pollen records of archaeological sites incorporate both environmentally controlled patterns and culturally produced bias. Each realm of information is essential for archaeological interpretation. The most commonly employed analogue for archaeological samples has been the characteristic palynological configuration of modern climax vegetation types of known composition. A second source of relevant analogues is currently receiving increased attention. Pollen records associated with particular ethnographic activities and cultural situations are being examined. Experimental studies have also extended the understanding of factors shaping pollen distributions in archaeological samples.

(10) **PUBLIC PERCEPTIONS OF ARCHAEOLOGY: ON THE IMPORTANCE OF AN ARCHAEOLOGICALLY WELL INFORMED PUBLIC.** The general public exhibits an obvious interest in archaeology. However, there is a problem in an uninformed public being extremely uncritical in their appetite for archaeological information. There has been a succession of people who have misused archaeology in attempts to prove various questionable hypotheses from Atlantis to creationism, from the cultural superiority/inferiority of particular groups to ancient astronauts, etc. Participants in this symposium agree that an informed public is vital to the health of the discipline. Archaeologists can and should communicate to people that genuine archaeological research is far more interesting and meaningful than the fantasies of the pseudoarchaeologists.

(11) **LITHICS IN COMPLEX SOCIETIES: SESSION I—INDICATORS OF SOCIAL COMPLEXITY, SESSION II—MESOAMERICAN STUDIES.** Lithics provide an unusual, and often neglected, opportunity to trace the components of a complex economic system through its many levels of organization. The goal of this symposium is to share, compare and synthesize the approaches which have been taken toward, and the results achieved from, studies of lithics within urban and/or state systems. Transcending the technological and functional bases of lithic studies provides a broader understanding of the dynamics of complex societies. Methodological issues and the social, political and economic milieu of lithic production and use within complex societies are examined.

(13) **GOALS, METHODS AND ACCOMPLISHMENTS IN ARMY ARCHAEOLOGICAL RESOURCES MANAGEMENT.** The Army's developing archaeological resources management efforts incorporate methodological elements essential for producing results useful both today and in the future. These elements include: (1) programmatic instead of particularistic, project-specific management orientation; (2) populational instead of site-specific approach to preservation; (3) emphasis upon analytical problem formulation and testing in all projects; (4) in-house and joint Army-contractor conduct of projects; and (5) development of overviews and preservation plans responsive to differential regional knowledge and needs. Accomplishments and developments illustrating these and related elements are described by Department of the Army, major command, installation and contractor personnel.

(14) **GEOGRAPHICAL APPROACHES TO PROBLEMS IN ARCHAEOLOGY.** The application of geographical methods to problems in archaeology has been common for well over a decade. The utility of results, however, has been variable. This session evaluates extant applications and suggests problem areas requiring resolution, including data requirements of geographical methods, the nature of archaeological data and the use of outmoded constructs by archaeologists. Applications of promising new approaches for the examination of spatially arranged archaeological data are explored by both geographers and archaeologists. Topics include location-allocation models, mathematical map transformations, the reformulation of central place models, pattern comparison through vector fields, intrasite clustering, and algebraic topology.

(15) **PIECING TOGETHER THE PAST: APPLICATIONS OF REFITTING STUDIES IN ARCHAEOLOGY.** Papers in this session illustrate diverse applications of refitting studies from a variety of site types in both the Old and New Worlds. Analyses of disturbance processes, assemblage contexts, intrasite spatial studies, behavioral aspects of artifact manufacture and technological changes can be greatly enhanced by refitting compatible pieces. Precautions to correct interpretation of prehistoric behaviors responsible for patterning in the archaeological record are recognition of patterning in the static remains and evaluation of distortions and noncultural patterning caused by intermediate disturbance factors. Toward this and other goals, refitting of lithic, bone and ceramic pieces is an important research technique.

(16) **A COOPERATIVE PERSPECTIVE ON SOUTHWESTERN PREHISTORY: SARG.** The Southwestern Anthropological Research Group (SARG) is an organization that has been engaged in cooperative research in the American Southwest for the past decade. Utilizing a computerized data base of ca. 3,500 surveyed sites, SARG is currently testing an environmental model of culture change focusing on site locating behavior in response to stress situations. Results of the analysis are addressed in discussions of regional environmental models, adaptation to environ-

mental diversity, demographic trends, changing subsistence patterns and organizational variability. An overview is directed at explaining regional variability in the prehistoric Plateau Southwest. Future research goals of SARG center on testing organizational and integrative models of culture change.

(19) **RELATIONS OF INEQUALITY: THE VIEW FROM THE NORTHEASTERN UNITED STATES.** Northeast archaeology can contribute to social theories concerned with the origins, maintenance and transformations of systems of social inequality. However, standard approaches treat prehistoric populations as relatively egalitarian, ignoring variation and asymmetry in these social relations. Similarly, investigations of historic populations rarely illuminate the processes of stratified societies. The papers draw on a variety of theoretical perspectives to examine the spatial and material manifestations of social inequality in nonstratified and stratified societies. They use these approaches to guide their investigation of problems specific to the Northeast, as well as to stimulate the development of theory having applications beyond the Northeast.

(20) **THE CORPS CARES: ARCHAEOLOGY IN THE 1980s.** Nationwide, the U.S. Army Corps of Engineers is involved in the location, evaluation, protection, mitigation and preservation of cultural resources from early project planning stages through final construction. This symposium presents a variety of viewpoints: from management, from contractors and from staff archaeologists. Included in the symposium is a discussion of regional planning, a large-scale survey and test program, cultural resources management at a military installation, and stabilization of an historic grist mill and powerhouse.

(23) **PRELIMINARY RESULTS OF THE FAP-405 HIGHWAY SALVAGE PROJECT AT THE RENCH SITE, PEORIA COUNTY, ILLINOIS.** Preliminary results of the multidisciplinary FAP-405 highway salvage project at the Rensch site, Peoria County, Illinois, are presented. The Rensch site is a stratified Late Archaic, Late Woodland and Mississippian habitation site located at the base of the Central Illinois Valley Bluff along Dickison Run Creek. The Illinois State Museum has conducted research into the prehistory, paleoecology and geology of the Rensch locality. This symposium primarily discusses the wealth of Weaver focus data recovered at Rensch, including the first complete Weaver house structures. Smaller quantities of Late Archaic, Havana, terminal Late Woodland and Mississippian remains also are examined.

(26) **GEOARCHAEOLOGICAL RESEARCH IN THREE RIVER VALLEYS OF THE SOUTHEAST.** This symposium is designed to inform archaeologists throughout the Americas of recent developments in geoarchaeology in three major river valleys of the Southeast. The valleys are the Upper Tombigbee (northeast Mississippi), the Duck (middle Tennessee) and the Savannah (northeast Georgia). Emphasis is placed on the full partnership between the geosciences and archaeology. Research in the three valleys represents new applications of interdisciplinary research in the heavily vegetated Southeast. Geoarchaeologists, geomorphologists, and soil morphologists present results from each area. The themes of the papers are integrated at the close of the session.

(27) **TOWARD AN ARCHAEOLOGY OF THE SYMBOLIC ORDER.** The theoretics of the New Archaeology have offered an entirely new structure of inquiry and have transformed the discipline of archaeology. Yet, they also have tended to homogenize the past by conceptualizing of other societies as highly differentiated and coherent systems. If a sense of the premodern social whole emerges, it usually is thought an economizing, capitalist order. These papers help to expand the interpretive limits of processual archaeology through explorations of past symbolic structures. A variety of data are examined in order to discover how premodern social wholes were constructed, symbolized, and made into artifacts.

(28) **ARCHAEOLOGICAL LEGISLATION: MANAGING OUR ARCHAEOLOGICAL HERITAGE.** This symposium is concerned with the various types of legislation enacted by both the federal government and various state governments to conserve archaeological remains. The papers presented in this symposium focus on three specific areas: 1) an overview of the federal legislation promulgated to conserve archaeological resources; 2) the effectiveness of the interrelationship between federal legislation and particular states statutes within a regional setting; and 3) an analysis of land use controls and planning techniques developed by local communities to conserve archaeological remains. The papers presented in this symposium individually and collectively increase understanding of current archaeological legislation.

(29) **PROBLEMS IN NORTHERN RIO GRANDE PREHISTORY.** The northern Rio Grande remains one of the least known areas of Southwestern research. In the absence of direct data, models drawn from other work, primarily the Middle Rio Grande, have been used to explain puebloan prehistory to the north. Recent excavation and survey (1978-82) in the Taos District demonstrates the inadequacy of these models by establishing the presence of a distinctly northern pattern. Work has focused on problems of settlement distribution and organization, sub-

sistence and land use, and trends in material culture, especially lithic sourcing and ceramic analysis. Research reveals unexpectedly complex cultural developments distinctive from, but related to, other regions in the northern Southwest.

(30) RECENT INVESTIGATIONS AT TLAJINGA 33:S3W1, TEOTIHUACAN. Extensive excavation of an apartment compound was recently conducted in the Tlajinga Barrio on the southern margin of the ancient city of Teotihuacan. This excavation represents the first systematic, extensive excavation of a Teotihuacan apartment compound utilizing modern data recovery techniques. The excavation provided, for the first time, specific classes of data related to social composition, demography, mortality, health, subsistence and economic specialization. The techniques used to obtain these data include fine screening, soil analysis, flotation and pollen analysis. The results provide a comprehensive picture of one sector of Teotihuacan urban life.

(31) THE STATUS OF ARCHAEOBOTANICAL RESEARCH IN THE AMERICAS. Five speakers in this symposium summarize archaeobotanical research in North and South America conducted to the present. Suggestions are made by each speaker for shaping recovery and research programs in the future. This is particularly needed in view of the growing lack of financial support which demands that programs be particularly well planned and provide some promise for answering questions raised by past recoveries.

(32) THE PROSPECTS FOR A PHILOSOPHY OF ARCHAEOLOGY. Recent comments on established modes of philosophical discussion in and of archaeology have raised a number of questions about the value of such discussion and the direction that it should take to best contribute to the discipline (cf., Flannery's objections to internal commentary, Clarke's earlier promotion of "internal philosophy" and Schiffer's recent discussion of relations between philosophy and archaeology). Contributors to the session address these encompassing issues through analysis of specific problem areas where philosophical concerns bear directly on (or emerge within) archaeological practice. The relevance of various philosophical perspectives to archaeology will thus be explored in light of the most recent work in this area.

(35) DUSTY ARCHIVES: THE RESEARCH POTENTIAL OF EXISTING ARCHAEOLOGICAL SITE AND SURVEY DATA. Tens of thousands of archaeological sites recorded in institutions across the United States are an enormous and virtually untapped basis for primary research. While these data frequently form a biased sample which can be quantitatively intractable, their study allows regional research at an unprecedented scale, which can encompass the entire territory of one or more social systems and offers sample sizes 10-100 times larger than those usually found. These possibilities are presently largely wasted. This symposium presents examples of the scientific potential of existing data, using a variety of analytic techniques, in the hope of stimulating similar research.

(36) THE JOY AND TORMENT OF LARGE-SCALE CONTRACT ARCHAEOLOGY: THE CHIEF JOSEPH DAM CULTURAL RESOURCES PROJECT. During the last decade, archaeologists have been concerned with contributions of contract archaeology to the field. As a large-scale, multidisciplinary project in contract archaeology, the Chief Joseph Dam Cultural Resources Project has proved an admirable if, at times, a daunting assay of the constraints and possibilities afforded by contract archaeology. This symposium examines the project's contributions to Columbia Plateau prehistory and the application of current archaeological method and theory to a vast body of data. Directions of future research in several areas are suggested. The common theme of the symposium is the marriage of research and contract archaeology.

(37) CULTURAL CHANGE AND CLIMATIC CHANGE IN THE CIRCUM-CARIBBEAN AND ATLANTIC COAST. Recent developments in solar physics and volcanology allow refined definitions of the effects of the sun and volcanos on climate. Since prehistoric data are also available on these phenomena, global climate can be modeled in some detail for the Holocene. The effects of global climate on the behavior of the Bermuda High dictates the climate of the circum-Caribbean and the east coast of North America. Using a climatic sequence generated from this model, the effects of climate on culture change are discussed for Puerto Rico, Yucatan, Texas, Florida and Virginia.

(38) MISSISSIPPIAN/LATE WOODLAND FARMSTEADS AND FOOD PRODUCTION. Early rural Mississippian farmsteads are a critical component for the basic understanding of the larger framework of Mississippian culture development. These so-called "fourth line" rural settlements are distinct from, but may be part of, the town pattern such as evidenced at Cahokia. Present indications are that these farmsteads, in addition to participating in different interaction spheres, may actually have substantially predated the development of the towns, and thus are in fact basic to the development of classic Mississippian settlement patterns.

(39) ARCHAEOLOGICAL USES OF PLANT OPAL PHYTOLITH ANALYSIS: CURRENT RESEARCH. This symposium brings together state-of-the-art research in the development and application of plant opal phytolith analysis in paleoethnobotany and paleoecology. Applications of this relatively new technique in multidisciplinary archaeology are proving to be extraordinarily productive in several problem areas and geographic regions. Results from a wide range of current research are presented on: 1) Old World and New World prehistory problems; 2) agricultural and nonagricultural contexts varying from arid to tropical to temperate zones; 3) taxonomic identification of cultigens and wild plant resources; 4) statistical procedures and data collection strategies; and 5) cultural resource management survey, planning and site evaluation.

(40) MUNSUNGUN LAKE ARCHAEOLOGICAL RESEARCH PROJECT. The goal of the Munsungun Lake Archaeological Research Project is to reconstruct the settlement, subsistence and lithic procurement patterns of a poorly known archaeological region in northern Maine. An environmental archaeological approach is used to place the history of human adaptation in an environmental context. Initial findings by specialists from the disciplines of bedrock geology, Quaternary geology, paleoecology, soil science, cultural anthropology and prehistoric archaeology made during the period from 1980 to 1982 are presented.

(42) COMPUTER SIMULATION AND TESTING OF PREHISTORIC ECONOMIC DECISION MAKING ON THE NORTHWEST COAST: HOKO RIVER ROCKSHELTER SITE. The research focus for the Hoko River Archaeological Project involves: 1) computer simulation of economic decision models for prehistoric hunters-gatherers-fishers to test theoretical models explaining Native American cultural evolution on the Pacific Northwest Coast; and 2) archaeological testing and evaluation of these economic models with data recovered from the Hoko River site complex and from other archaeological site excavations in the region. This symposium concentrates on the recently explored Hoko Rockshelter site and on the data involved in responding to established research problems.

(44) NEW WORLD MARITIME ADAPTATIONS. This symposium addresses the current status of research about maritime adaptations—broadly defined as "prehistoric peoples' interactions with the ocean"—in the Western Hemisphere. Overview papers treat specific coastal areas throughout the Americas and synthesize and interpret maritime adaptations on a region-by-region basis. Where warranted by the archaeological record, regional specialists also discuss intraregional variations as these pertain to maritime adaptation. Discussants compare and contrast adaptations for regional and larger geographic areas.

(45) RIPPLES IN THE CHICHIMEC SEA: NEW CONSIDERATIONS OF SOUTHWESTERN U.S. AND MESOAMERICAN INTERACTION. The last ten years have seen a flurry of thought and research on the nature of interaction between Mexico and the southwestern U.S. Recently, investigators have been moving beyond the "isolationism vs. Aztec *pochteca*" model to more sophisticated interaction models. Prominent among these are ones derived from the world-system approach of Wallerstein. This symposium presents new data on Mesoamerican-Southwestern interaction and considers the latest theoretical advances. The issues raised go beyond the culture history of two major regions; the basic question is, "At what scale does one study culture change?"

(48) EVOLUTIONARY THEORY AND ARCHAEOLOGY: ISSUES AND APPLICATIONS. Traditional views of cultural evolution are being increasingly questioned, especially by archaeologists. Alternatively, perspectives from evolutionary biology, specifically evolutionary ecology, are being investigated. Whether anthropology will simply borrow from or actively participate in the development of evolutionary theory depends upon continued debate. Significant theoretical issues in the archaeological investigation of human behavioral evolution include: 1) the relationship between selection and the various concepts of adaptation; 2) the measurement of fitness and the role of optimization modeling; and 3) the identification of appropriate units of selection in increasingly complex human societies. These and other issues are addressed theoretically and empirically.

(50) ARCHAEOLOGICAL SITE LOCATION PREDICTION MODELS: DERIVATIONS AND APPLICATIONS. The symposium considers various methods of derivation and factors affecting accuracy and validity of predictive models for archaeological site location. These include strengths and weaknesses of various statistical methods (discriminant function, logistic regression, ordinary multiple regression, cluster analysis, etc.), use of existing or specially collected data, variable selection, sampling methods, testing, practical field decisions, site ranking and computer-aided site prediction mapping. In-depth comparative studies highlight problems posed by differing environments and cultures, and theoretical implications for prehistoric subsistence explanation are explored. Finally a cautionary note for some land use applications is sounded.

(51) PROBLEMS OF THE APPLICATION OF PHYTOLITH ANALYSES TO ARCHAEOLOGY. This symposium takes the form of a panel discussion (with audience participation) of the major prob-

lems in state-of-the-art application of phytolith analyses to the solution of archaeological problems. Discussed will be the morphological classification of phytoliths, adequate description of phytolith morphology, morphological variation, statistical analysis techniques for phytolith assemblages in archaeological sediments, geographic variation in assemblages, extraction techniques, data banks, counting statistics and related pressing problems in phytolith research. Panelists include many of the leading researchers in the field.

(52) THE COPAN PROJECT: PHASE TWO, RESULTS OF THE FIRST TWO YEARS. In 1981, the government of Honduras initiated a four-year program of research at Copan, Honduras. Two years of this project have been completed and the symposium presents the results of the project to date. The major activity of this project is large-scale excavations at what is currently called the Sepulturas Barrio. The barrio consists of approximately 80 residential groups including some 400 Mounds covering an area of 30 hectares. Four complete plaza groups have been excavated as have large portions of four others, including some 40 residential structures. Preliminary ideas of Maya social class organization and the composition and size of the Maya household are presented.

(54) PALEOINDIAN IN EASTERN NORTH AMERICA: NEW LOOKS AT AN OLD PROBLEM. This symposium treats fundamental concerns of Paleoindian archaeology in the eastern United States. The three main areas treated: 1) late Pleistocene/early Holocene environments as they may relate to human ecological systems; 2) new findings in chipped stone manufacturing and the organization of technologies; and 3) the reconstruction of subsistence systems in terms of both environments and technology. The symposium provides a forum for bringing together new ideas and substantive interpretation.

(55) ARCHAEOLOGY AND THE PUBLIC. Because the discipline of archaeology has traditionally suffered from a case of myopia, its future health is uncertain. This symposium addresses the problem of how to build the broader public support base that will be instrumental in facilitating active research in upcoming decades. Papers by archaeologists discuss what should be presented to the public and how it can be presented to maximum advantage. Innovative methods of engaging public interest are evaluated. Representatives from the television, newspaper, magazine and popular book industries discuss archaeology's public image.

(56) CULTURE AND ENVIRONMENT IN THE SOUTHEASTERN PIEDMONT. The purpose of this symposium is to present the results of multidisciplinary investigations undertaken along the Piedmont segment of the Savannah River as part of the Cultural Resources Mitigation Program on the Richard B. Russell Dam and Lake Project, one of the major data recovery projects in the Southeast. Occupations span the range from late glacial to recent times, and a team of paleoenvironmental specialists and archaeologists have been addressing problems of both site-specific and regional concern in an attempt to develop a comprehensive picture of changing man-land relationships through time. The papers also attempt to place site-specific findings in a broader regional context to provide perspective on the changing socioeconomic landscape.

(58) AMERICAN CONTRIBUTIONS TO PALEOLITHIC METHODOLOGY. Most Americans doing Paleolithic archaeology in Eurasia ask research questions that are very different from those posed by their Eurasian counterparts. The implication is that suitable methods must be developed to respond to these questions at every level of research. This symposium explores such methodological issues and applications as they pertain to: 1) meaningful classification of lithic artifacts; 2) questions of technological and organizational continuity in the Upper Paleolithic succession; 3) assessments of faunal exploitation strategies; 4) regional studies of settlement/land use patterns; and 5) the understanding of interregional relationships during the Paleolithic.

Abrams, E. M. (Penn State) ECONOMIC SPECIALIZATION IN LATE CLASSIC COPAN, HONDURAS. The degree of economic specialization in Late Classic Copan is measured through an analysis of sculpting. Three timed replication experiments are conducted, thus quantifying this specialty. The application of these standard figures to major sculptural pieces indicates that very few sculptors were required at Copan. This very low number of specialists suggests a low degree of specialization, which fits well with analogies for complex chiefdoms as well as several known states. It is concluded that this low level of specialization played at best a minor role in the development of social stratification. (52)

Adams, R. E. W. (Texas at San Antonio) and Eric C. Gibson (Harvard) HOLOCENE CLIMATE AND CULTURE CHANGE IN THE MAYA LOWLANDS. A previous effort by Gunn and Adams demonstrated a logical relationship between Late Holocene (5000 BP to present) climatic change and culture chronology in Mesoamerica. This paper reexamines the original hypothesis in the light of the new, high-resolution climatic sequence generated from solar and volcanic data which became available after the first paper. The new climatic chronology explains previous problem episodes such as the hiatus between the Maya Preclassic and Classic. The origins of the Maya in Belize are nicely explained by a local climatic change model. (37)

Adovasio, J. M. (Pittsburgh) ARTIFACTS AND ETHNICITY: BASKETRY AS AN INDICATOR OF TERRITORIALITY AND POPULATION MOVEMENTS IN THE PREHISTORIC GREAT BASIN. In a series of publications beginning in 1970, this author has suggested or attempted to demonstrate that basketry is a peculiarly useful and sensitive artifact class on a variety of analytical levels. Germane here is their especial importance in the establishment of prehistoric "territorial" boundaries as well as in the documentation of prehistoric population movements. Between the extremes of the "individual" and the basketry "universe," it is possible to distinguish taxonomic groupings based on mutual similarities which appear to correspond to "real world" situations or divisions. Examples from the prehistoric Great Basin are used to illustrate these contentions. (53)

Adovasio, J. M. (see Jorstad, T.) (21)

Agurcia Fasquelle, Ricardo (IAHA, Instituto Hondureño de Antropología e Historia) THE COPAN PROJECT: PHASE TWO. In 1981, the government of Honduras initiated a four-year program of research at Copan, Honduras, of which two years have been completed. In the paper the author discusses the overall objectives of the project and general methodological approaches as well as certain aspects of the project that relate to the preservation of Honduran cultural heritage and the training of Honduran professionals and technical personnel. (52)

Ahler, S. A. (North Dakota) USE-PHASE CLASSIFICATION AND MANUFACTURING TECHNOLOGY IN PLAINS VILLAGE ARROW POINTS. A sample of ca. 2,500 artifacts from the Walth Bay earthlodge village site (39WW203) in South Dakota provides the basis for developing a technological model of the manufacturing trajectory of arrow points. Identification of stages in arrow point manufacture is aided by data from ca. 50 refitted fractured specimens. This leads to a use-phase classification, a means for measuring variation in artifact systemic context. Use-phase classification allows study of the relationship between systemic context and archaeological context and, augmented by artifact matching data, provides a means for studying within-site artifact manufacture, use, storage and disposal patterns. (15)

Aleto, Thomas F. (Illinois, Urbana) RECENT CULTURE HISTORICAL DATA FROM LA PUNA, ECUADOR. Recent survey and excavation from Isla La Puna, Ecuador, sheds light on the role of the island in culture history and process in northwestern South America. Sites representing cultural occupation spanning from the Preceramic through the Contact period have been located. Ceramic evidence of Valdivia-Machalilla related material demonstrates marked differences that cannot be reconciled with the standard type sequences. Manteno period ceramics also demonstrate significant variation from continental counterparts. These data form the basis of a broader investigation of the development of a complex maritime trading economy. (46)

Alexander, L. S. (Alabama), C. Davis (Alabama), D. Lenhardt (GAI Consultants) and R. Skrivan (Alabama) ARCHAEOLOGICAL EXCAVATIONS AT 22TS954, TISHOMINGO COUNTY, MISSISSIPPI. Site 22Ts954 is a stratified, multicomponent site located on a major tributary of the Tombigbee River in northeast Mississippi. During the fall of 1981 full scale excavations sponsored by the U.S. Army Corps of Engineers, Nashville District, were conducted at this stratified late Middle Archaic through middle Late Archaic site (ca. 4,500-2,700 BC). Lithic procurement, stone-working technology, ethnobotanical profiles, site geology, soils and intrasite organization were investigated. Information is combined with similar components in the Tennessee-Tombigbee area to generate a settlement pattern model. (34)

Alexandrowicz, J. S. (Pittsburgh) and Susan R. Alexandrowicz (Pittsburgh) **THE MARKET STREET SITES, PITTSBURGH, PENNSYLVANIA: A STUDY IN HISTORICAL URBAN ARCHAEOLOGY 1981-82.** The Market Street sites are stratified, multicomponent historical sites in downtown Pittsburgh, Pennsylvania. The 11 archaeological features (e.g., outbuildings, wells and cisterns) defined during the excavations at the sites span at least 150 years and perhaps 200 years of continuous occupation by Euro-American groups. Following the Revolutionary War period, the sites served as loci for habitation, as well as commercial and industrial enterprises. The significance of this study is underscored as the fieldwork represented the first attempt in recent years at archaeological salvage investigations of historic sites impacted by construction in the city of Pittsburgh. (49)

Alexandrowicz, Susan R. (see Alexandrowicz, J. S.) (49)

Alterman, M. L. (Columbia) **AN EVALUATION OF THE PIEDMONT LATE ARCHAIC ALONG THE UPPER SAVANNAH RIVER VALLEY.** Excavation of buried flood plain sites along the Upper Savannah River indicates that surface samples have not provided adequate representation of the range of prehistoric sites in the southeastern Piedmont. Sites with extensive middens and diverse assemblages refute earlier assumptions that the Late Archaic occupation of this region was transient. The presence of soapstone cooking stones, stone bowls and fiber-tempered ceramics suggest the use of new food resources or the increased efficiency of processing and cooking certain foods at this time. The Late Archaic development in the Richard B. Russell Project area is viewed as an indigenous adaptation that did not include exploitation of shellfish, unlike its counterpart at Stalling's Island. (56)

Anderson, David G. and Joseph Schuldenrein (Commonwealth Associates Inc.) **MISSISSIPPIAN PERIOD SETTLEMENT IN THE SOUTHERN PIEDMONT: EVIDENCE FROM THE RUCKER'S BOTTOM SITE.** Multidisciplinary investigations conducted from 1980 through 1983 at a small (ca. 20,000 m²) 14th and 15th century Mississippian village in northeastern Georgia are summarized. The late Savannah/Early Lamar assemblage included a ditched-and-stockaded central enclosure with numerous houses, pits and burials found both inside and outside this (presumably) defensive partition. Overall site size, and the organization of private, public and defensive structures at Rucker's Bottom is similar to that noted at several contemporaneous village sites excavated in this part of the Southeast. This evidence for fairly standardized, semiautonomous small agricultural communities may reflect optimal population levels for meeting year-round subsistence requirements. Population limits, it is argued, are sharply constrained by both organizational and ecological factors. (56)

Anderson, David G. (see Schuldenrein, Joseph) (26)

Anderson, Duane C. (Iowa) **APPROACHES TO PUBLIC ARCHAEOLOGY.** Most archaeologists agree that they have an obligation to disseminate information to the public. The rationale for this is based largely on humanistic considerations, coupled with the fact that the public pays for most research either directly or indirectly. This paper focuses on the responsibility of state programs to: 1) classify and define the needs of various public audiences (e.g., collectors, students, teachers, elderly, amateur societies and the general public); 2) develop adequate programs to meet the needs; and 3) provide mechanisms to evaluate those offerings and revise them as necessary. Some Iowa approaches to various public audiences will be discussed and evaluated. (10)

Andrejko, M. J. and Arthur D. Cohen (South Carolina) **DIFFERENTIATION OF SEDGE PHYTOLITHS THROUGH USE OF SCANNING ELECTRON MICROSCOPY.** Sedges are not studied as extensively as grasses due to their lesser importance as a food source and their preference for wetter habitats. The traditional use of light microscopy for phytolith research affords only a "two-dimensional" view which, although useful for grass silica bodies, inhibits the study of the surface ornamentation and structures which are necessary for the identification of sedge silica bodies. Through use of SEM, modifications over the approach of Melcalfe (1971) have been made in the development of a series of textures, structural geometries and morphologies which are quite diagnostic for the individual plant studied from major peat deposits in the southeastern United States. (39)

Andrews, E. W., V. (see Ringle, W. M.) (7)

Anthony, David (Pennsylvania and Loudon County Archaeology Center, Leesburg, Virginia) and Petar Glumac (California, Berkeley) **TRANSITION IN THE SOUTHEAST EUROPEAN COPPER TRADE.** The first phase in the southeast European copper trade witnessed the invention of copper metallurgy, initial refinement of techniques and the development of a complex trading system in metals, oriented largely towards internal redistribution within a group of related Danube-area

chiefdoms. The second phase witnessed the collapse of these societies, the entry of North Caucasian metal producers, new refinements in techniques (including bronze production) and the growth of much wider trading networks extending from the Black Sea to the Aegean and the Near East, prompting the emergence of export-oriented trade systems in the circum-Black Sea Early Bronze Age. (47)

Anthony, David W., M. Rushing and W. Rust (Loudon County Archaeology Center, Leesburg, Virginia) **PREHISTORIC SETTLEMENT PATTERNS IN THE POTOMAC PIEDMONT LOWLANDS.** Recent research dealing with the Savannah River/Susquehanna Broadspear tradition has stressed the evolution of specialized riverine adaptations as a major element in explaining the topographic orientation and rapid diffusion of the complex. This paper presents the results of an archaeological survey in the Piedmont Lowlands east of Leesburg, Virginia. Savannah River related sites were found in Potomac flood plain, 1st, 2nd and 3rd terrace environments, including interior stream drainages. Large basecamps were found in interior environments well removed from the flood plain, suggesting revision of current models. (34)

Anzalone, R. D. (Advisory Council on Historic Preservation) **MODELS OF SPATIAL DECISION MAKING AND SETTLEMENT CHANGE.** Archaeologists studying complex societies are currently searching for appropriate models and methods to analyze and explain the complex patterning of settlement space. By examining certain patterns of architecture and architectural space through models of design and choice, it may be possible to suggest not only some of the rules or norms by which a given society organizes its settlements, but to go beyond generalizations and examine how variations from those norms result from individual and group decisions based on functional needs, societal values and other factors. Examples focus on medieval North Africa and the Iberian peninsula. (9)

Applegarth, Jan D. (Illinois State Museum) **ARTIFACTS FROM THE RENCH SITE: THE SCHOENBECK COLLECTION.** During the 1930s and 1940s George and Ethel Schoenbeck and members of the Peoria Academy of Science surface collected and excavated some 3,500 artifacts from the Rench site. Flaked stone, ground stone, ceramics, bone, shell and copper artifacts were recovered. Although unprovenienced, the collection indicates an aboriginal occupation of the Rench locality from the Early Archaic through the Mississippian periods and contains numerous artifact types not represented in the excavated assemblage. Further, a substantial Middle Woodland occupation is indicated. Relationships with the excavated Rench materials and materials elsewhere in the Illinois Valley are discussed. (23)

Artz, Joe Alan (Kansas) and Kenneth C. Reid (Tulsa) **MODELING THE LOCATION OF BURIED ARCHAIC SITES IN NORTHEASTERN OKLAHOMA: A GEOMORPHIC PERSPECTIVE.** Geoarchaeological investigations in the Little Caney basin of northeastern Oklahoma indicate that surficial and shallowly buried Late Archaic sites are concentrated in Mason series soil, a Typic Arguidall extensively exposed in the middle reaches of secondary tributaries. Combined hydrologic and geomorphic factors inhibit aggradation and promote surface stability in Mason soil exposures, while elsewhere in the system both sediments and sites predating 2000 BP have been either deeply buried or eroded by subsequent fluvial activity. Recognition and resolution of this pattern promises to help locate sealed Archaic deposits in the northeastern Cross Timbers. (50)

Arundale, Wendy H. (Alaska, Fairbanks) **HISTORIC SETTLEMENT AND SUBSISTENCE ON THE MEADE AND CHIPPIKPIKPUK RIVER SYSTEMS, NORTHWEST ALASKA.** Since archaeological research began in Alaska, oral history and ethnography have played mutually supporting roles; this project illustrates how this important connection continues today. An oral history-archaeology project on the upper Meade River and Chippikpikpuk River system, both near Barrow, has revealed substantial new information on the history and human ecology of these two important areas. This paper discusses hypotheses concerning how settlement and subsistence patterns have changed in these areas over the past 1,000 years, and presents some of the propositions that will be tested in the upcoming field season on the upper Meade River. (49)

Ashmore, W. (Rutgers) **HOUSEHOLDS OF CLASSIC QUIRIGUA.** Settlement archaeology at Quirigua has documented the distribution of probable household groups and clusters in the 8th century flood plain community. While the unusual survey conditions kept details on individual household units at a minimum, information was complementarily abundant concerning: 1) aggregates that defined community subdivisions; 2) distribution of apparent interhousehold distinctions in socioeconomic status; and 3) household-level associations of manufacturing activities. Aspects of all these are discussed with respect to implications for general models dealing with ancient Maya households and community organization. (7)

Baker, Ruth L. (Southern Methodist) **WILD AND DOMESTIC PLANT UTILIZATION AT POT CREEK PUEBLO.** The analysis of macrobotanical remains recovered from stratigraphic courtyard trash

deposits at Pot Creek Pueblo, northern Rio Grande, is presented. Plant remains were recovered through a combination of dry and wet flotation techniques. These materials present a well-preserved, composite picture of local adaptations to a seasonal schedule based on the collection of both wild and domestic plant resources. While both types of edible foods were important, it appears that wild plants played a significant role in the overall subsistence base even during times of intensive agricultural activity. (29)

Bamforth, Douglas B. (California, Santa Barbara) ADAPTIVE PROCESS ON THE MIXED GRASS PLAINS: PALEOINDIAN SUBSISTENCE AND SETTLEMENT ON THE LLANO ESTACADO. Analysis of Paleoindian site data on file in the Texas Panhandle shows changes in the types and frequencies of sites present from the Clovis to the Firstview periods which appear to reflect changes in the organization of regional subsistence activities. A lack of clear spatial patterning in some site categories indicates a complex settlement pattern which cannot be fully clarified using currently available information. The proposed changes can be explained by examining documented environmental changes on the South Plains with reference to general theories of hunter-gatherer behavior. In addition, pollen evidence for Folsom period forestation is shown to be misleading. (35)

Bamforth, Douglas and David Stone (California, Santa Barbara) DUSTY ARCHIVES: THE RESEARCH POTENTIAL OF EXISTING ARCHAEOLOGICAL SITE AND SURVEY DATA. Tens of thousands of archaeological sites recorded in institutions across the United States are an enormous and virtually untapped basis for primary research. While these data frequently form a biased sample which can be quantitatively intractable, their study allows regional research at an unprecedented scale, which can encompass the entire territory of one or more social systems, and offers sample sizes 10 to 100 times larger than those usually found. These possibilities are presently largely wasted. The paper discusses examples of such research from California, the Great Basin and the Northeast to illustrate these problems and potentials. (35)

Banks, K. M. (New Mexico State) THE DEVELOPMENT OF CERAMIC TECHNOLOGY IN THE EGYPTIAN WESTERN DESERT AND NORTHERN SUDAN. Recent research in the Egyptian Western Desert and northern Sudan has provided new data on the appearance and spread of ceramic technology during the Holocene Wet phase. Four different traditions have been identified with temporal and geographical significance. The earliest appears with the first Holocene populations and has no known equivalents elsewhere in the Sahara. The second belongs to the Khartoum Horizon Style and is part of a pan-Saharan ceramic tradition. The third is related to Nubian ceramic material found in the Nile Valley. The fourth is limited to the Gilf Kebir and appears to have been a localized occurrence. (17)

Barber, Russell J. (Harvard) DEMOGRAPHIC MODELS FOR PREHISTORIC NEW ENGLAND. There exists for New England a site inventory which is substantial but has unassessed biases. This paper uses that data base to produce raw site density curves and adjusted inferential population curves. A series of models of demographic trajectory are presented and discussed and their bearing on the New England curve is examined. Finally, similar curves from the Middle Atlantic states are presented and compared to their New England counterparts. (4)

Barbour, Warren (SUNY, Buffalo) ANALYSIS OF FIGURINES FROM TLAJINGA 33, TEOTIHUACAN. Recent excavation of the site Tlajinga 33:S3W1 on the south margin of the ancient city of Teotihuacan has resulted in a large collection of ceramic figurines spanning more than 400 years of occupation. For the first time, figurines are associated with specific proveniences within a Teotihuacan apartment compound, and the artifacts have context with floors, rooms or features. The figurines are not randomly distributed throughout the compound, but are in differential contexts and frequencies, indicative of specific activities. For the first time, it is possible to suggest specific ritual functions and associations in a Teotihuacan domestic residence. (30)

Bartel, Brad (San Diego State) INTERACTION AND ACCULTURATION IN ROMAN MOESIA. Over the last decade, the Kraku'lu Yordan and Mt. Kosmaj archaeological projects have researched the degree of Roman/native interaction during the colonial period of the 3rd and 4th centuries AD in what is now northwestern Serbia, Yugoslavia. Strategies of social control, rates of acculturation and patterns of Illyrian ethnicity are presented to illustrate the complexity of the social situation. Aspects of technological innovation in metallurgical production are linked to widening economic pressures within the Roman Imperial System. (3)

Barth, Robert J. (Wisconsin, Eau Claire) THE EMERGENCE OF THE VINCENNES CULTURE IN THE LOWER WABASH DRAINAGE. The Vincennes culture is generally considered to be a late Mississippian manifestation, possibly owing its origins to influences from Cahokia and the Ohio

Valley Mississippian centers. An alternative hypothesis, based upon ceramic evidence and recent radiocarbon dates, is offered. This hypothesis argues that the Vincennes culture developed from the Middle-Late Woodland Allison-LaMotte culture during the 9th and 10th centuries AD and that its emergence was therefore not late but contemporaneous with the appearance of Mississippian societies in other areas of the Midwest. (6)

Bartholomew, W. (Maine, Orono) THE KNOB SITE: AN EARLY ARCHAIC OR PALEOINDIAN COMPONENT AT THE MUNSUNGUN-CHASE LAKES THOROUGHFARE, NORTHERN MAINE. The Knob site (154-25) is located on a small terrace 9 m above Munsungun Lake. The geomorphic position of this site directly below the Fluted Point site (154-14) suggests that it may have great antiquity. Archaeological remains occur in colluvial deposits which overlie kame terrace gravels. Excavations produced several bifacially flaked core preforms designed for blade production, a leaf-shaped point and a scraper. Datable organic remains were not recovered. (40)

Bartochowski, Norbert L. (SUNY, Buffalo) POSITIVISM, ARCHAEOLOGY AND ETHNOHISTORY: PROBLEMS IN SYNTHESIS. Positivist philosophy and its widespread acceptance in contemporary archaeology, especially in the New Archaeology, presents a number of critical problems in the synthesis of archaeology and ethnohistory and in the use of ethnographic analogy. The fundamental tenets of positivism are shown to be antihistorical in their practical application. Examples are drawn from works in American archaeology of the last four decades, which more concretely elucidate the nature of some of these problems. (32)

Batović, S. (see Chapman, J.) (47)

Baugh, Timothy G. and Richard R. Drass (Oklahoma, Norman) THE DUNCAN SITE (34WA2): WICHITA ADAPTATIONS DURING THE PROTOHISTORIC PERIOD. Traditional views of Plains-Southwest exchange have focused on the eastern Pueblos and the Plains Apache. Recent work in the Southern Plains, however, indicates that semisedentary villagers (ethnohistorically identified as the Teya) also participated in this exchange network during the Protohistoric period (AD 1450-1650). This paper presents the results of recent test excavations at the Duncan site (34WA2), a fortified Plains Caddoan village situated in western Oklahoma. The presence of a circular ditch, plus the occurrence of obsidian, glaze pottery, corn and bison bone attest to the mixed economy of these people and adds to our knowledge about Southern Plains adaptations during the Protohistoric period. (49)

Bayreuther, William A., III (Texas A&M) TOOL MARK ANALYSIS OF THE HULL OF THE CONTINENTAL GONDOLA PHILADELPHIA. Eight of the 17 vessels comprising the Continental naval squadron on Lake Champlain in 1776 were oared sailing craft known as "gondolas." These gunboats were hurriedly constructed in a shipyard in Skenesborough, New York, and were all but one lost within a year. The Philadelphia was salvaged and is on permanent exhibit in the Smithsonian Institution. The excellent preservation of the Philadelphia's hull provides a unique opportunity for the study of Revolutionary War era inland warcraft construction. Smithsonian-supported research has documented tool marks on the hull which reflect state-of-the-art boatbuilding technology in the fledgling United States. (49)

Baudry, Mary (Boston) YEOMEN AND GENTLEMEN: AN ARCHAEOLOGICAL PERSPECTIVE ON SOCIAL RANK IN 17TH CENTURY MASSACHUSETTS. The nature of the social order in colonial New England is the focus of much theoretical and substantive debate. Material remains and documentary evidence for the homesites of a middling farmer and a prosperous merchant-trader are compared for what they reveal about artifactual expressions of social inequality in late 17th century Massachusetts. The analysis of the material goods provides insight into such issues as achieved and ascribed statuses in these archaeological and social contexts. (19)

Beckes, M. R. (Custer National Forest) and D. Davidson (Bureau of Land Management) ARCHAEOLOGY AND ENERGY DEVELOPMENT: THE FUTURE OF THE PAST IN WESTERN NORTH DAKOTA. Large-scale oil and gas development in the Williston Basin and exploitation of the vast Fort Union coal reserves present a major challenge to cultural resource managers in western North Dakota. Archaeological and historical resources ranging from numerous buried McKean phase occupations through standing Mandan-Hidatsa ceremonial eagle lodges, to the vast Knife River Flint Quarries are being impacted by energy development. The U.S. Forest Service and Bureau of Land Management are taking an active role in the on-the-ground application of archaeological legislation in the "oil patch" and coal fields of North Dakota. Effective management of our archaeological heritage requires effort, good faith and compromises on the part of federal agencies, state historic preservation officers (SHPOs) and private industry. (28)

Bell, Thomas L. (see Church, Richard L.) (14)

Bellantoni, N. F. (see McBride, K. A.) (4)

Bense, J. A. (West Florida) EARLY HOLOCENE CULTURAL ADAPTATIONS IN THE UPPER TOMBIGBEE VALLEY OF NORTHEAST MISSISSIPPI: RESULTS OF GEOARCHAEOLOGY. Intensive geoarchaeological investigations in the Upper Tombigbee Valley have established a continuous cultural sequence for the last 10,000 years. Deposits of the Early through initial Late Archaic (12,000-5000 BP) have been preserved through fluvial burial in the flood plain. Fortunately, these deposits have been discovered and investigated at several sites. Sequences of changing adaptations to the dynamic early Holocene environment have been identified through consistent association of archaeological components and soil/sedimentary units. Information from sediment deposition, erosion, soil development, plant fossils and other geoscience phenomena has been crucial in developing models of early cultural adaptation mechanisms in the mid-South. (26)

Benz, Bruce F. (Wisconsin, Madison) RACIAL CLASSIFICATION IN MAIZE (*ZEA MAYS* L.). The ear of corn is a human artifact that has been the object of human selection for at least eight millennia. The morphology of the maize ear should reflect both the cultural and the environmental selection pressures to which it has been subjected during its long evolutionary association with man. Analysis of maize collections obtained from the Tarahumara Indians of southern Chihuahua suggests that characters employed in racial investigations by previous investigators may not be appropriate for describing racial evolution, but may actually describe environmental variation and/or morphologically plastic attributes easily modified through human selection. Recognizing the source of the observed morphological variation in the maize ear in ethnological or archaeological collections is critical in order to understand the prehistoric cultural behaviors leading to the evolution and racial diversification of maize. (18)

Benz, Bruce F. (see Matthews, Meredith H.) (24)

Bey, George J., III (see Healan, Dan M.) (11)

Beynon, D. E. and P. J. Provost (Indiana-Purdue, Fort Wayne) A PRELIMINARY REPORT ON THE EXCAVATION OF FOX ISLAND (12AL121). The Fox Island Archaeological Project represents the first excavation of an archaeological site in northeastern Indiana. The Fox Island site is a multicomponent, temporary campsite located on an aeolian sand dune in the ancient Wabash River Valley just southwest of Fort Wayne, Indiana. This dune is part of a post-Pleistocene sand dune system that comprises the Fox Island Nature Preserve. The goal of this ongoing research project is to elucidate archaeological, geological and climatological data acquired within the structure of systematic excavation procedures in order to compare that information to archaeological data generated from survey alone. This research should provide additional empirical data for this relatively unknown area of northeastern Indiana. Analysis of the Fox Island material is currently being conducted in the anthropology laboratories of Indiana-Purdue University at Fort Wayne. (33)

Bienenfeld, Paula F. (SUNY, Binghamton) PATTERNS OF STONE TOOL USE IN THE EARLY NEOLITHIC OF THE NETHERLANDS. Results of a microscopic use-wear study of early Neolithic chipped stone assemblages from the Dutch Swifterbant sites are discussed. Function is defined by the presence of both use-polishes and edge damage patterns, with emphasis on the higher magnification approach. In particular, means of integrating use-wear results into a program of study that examines tool use within a lithic "use-life" sequence are discussed. These take the form of an examination of range of activities within settlements and measures of efficiency of use as indicators of access to raw materials. This approach complements morphological studies of reduction sequences by contributing information on the interrelationships of the use and discard steps. (47)

Billings, D. (see Hargrave, M.) (33)

Bishop, R. (see Weigand, P. C.) (45)

Black, Kevin D. (Metcalf-Zier Archaeologists, Inc.) PREHISTORIC HUNTER-GATHERER HIGH ALTITUDE ADAPTATIONS IN CENTRAL COLORADO. Data from two high altitude surveys in central Colorado—Cottonwood Pass and Arapahoe Basin—are summarized. These areas range in elevation from 9,000 ft to nearly 13,000 ft and are characterized by montane to subalpine meadows, woodlands and alpine tundra ecozones. Prehistoric use of such areas is seen as seasonal but otherwise includes the full range of hunter-gatherer activities apparent at lower elevations. Issues discussed are settlement systems, subsistence strategies and shelter in the

context of extant paleoenvironmental data. Similarities and contrasts with models of adaptive strategies developed for adjacent areas of Colorado are highlighted. (24)

Black, R. (see Konard, V. A.) (40)

Bogdanović, Milenko (National Museum, Kragujevac, Yugoslavia) THE TRANSITION FROM NEOLITHIC TO BRONZE AGE IN CENTRAL SERBIA. The hiatus between final Neolithic (Divostin IIb, 3300 BC) and earliest Bronze Age (Ijuliaci, 1950 BC) can be filled with a series of phases that suggest cultural practices of the north Caucasus. The end of Divostin may well be attributed to the introduction of steppe elements; most of the intervening phases do not appear to have local roots but show influences and/or intrusions from the Caucasus. Most archaeological evidence in this period comes from burial mounds rather than settlements, an inversion of the situation characteristic of the Neolithic and Bronze Age. (47)

Boisvert, Richard A. (see Duffield, Lathel F.) (34)

Bonnichsen, R. (Maine, Orono) AN INTRODUCTION TO THE MUNSUNGUN LAKE ARCHAEOLOGICAL RESEARCH PROJECT. High-quality chert used for artifact production attracted native populations to north-central Maine since the end of the last ice age. From 1976-79 survey work revealed a rich and varied archaeological record. Since 1980, investigations have focused on excavations of Paleoindian, Archaic and workshop sites at Munsungun Lake. The overall goal of a multidisciplinary team is the elucidation of the bedrock, Quaternary geology, vegetation, faunal and human history in the project area. Special emphasis is placed on understanding the relationship between lithic procurement systems and changing environmental patterns through time. (40)

Bonnichsen, R. (see Young, D. E.) (40)

Borns, H. W., Jr. (Maine, Orono) THE LATE WISCONSIN HISTORY OF THE CHASE MUNSUNGUN LAKE BASINS, NORTHERN MAINE. The late Wisconsin ice sheet thinned over the highlands containing the Chase and Munsungun Lake basins separated, as successively lower topographic thresholds emerged, and finally dissipated. The distribution of kame terraces suggests drainage was southward across the ice. These are best developed at low levels and document the meltwater flow from Chase Basin across the intervening high divide into Munsungun Lake Basin, and subsequently, into the Aroostook River drainage, Chase, and probably Munsungun, lakes formed about 12,700 years ago. They subsequently stood at least 10 m higher and drained southward reducing fluvial terraces between the lakes. (40)

Boszhardt, Robert F. (see Gallagher, James P.) (33)

Bowen, Jonathan E. (Ohio Historical Society) RECENT EXCAVATIONS AT PEARSON VILLAGE I IN NORTHERN OHIO. Pearson Village I, a late prehistoric Sandusky tradition settlement in the Sandusky Bay drainage area of northern Ohio, is being excavated as part of a long-term research project. The work already completed shows that the site is approximately 80 m in diameter, encircled by a probable fortification ditch. Subplow zone feature types are arranged concentrically, and there is apparently a central plaza. A large skeletal sample provides population data, and abundant floral and faunal remains allow a preliminary reconstruction of the subsistence economy. (33)

Boydston, Roger A. (Northwestern) TWO FOR ONE: THE RENCH SITE LITHICS AND THE INVENTIVE SURFACE COLLECTION AT RENCH. Part I: A formal description of the lithics recovered at the Rench site (11P4) in 1980-81 is presented. Most of the lithics represent an early Late Woodland occupation, with small amounts of materials derived from Late Archaic and Mississippian occupations. Part II: The results of a systematic, intensive surface collection conducted at the Rench site in 1981 are used to test three hypotheses: 1) surface distributions of artifacts allow prediction of subsurface activity area distributions; 2) collector predation of a site surface will impoverish certain artifact classes; and 3) a size effect results in the overrepresentation of larger artifacts on the surface. (23)

Brackenridge, G. R. (Dartmouth) and J. L. Hofman (Tennessee) LATE QUATERNARY STRATIGRAPHY AND ARCHAEOLOGY OF THE MIDDLE DUCK RIVER VALLEY, TENNESSEE. Stratigraphic mapping of trenches demonstrates three Holocene lithostratigraphic formations that include six radiocarbon dated phases of flood plain accumulation. Mappable formations include historic sediment belonging to the modern flood plain (T0) and two prehistoric units (ca. 7200-1600 BP and ca. 10,000-8000 BP) that underlie the T1 surface. The earlier unit is commonly buried, and its surface exhibits fossil flood plain topography and an associated paleosol. Middle Archaic artifacts are present within and on this paleosol. Refitting analysis indicates 50 cm ver-

tical displacement of some artifacts has occurred. A pressing need for regional studies is the development of time stratigraphic units comparable in scale to that now used in glaciated regions. (26)

Breternitz, Cory Dale and David E. Doyel (Soil Systems, Inc.) **THE BIS SA'ANI COMMUNITY STUDY: INVESTIGATIONS INTO A LATE BONITO PHASE CHACOAN COMMUNITY IN THE SAN JUAN BASIN.** Excavations conducted in 1981 by the Navajo Nation Cultural Resource Management Program in the Bis sa'ani community represent the first opportunity to quantify a late Bonito phase (AD 1120-1220) Chacoan community in the San Juan Basin. The study investigated thoroughly a series of contemporary, spatially associated sites that are presumed to have interacted on a local and daily basis as an integrated community. Analytical techniques emphasized the quantification of material remains to arrive at population and carrying capacity estimates and to investigate basic questions of community origin, growth and development. (53)

Breternitz, D. (see James, S. E.) (50)

Bricker, Harvey M. and Stephen Sieracki (Tulane) **SPECIALIZED BLANK-DETACHMENT HAMMERS FROM THE EARLY UPPER PALAEO-LITHIC.** A series of secondarily modified, water-rolled cobbles from the early Upper Paleolithic (Chatelperronian) site of Les Tambourets (southwest France) belongs to the general class of Palaeolithic flint-knapping implements usually described as "retouching tools," contrasting with the more massive "hammerstones." Detailed morphological study of the Tambourets objects combined with replication experiments suggest that they are, in fact, specialized hammerstones used, by right-handed artisans, primarily for the detachment of blades and flakes from flint nuclei. These tools, shaped before use by grinding, provide useful information about one technique of blank detachment by direct, stone-on-stone percussion at the beginning of the Upper Palaeolithic. (43)

Briuer, Frederick L. (U.S. Army, Fort Hood, Texas) **PROBLEM-ORIENTED RESEARCH AND ARMY ARCHAEOLOGICAL RESOURCE MANAGEMENT STRATEGIES.** Overall goals and accomplishments of a five-year archaeological program at the largest federally owned Texas landholding are discussed, with special emphasis on the role of anthropological research for compliance purposes. Program features are summarized, including research resources, personnel, computerized site and artifact inventories and joint government/contractor research commitments. Research problems and results to date are discussed, including cultural and noncultural models for explaining patterns of archaeological data from this large, intensively surveyed region. Investigations focusing on the understanding and control of ongoing site destruction processes are also important research considerations. (13)

Browman, David L. (Washington, St. Louis) **INCAIC HUANCA POLITY LITHIC INDICATORS.** While archaeological work on Inca occupations in Peru normally focus exclusively upon architecture and settlement patterns, in the Jauja-Huancayo area of Junin the analysis of Inca period lithic tool assemblages provided unexpected information in terms of lithic indicators. A shift in camelid production techniques was identified; a previously unreported *mitmag* (Inca resettlement colony) was verified; and lithics provided a mechanism for distinguishing the settlements of one of the three subdivisions from the other Huanca federation groups. (11)

Brown, Barton McCaul (SUNY, Buffalo) **POPULATION ESTIMATION FROM FLOOR AREA—A RESTUDY OF "NAROLL'S CONSTANT."** From a worldwide, cross-cultural study of ethnographic cultures (*American Antiquity* 1962), Naroll concludes that population can be inferred from floor area in the ratio of one person for each 10 square m of area. A restudy was conducted using the same methodology. Several methodological problems with the original study are addressed: to whit, sampling, variable definition and alternative hypotheses. The 1-to-10 ratio overestimates the restudy prediction line by a factor of about two. Hence, "Naroll's constant" led archaeologists astray in population estimation. The results of the restudy offer a more reliable guide for this task. (9)

Brown, James A. (Northwestern) **ON THE ORIGIN OF POTTERY.** An economic model is offered to account for the appearance of ceramic container technology in different cultural traditions. This model is particularly applicable to high-latitude settings where the earliest pottery is crude, fragile and seemingly an unlikely replacement for other well-established container types. Pottery has one advantage over alternatives that is critical in situations in which rising consumption of all containers places intolerable demands on the time spent in making containers. Because pottery manufacture can be divided into assembling, drying and firing stages, it offers potential savings of time in manufacture not possible in basketry and other competing container technologies. (12)

Buehrig, Jeanette E. (see Hicks, Ronald) (33)

Bunn, H. T. (see Kroll, E. M.) (15)

Burke, Thomas D. (National Association of State Archaeologists) **REACHING OUT: EDUCATING THE PUBLIC ABOUT ARCHAEOLOGY.** The preservation of archaeological resources and the future of the profession depend on public support. Support arises through effective communication and education of the public. This poster session provides for examination of materials in several formats (print, videocassette, film) for all audiences and from various sources (museums, universities, archaeological societies, state government programs) across the country. Subject matter varies widely (archaeological methods, prehistoric and historical archaeology, complementary roles of amateurs and professionals). The purposes are to offer examples of what has been done and to stimulate more development of effective educational programs. (25)

Butler, B. M. (Southern Illinois, Carbondale) **PATTERNS OF CHERT SOURCE UTILIZATION IN SOUTHERN ILLINOIS.** The changing patterns of chert source utilization provide insight on a variety of problems, including resource procurement strategies, technological requirements, mobility and trade. Southern Illinois is a particularly favorable laboratory for such studies because of a substantial number of macroscopically distinct chert sources. This paper presents preliminary results from a pilot study in which diagnostic chipped stone items from a 12-county area in southern Illinois were classified as to probable chert type and source area. Diachronic and synchronic patterns are presented and discussed. (43)

Cameron, Catherine M. (see Leonard, Robert D.) (24)

Campbell, S. K. (Washington) **CONTRACT ARCHAEOLOGY: A CASE STUDY OF CHANGING POLICIES AND THEIR IMPACT ON RESEARCH POTENTIAL.** All archaeological projects in the Rufus Woods Reservoir have been government-funded programs initiated in response to impacts of Chief Joseph Dam. The history of cultural resources management priorities and practices in the reservoir, commencing with the River Basin Survey in 1947, is considered in the context of contemporary archaeological goals and methods. The only site excavated by three independent projects, 450K2 provides a case history of changing management policies. Further, independent research based on the large site assemblage affords a means of evaluating the limitations of the CRM-collected data in research contexts. (36)

Carbone, V. A. (National Park Service), A. V. Segovia (Maryland), J. E. Foss (North Dakota), M. C. Sheehan (Indiana), D. R. Whitehead (Indiana) and S. T. Jackson (Indiana). **THE CHANGING PIEDMONT LANDSCAPE FROM LATE GLACIAL TO RECENT TIMES.** Geomorphological, pedological and palynological investigations of the Piedmont segment of the Savannah River Valley and its tributaries were undertaken as part of the cultural resource mitigation program in the Richard B. Russell Dam and Lake Project. Pollen and plant macrofossil data provide the first major reconstruction of vegetational history in the Piedmont, dating back 21,000 years. A 40,000-year geomorphologic history documents the changing valley landscape through time. Soil studies identify a number of episodes of soil formation which correlate with geomorphologic and vegetational episodes. This paleoenvironmental history is being utilized to study the changing patterns of man-land relationships through time. (56)

Carbone, Victor A. (see Gardner, William M.) (37)

Carbone, Victor A. (see Valdez, Fred, Jr.) (37)

Carlson, D. L. (Texas A&M) **RANGIA CUNEATA AS A SEASONAL INDICATOR FOR COASTAL ARCHAEOLOGICAL SITES IN TEXAS.** Previous efforts to evaluate the season of occupation at archaeological sites by analyzing patterns of growth interruption in bivalves are reviewed. Emphasis is given to the technique, pioneered by Lawrence Aten, of evaluating growth patterns of archaeological specimens of *Rangia cuneata* and comparing these with a master chart derived from modern samples. The potential for microscopic examination of internal growth lines is explored and contrasted with Aten's technique. Problems of examining sites occupied during several seasons are also explored. Finally, the importance of these techniques for studying the seasonal-round and settlement patterns of prehistoric Texas coastal foragers is considered. (1)

Carmichael, David L. (Illinois) **OBSERVATIONS ON STRATIGRAPHY AND A SAMPLE OF EARLY MAIZE AT FRESNAL SHELTER, NEW MEXICO.** Past work at Fresnal Shelter has provided evidence for some of the earliest cultigens reported in North America, dating to 3615 BP. In this paper, a more detailed discussion of the stratigraphy is presented, including an attempt to define assemblages according to natural strata. A sample of the maize remains from these strata also is examined. The results of comparisons among strata suggest little change in the exploitation of resources at the site. Implications of these data for studying the shift to agriculture are noted. (18)

Carr, Christopher (Arkansas) THE POLYTHETIC ORGANIZATION OF ARCHAEOLOGICAL "TOOL-KITS:" AN EXAMPLE FROM PINCEVENT, FRANCE. The tendency for archaeological "toolkits" to be polythetic rather than monothetic in their intrasite spatial organization and to exhibit different patterns of asymmetry among their member types in different intrasite locations is illustrated for the French Magdalenian site, Pincevent habitation 1. These organizational relations found at Pincevent are linked to the multipurpose nature of tool types and contextual variations in their use. Commonly used mathematical spatial analytic procedures for defining toolkits are shown inappropriate for revealing such relationships. The new technique, "polythetic association," used with nonmetric multidimensional scaling and overlapping cluster analysis, is shown preferable. (9)

Carr, H. S. (Tulane) FAUNAL EXPLOITATION IN A PRECLASSIC MAYA COASTAL COMMUNITY AT CERROS, BELIZE. Survey and excavations at Cerros, northern Belize, from 1974 to 1981 revealed the site to be a major civic-ceremonial center and occupational locus in the late Preclassic period. Its strategic coastal location and the presence of possible docking facilities suggest an economy with a strong maritime orientation. Preliminary results of an ongoing faunal analysis indicate that marine resources were an important aspect of the subsistence and suggest ways in which the procurement of these resources was incorporated into the economy as a whole. (1)

Carucci, James (Southern Illinois, Carbondale) and Thomas F. King (Advisory Council on Historic Preservation) MAI OH MAI: BREADFRUIT AND PREHISTORIC CULTURE CHANGE IN TRUK. Breadfruit (*Ma*) is the most important plant resource in ethnographic Truk Lagoon, in the central Caroline Islands of Micronesia. Archaeological research since 1977 suggests that the ethnographic pattern of breadfruit reliance has at least 600 years of time depth, but possibly no more. Major reliance on breadfruit as a staple crop may have begun in connection with a significant episode of contact with Kosrae, some 600 miles to the east, and may have significantly affected the development of modern Trukese social organization. (2)

Chan, Román P. (see Folan, William J.) (41)

Chandler, Susan M. and Paul R. Nickens (Nickens and Associates) REGIONAL SAMPLING AND PREDICTIVE MODELING IN CRM: SOME EXAMPLES FROM THE NORTHERN COLORADO PLATEAU. The use of regional sampling and predictive modeling for site locations is a growing concern for land managers and archaeologists alike. Recently, federal contracting efforts in several states have centered on the production of predictive models, often based on very small field samples. Several examples of such efforts, each based on discriminant function analysis, are described with specific reference to development of the models and applicability in the regional context. Effects of contrasting field and cultural environments as well as operational (practical) decisions on model efficacy are highlighted. (50)

Chang, C. (Sweet Briar) THE ETHNOARCHAEOLOGY OF AN ESKIMO FISH CAMP: AN ANALYSIS OF ACTIVITY LOCI AND BEHAVIORAL PROCESSES. An inland fish camp along the Meade River of the North Slope was mapped and recorded during the summer of 1982. The spatial relationships between fish drying and processing areas, meat racks and caribou butchering areas, tent and cabin locations, storage of active and passive gear and refuse disposal were examined in a series of mapping projects. Behavioral processes affecting artifact distribution were studied. Some preliminary results from time-motion studies of activity episodes such as fishnet repair, butchering and dressing caribou, cleaning fish and refuse disposal activities are presented. (49)

Chapman, John (Newcastle upon Tyne, United Kingdom) THE EARLY BALKAN VILLAGE: PATTERN AND PROCESS. Spatial patterning at village and household levels is only indirectly related to social form and therefore cannot be used to reconstruct social form without other kinds of data. The intermediate symbolic codes relating to proxemics, ritual and architecture provide such data. A preliminary attempt to define general categories of spatial patterning sets the scene for analysis of the "internal logic" of village and house layout. The data sets range from Bosnian Neolithic (Obre) to Bulgarian Chalcolithic (Vinica, Polyanica) via some Vinča material. (3)

Chapman, John (Newcastle upon Tyne, United Kingdom) and S. Batović (Zadar, Yugoslavia) PREHISTORIC SURVEY ON THE DALMATIAN COAST. Because the coast is geologically an uplifted mountain range, there are few areas suitable for farming communities. The Plain of Zadar offers one of the best possibilities for investigation. The first season of intensive survey has yielded a broad spectrum of sites of various periods and promises to yield a fuller understanding of settlement systems. (47)

Chappel, Sylvia (Michigan) ALTERNATIVE SOURCES IN REGIONAL EXCHANGE SYSTEMS: A GRAVITY MODEL APPROACH. The influence of alternative sources on patterns of abundance of exchanged goods within a region is investigated through presentation of a gravity model that

predicts relative percentages of goods from each source at each site in the region. Application of the model to an ethnographic example demonstrates that abundance fall-off patterns which seem anomalous in terms of known exchange patterns can be explained by the presence of alternative sources. Application of the model of an archaeological case, the British Neolithic stone axe exchange, suggests that some anomalies in abundance fall-off patterns are related to the presence of alternative sources while others are not. (47)

Charnov, Eric L. (Utah) NATURAL SELECTION AND BEHAVIORAL ECOLOGY. Behavioral ecology is the application of the theory of natural selection to behavior and related topics. The key idea is that selection favors behaviors which tend to increase an individual Darwinian fitness (including inclusive fitness). A review of these ideas applied to social behavior is presented stressing: 1) facultative (learned) responses; 2) conflict of interest in social interaction; and 3) the value of ultimate vs. proximate questions. The ideas are illustrated with data on wasps, shrimp and finally, people. (48)

Cheek, Charles D. (Soil Systems, Inc.) THE ARCHITECTURAL SEQUENCE AT THE MAIN GROUP, COPAN. Three seasons of excavations in the Main Group at Copan have produced a detailed construction sequence. Information on the frequency and intensity of construction for all phases is now available. The relative amount of energy expended during each construction phase is examined from several perspectives. Population growth over time, absolute population size and the possibility of the incorporation of groups previously outside the polity all affect the interpretation of simple construction rates of man-days per year. The analysis suggests that the nature of the Maya polity at Copan changed in the Late Classic. (52)

Chomko, Stephen A. (see Kornfeld, Marcel) (57)

Choyke, A. (SUNY, Binghamton) CHANGES IN RAW MATERIAL CHOICES FOR BONE/ANTLER TOOLS IN THE HUNGARIAN BRONZE AGE. The tell site of Jaszdozsa, in the north of the Great Hungarian Plain, spans three occupational phases. The large body of bone/antler tools recovered permits study of changes paralleling changes in species exploitation. The use of planned vs. expedient categories in bone tools is discussed. (47)

Church, Richard L. (California, Santa Barbara), Thomas L. Bell (Tennessee) and L. Gorenflo (California, Santa Barbara) AN ANALYSIS OF LATE HORIZON SETTLEMENT IN THE BASIN OF MEXICO USING LOCATION-ALLOCATION MODELS. Many techniques have been employed to analyze, describe, prescribe and predict patterns of settlement and resource use. Operations research approaches are quite important in this context, but with very few exceptions are confined to examining contemporary problems. This paper presents some preliminary results based upon the use of both hierarchical and nonhierarchical location models applied to Late Horizon settlement patterns in the Basin of Mexico. Several objectives are developed within the context of this optimization/operating research framework. The efficiency of the Aztec landscape in terms of agricultural, administrative and religious activities is discussed. (14)

Clark, D. W. (National Museum of Canada) and W. B. Workman (Alaska, Anchorage) MARITIME ADAPTATIONS OF NORTHWESTERN NORTH AMERICA. South of the former Beringian shelf (Bering land bridge) maritime adaptations to sea mammal hunting evidently were achieved early in the Holocene. Evidence for this is partly circumstantial, based on site location, inasmuch as maritime capabilities are a presumed prerequisite for the initial settlement of rugged, complex insular coasts in areas with few land-based resources. Maritime adaptation may be later to the north in the Bering-Chukchee Sea region, but the evidence has been destroyed in most regions due to the rise of the sea to modern levels and coastal erosion. (44)

Clark, G. A. and Seonbok Yi (Arizona State) RESOURCE DIVERSITY IN CANTABRIAN ARCHAEOFAUNAS. Variability in the exploitation of subsistence resources can be understood in terms of least-cost selection behavior, and changes in subsistence can be monitored over time and sometimes explained by a model for variation in resource diversity linked to changes in regional population growth rates. Faunal data from sites in Cantabrian Spain are analyzed from ca. 45,000 BP (Mousterian) through the end of the Roman Iron Age. Although of variable quality, the Cantabrian archaeofaunas are adequate to monitor regionwide changes in subsistence and to allow for an evaluation of the diet-breadth model for this particular area. Discrepancies between expected and observed patterns are also discussed. (58)

Clark, G. A. (see Yi, Seonbok) (58)

Clark, J. D. (see Harris, J. W. K.) (17)

Clark, John E. (Michigan, Ann Arbor) **OBSIDIAN, CHIEFDOMS AND STATES: A CRITICAL REVIEW OF MESOAMERICAN OBSIDIAN STUDIES.** Obsidian studies have greatly increased our understanding of the emergence and operation of complex societies in Mesoamerica. Some claim, in fact, that control of obsidian was the reason for Teotihuacan's rise to power. Special properties make obsidian ideal for studying aspects of past economic systems, especially long-distance exchange and craft specialization. In Mesoamerica, obsidian artifacts have been studied in numerous ways and for a variety of reasons. Strengths and weaknesses of these approaches are assessed. Replication studies offer one promising avenue of research for better understanding the importance of obsidian in Mesoamerica. (11)

Clausen, C. J. (Miami), C. F. Merbs (Arizona State), J. A. Holman (Michigan State) and J. A. Gifford (Miami) **HUMAN RESPONSE TO LATE QUATERNARY ENVIRONMENTAL CHANGE: EVIDENCE FROM LITTLE SALT SPRING (LSS), SOUTHWESTERN FLORIDA.** Located 20 km east of the Gulf of Mexico, Little Salt Spring (80Sol8) is a flooded, 60 m deep collapse sinkhole in the Tampa Limestone (*Science* 203:609-614, 1979). The site has produced the oldest association (ca. 12,000 BP) of an artifact with a vertebrate faunal assemblage in the southeast United States; it was also utilized in the later Paleoindian and Archaic periods. Recent analyses of material from Little Salt Spring have generated several hypotheses concerning the synchronous effect of interacting climatic patterns, sea level and hydrology on floral, faunal and human subsistence patterns of the peninsula during the glacial-postglacial transition as well as during the Hypsithermal. (25)

Clay, V. (Maine, Orono) **GEOARCHAEOLOGY OF FOUR SITES AT THE MUNSUNGUN-CHASE LAKES THOROUGHFARE, NORTHERN MAINE.** Sedimentary and landform analyses of adjacent Paleoindian, Archaic and Ceramic period archaeological sites have provided the bases for developing a relative geological chronology. Downcutting of the Munsungun and Chase Lake basins by changing drainage systems during and since deglaciation has left a complex landform record. The oldest archaeological sites are associated with the most ancient landforms and younger sites occur on more recent surfaces. The selection of topographic surfaces adjacent to the water-land interface through time appears to underlie the chronological ordering of the Thoroughfare site sequence. (40)

Cleland, James H. (see Lyneis, Margaret M.) (13)

Cleland, Kathryn M. (UCLA) and Izumi Shimada (Princeton) **EXCAVATIONS AT HUACA DEL PUEBLO BATAN GRANDE AND IMPLICATIONS FOR THE SICAN CULTURE.** Three months excavation in 1982 at Huaca del Pueblo Batan Grande on North Coast, Peru, reveal an excellent 5 m stratigraphy with 34 levels and 28 floors, spanning the Middle to Late Horizon and containing numerous burials, structures and a set of 1,000-year-old smelting furnaces. Data from the 1979 and 1982 seasons at the site, together with data from Huacas Las Ventanas and the Corte allow us to examine stylistic variability and large-scale metallurgical production of the Middle Sican, as well as the nature of the transitional period between Chimú conquest (ca. AD 1400) and the end of the Middle Sican (ca. 1100). (46)

Cliff, M. B. (Southern Methodist) **CHANGES IN DOMESTIC ARCHITECTURE AND THE DEVELOPMENT OF COMPLEX SOCIETY AT CERROS.** During the Late Preclassic at Cerros, the social system gradually changed from an egalitarian to a rank society. These social changes were accompanied by changes in domestic architecture. Apparently, the degree and manner in which wealth was invested in domestic architecture was dependent upon the perceived desirability of stressing differential access to such wealth. Differential labor investment in domestic architecture was initially undertaken to reinforce the principles of an egalitarian society, and it was not until later that domestic architecture was used to express differential status within the community. (7)

Cobb, James E. (U.S. Army Corps of Engineers, Savannah) **MANAGEMENT OF THE CULTURAL RESOURCES IN THE RICHARD B. RUSSELL DAM AND LAKE PROJECT.** The scope of the Richard B. Russell Dam and Lake Project, which began in the mid-1970s, made it necessary for the U.S. Army Corps of Engineers to employ a fulltime manager involved with a cultural resource program. The cultural resource manager is required to coordinate construction activities with a mitigation program acceptable to state and federal agencies, and to make technical decisions which advance the objectives of scientific research in the framework of the mitigation process. Ultimately, the cultural resource manager must follow compliance procedures while remaining sensitive and concerned with scientific data collection. (56)

Cochran, Donald R. (see Hicks, Ronald) (33)

Cohen, Arthur D. (see Andrejko, M. J.) (39)

Cole, G. G. (Alabama, Office of Archaeological Research) **STRUCTURAL ANALYSIS OF A MIDDLE WOODLAND COPENA MOUND.** The Murphy Hill site, 1MS300, a single-component Middle Woodland Copena mortuary mound, is located in Marshall County, northeast Alabama, on the south bank of the Tennessee River. It is both the easternmost Copena mound excavated to date and one of the earliest; radiocarbon dates place the stratified, patterned sets of interments between 100 BC and AD 250. A structural analysis indicates that seven groups, identified from their distinctive mortuary facilities, used the mound during different phases of construction. A system of ranked lineages is indicated by the distribution of copper, galena, greenstone and marine shell mortuary artifacts among these groups. (34)

Cole, John R. (Northern Iowa) **ARCHAEOLOGY, ANTI-EVOLUTIONISM AND THE PUBLIC: FACTS, ARTIFACTS AND AREN'TIFACTS.** Antievolutionists claim to have found human footprints and other traces alongside dinosaur tracks in Cretaceous Texas sediments. In response to this popular claim, brief field research demonstrates how the claim is wrong rather than simply denouncing it. True believers are not convinced, but others appreciate professional attention to such issues. Archaeology fascinates more people than can define it. Archaeologists are sometimes vilified for defining their subject contrary to popular impressions. People may create a phantom "archaeology" to meet sociopolitical or religious needs, but professionals can and should respond effectively to cultlike claims to serve their larger clientele. (10)

Conkey, Margaret (SUNY, Binghamton) **ART AND DESIGN IN THE UPPER PALEOLITHIC.** A review of Upper Paleolithic societies involved with carving and cave painting shows the beginnings of symbolism as an integral part of evolving human information systems. The data are the portable art and cave art of the caves and rockshelters of the Upper Paleolithic in southern France. A discussion of the origins of symbolism expressed in art and design is related to communication within groups, the maintenance of their boundaries, their social structure and their adaptability. So, a symbolic archaeology of the earliest art reveals that the structures and poses of everyday life are represented by a category reminiscent of the ideotechnic. (27)

Connor, Douglas (Southern Methodist) **PHYTOLITH ANALYSIS IN EAST-CENTRAL TEXAS PREHISTORY.** Three archaeological sites in east-central Texas were sampled for phytolith analysis when pollen studies failed to produce paleoenvironmental data. Phytoliths were extracted from soil samples by silt fractionation and heavy liquid flotation. Method of extraction and counting procedures are reviewed along with a compilation of results. Phytolith spectra from the samples indicate a short grass prairie environment with some deciduous vegetation. Possible sources of error in these conclusions are discussed. (39)

Connor, Melissa (see Price, T. Douglas) (57)

Conrad, Lawrence A. (Western Illinois) **THE SPOON RIVER MISSISSIPPIAN CULTURE OF THE CENTRAL ILLINOIS RIVER VALLEY.** Surveys, excavations and analyses undertaken over the past decade allow a refinement and elaboration of the five-part Spoon River sequence which has evolved since the relevant material was initially reworked in 1966. It is now fairly clear that there were at least three polities living simultaneously in the central Illinois Valley and that the southernmost one was more populous and sophisticated than the one in Fulton County, upon which most generalizations have been based. Large-scale excavations of a town site in Fulton County have provided abundant data concerning most aspects of life during the 13th century. (6)

Cook, D. (Maine, Orono) **ANCIENT CANOE ROUTES AND MUNSUNGUN CHERTS.** Munsungun Lake Formation cherts are widely distributed in northern New England archaeological sites. It is proposed that artifact raw materials were transported by canoe outward from the source area during much of the Prehistoric period. Factors such as abundance of water, low topographic relief, numerous drainages and short distances between drainages undoubtedly facilitated the movement of chert by canoe from drainage to drainage. This study illustrates patterns of travel and trade inferred from the distribution of Munsungun cherts found at archaeological sites in the state of Maine. (40)

Cook, Della Collins (Indiana) **PALEOEPIDEMOLOGY OF THE SCHILD CEMETERY: HEALTH CONSEQUENCES OF REGIONAL INTEGRATION.** The Schild cemetery is a large mortuary site associated with dispersed farming communities which were satellites of Cahokia. When compared with earlier, less integrated societies, Schild remains present a paradox. While life expectancy, stature and indicators of developmental stability improve or remain stable, chronic infectious diseases become more severe. Treponematoses changes its epidemiologic pattern and a tuberculosislike disease makes its appearance. Relative contributions of increased dependence on maize agriculture and population aggregation are evaluated in the light of within-site distribution of pathological conditions. (6)

Cordell, Linda S. (New Mexico) and Shirley Powell (Southern Illinois) PREHISTORIC SUBSISTENCE VARIABILITY IN THE NORTHERN SOUTHWEST. Written records of historic and ethnographic Puebloan cultures as well as data obtained from recent excavations document highly variable adaptations to a highly variable and unpredictable biophysical environment. Surprisingly, though, the prehistoric Anasazi frequently are characterized as subsistence farmers who supplemented their often meager crops with hunted and gathered bounty—regardless of time or space. We question this characterization and examine subsistence and settlement data collected from the northern Southwest by members of the Southwestern Anthropological Research Group (SARG). (16)

Cordy, Ross THE DEVELOPMENT OF COMPLEX SOCIETIES IN MICRONESIA: CONCEPTUAL, THEORETICAL AND METHODOLOGICAL PROBLEMS IN ARCHAEOLOGICAL STUDIES. It is clear now that complex societies developed in Micronesia before the arrival of the Europeans. However, the study of this development in Micronesia is fraught with several serious problems. Problems include: 1) defining what a complex society is and what organizational changes occurred; 2) archaeologically measuring these organizational variables; 3) selecting viable causal hypotheses; and 4) archaeologically measuring relevant causal variables. This overview offers resolutions based on synthetic work with historical and social anthropological data, archaeological research in Palau, Yap and Kosrae and a review of other archaeologists' approaches. (2)

Cordy, Ross (see Ueki, Takeshi) (2)

Coughlin, E. (see Rapp, G., Jr.) (51)

Cowgill, George L. (Brandeis) MEANINGS AND BUILDINGS AT TEOTIHUACAN: POLITICAL INFERENCES FROM PREHISTORIC ARCHITECTURAL COMPLEXES. The Ciudadela was probably the political center of Teotihuacan. However, it differs interestingly from many ruler's palaces. This is probably partly because political office in Teotihuacan was highly sacralized, but it also suggests that much high-level political activity was carried out elsewhere. The "Calle de los Muertos Complex" may have been used for this purpose, although there are other possibilities. Nonresidential architecture at Teotihuacan is often too one-sidedly thought of in terms of temples and religious ritual. More attention should be paid to political and other functions. Inferences about meanings of structures can and should be derived from architecture as well as iconography. (30)

Craig, Alan K. (Florida Atlantic) CHILEAN COASTAL NOMADS: MARITIME ADAPTATIONS ALONG 5,000 KILOMETERS BETWEEN FIRE AND ICE. Shifting prehistoric maritime resource exploitation in northern Chile was restricted to sectors where vestigial amounts of fossil ground water were available in the hyperarid Atacama Desert. From ca. 9500 BP onward the sea became an increasingly important source of food, although some terrestrial hunting is always evident. Watercraft and complex harpoons appear by 2500 BP. Eventually, limited trade with inland agriculturists developed. Data on adaptations from sites along the central coast are sparse. Austral Chile south of Chiloe Island yields abundant archaeological and ethnographic evidence indicating extremely strong marine orientation by canoe Indians using elaborate watercraft and specialized gathering techniques. (44)

Craig, Douglas B. (see Howard, Ann Valdo) (53)

Creamer, Winifred (Tulane) SUBSISTENCE STRATEGIES IN THE GULF OF NICOYA, COSTA RICA: A COMPARISON BETWEEN SITES ON SMALL AND LARGE ISLANDS. Subsistence techniques available to coastal populations—fishing, collecting, hunting and farming—were employed according to resource availability, scheduling decisions and social constraints. Islands provide a bounded resource base for study. Subsistence remains on island archaeological sites reflect procurement strategies including scheduling and cost/benefit decisions in the use of local vs. off-island resources. Excavations at small (4 km²) and large (40 km²) islands in the Gulf of Nicoya provide data to compare strategies employed on each island. Differences in size between the islands, located in similar environments and possessing similar resources, strongly influence subsistence choices. (46)

Croes, D. R. and S. Hackenberger (Washington State) PREDICTIVE MODELING OF PREHISTORIC ECONOMIC PATTERNS IN THE HOKO RIVER REGION. The research design of the Hoko River Archaeological Project has centered on: 1) developing and refining computer-based simulation models predicting evolution of economic decision making, using a substantive mixed-goal subsistence model for prehistoric hunter-gatherer-fishers in this Northwest Coast region (the model predicts through time potential changes in seasonal resource use, storage activities, population levels, settlement and labor organization); and 2) testing and evaluating predictive economic models, through analysis and interpretation of archaeological data pertaining to subsistence activities, collected from rockshelter and wet/dry sites and other regional sites. (42)

Cross, John R. (Massachusetts) ORGANIZATIONAL OPTIONS FOR NONSUBSISTENCE PRODUCTION IN THE LATE ARCHAIC. On the topic of prehistoric social relations, researchers in the Northeast have assumed that undifferentiated bands characterize regional sequences until the advent of agriculture. It is therefore not surprising that technoenvironmental factors are evoked traditionally to account for observed changes in the archaeological record. The alternative offered here is that changes in the production of nonsubsistence items (moving toward craft specialization) create potential asymmetries within and between groups which are mediated or amplified by social mechanisms. Such an approach allows more meaningful understanding of the range of organizational options between Kung-like egalitarian baseline and the obvious asymmetry of Northwest Coast hunter-gatherers. (19)

Cross, Paula G. (Illinois) TRENDS IN MISSISSIPPIAN ANIMAL EXPLOITATION IN THE AMERICAN BOTTOM REGION OF ILLINOIS. The study of faunal material from Mississippian sites located in the American Bottom region of Illinois has delineated a generalized pattern of faunal exploitation. The variety and quantity of faunal remains from these sites suggest that the Mississippian peoples retained a broadly based faunal resource procurement strategy even though maize agriculture was increasingly important in the aboriginal subsistence base. In this paper, the recovered faunal assemblages are examined for any temporal or spatial variations within this period. The possible influence of community size and local physiography on the diversity found within the faunal assemblages is discussed. (6)

Crye, S. S. (see Styles, B. W.) (23)

Cullen, Tracey (Indiana, Bloomington) THE REFLECTION OF COMMUNITY BONDS AND BOUNDARIES IN THE ARCHAEOLOGICAL RECORD: NEOLITHIC URFIRNIS POTTERY IN SOUTHERN GREECE. The distribution of highly similar middle Neolithic (5000–4500 BC) Urfirnis pottery in contemporary levels of five southern Greece sites testifies to a common cultural tradition, presumably established and reinforced by frequent intercommunity contact. In exploring the particular extent and nature of such contacts, the geometric painted design style of Urfirnis is employed (after consideration of past criticism of similar studies) as an index of interaction among potters. The close bonds which emerge between different sites through time are discussed in terms of exchange patterns and information flow. Relevant results of compositional analyses of the Neolithic clays are also summarized. (17)

Curran, M. L. (see Dincauze, D. F.) (54)

Custer, J. F. (Delaware) LATE ARCHAIC AND DELMARVA ADENA SETTLEMENT PATTERNS OF CENTRAL DELAWARE: IMPLICATIONS FOR THE ORIGINS OF RANKED SOCIETIES. Analysis of site location data from central Delaware, including site survey files, data from cultural resource management studies and comprehensive surveys of National Register districts allows the generation of settlement pattern models for the period between 3000 BC and AD 0. A shift to semisedentary basecamps in estuarine environments occurs as a response to the warm/dry conditions of the mid-postglacial xerothermic. Basecamps contain evidence of supralocal exchange, mortuary ceremonialism and incipient redistribution which are indications of the development of incipient ranked societies in circumscribed environments. Models are currently being tested using a stratified random sample of the region. (35)

Custer, J. F. (see Stewart, R. M.) (44)

D'Altroy, T. (Columbia) STATE-LOCAL POLITICAL AND ECONOMIC RELATIONS: THE INCA OCCUPATION OF THE UPPER MANTARO VALLEY, PERU. The Inca state conquered and occupied the upper Mantaro Valley of the central Andean highlands ca. AD 1460–1533. Political and economic relationships between the state and the local Huanca populations are analyzed in light of recent archaeological and ethnohistoric evidence. The spatial distribution of state support facilities and evidence of state activities conducted at Huanca settlements imply that the Incas adopted policies designed to balance economic efficiency with political security. Huanca polities were reorganized to accommodate state requirements for economic production, while the local authority structure was centralized and incorporated into the lower echelons of state government. (5)

Dancy, John (NBC News) PAST TIME ON PRIME TIME: GETTING ARCHAEOLOGY ON TELEVISION. This presentation includes both discussion and demonstration of archaeology on television. Comments are made on which aspects of archaeology best lend themselves to television stories and advice is given on how to deal with the mechanics of television journalism. Videotapes of pieces on archaeology that have appeared on NBC are shown and evaluated. (55)

Darsie, R. F. (Washington State) MAPPING AGRICULTURAL POTENTIAL IN THE DOLORES PROJECT AREA. A portion of the area under investigation by the Dolores Archaeological Program is the subject of an attempt to map agricultural potential. The classification is based on microclimatic principles and environmental characteristics and is accomplished through decision functions on a digital computer. Maps are made for each of a set of reconstructed climatic conditions for the period AD 600-950. Locational analysis using catchment techniques is used to probe the relationships of habitation and seasonal sites to agricultural land through time. (24)

Davidson, D. (see Beckes, M. R.) (28)

Davis, C. (see Alexander, L. S.) (34)

Davis, R. B. and C. M. Kuhns (Maine, Orono) CARBON-14 DATED VEGETATIONAL RECONSTRUCTION FROM CHASE LAKE, MAINE. Pollen and charcoal analyses from Chase Lake, Maine, indicate the following vegetational chronology: 1) ca. 13,000-11,000 years BP—tundra of sedges, grasses, herbs, mosses, small shrubs and possibly poplar trees; 2) ca. 11,000-10,000 BP—woodlands and/or parkland with spruce, poplar, birch, jack/red pine, fir; 3) ca. 10,000-8000 BP—forest of white pine, fir, birch, spruce and oak with fire; 4) ca. 8000-4800 BP—at the outset, decrease in white pine, fir, birch, spruce and oak with fire; 5) ca. 4800-2000 BP—at the outset, decrease in hemlock; forest of beech, birch and other hardwoods, fir, white pine; at ca. 3000 BP increase in cedar and recovery of hemlock; 6) ca. 2000-0 BP—increasing spruce and fir. The data and implications of this suggested reconstruction are discussed. (40)

Dean, Jeffrey S. (Arizona), Robert C. Euler (Southern Illinois, Carbondale) and George J. Gumerman (Southern Illinois, Carbondale) REGIONAL ENVIRONMENTAL MODELS. Intensive geomorphological, palynological and dendroclimatic research on the Colorado Plateau has produced a broad range of accurate, well-integrated paleoenvironmental reconstructions that are related to one another by independent, high-resolution temporal controls provided by dendrochronology, radiocarbon dating and ceramic placement. These reconstructions are correlated with models of long-range behavioral change accomplished by delineating possible interrelationships among environmental, demographic and behavioral variables that prevailed in the region during the last two millennia. The proposed models are then tested against the data generated by SARG. (16)

DeGarmo, G. D. (Fort Bliss, Texas) THE ARCHAEOLOGICAL PROGRAM ON FORT BLISS, TEXAS. An archaeological program that protects the prehistoric data base has been developed and is being conducted on Fort Bliss, a 1.2 million acre Army installation in the Southwest. The program includes: 1) identification and preservation of statistical samples of populations of sites; 2) a district-specific rather than a site-specific preservation methodology; 3) long-term field and analytical investigations designed to develop improved cumulative recognition and understanding of populations of sites; and 4) an installation archaeological staff. The developed program has been tested and has been found to be effective in the context of military field training. (13)

Deller, D. Brian (McGill) CROWFIELD AHJ-31: A PALEOINDIAN RITUAL FEATURE IN SOUTHWESTERN ONTARIO. A large number of heat-fractured tools were salvaged from a single pit which is the predominant constituent of the Paleoindian component at the Crowfield site in Middlesex County, Ontario. The pit was excavated during the summers of 1981 and 1982. The artifact inventory includes both familiar and rarely recognized Paleoindian implements. The tools, which were prematurely ejected from their technological system, offer a rare opportunity to examine Paleoindian implements at early stages in their functional "lives" rather than as used artifacts discarded in habitation site contexts. The material from the Crowfield site is also considered in the broader context of Paleoindian manifestations in the Northeast. (54)

Demarest, A. A. (see Leventhal, R. M.) (7)

DeNiro, M. J., and C. A. Hastorf (California, Los Angeles) IDENTIFICATION OF PREHISTORIC CARBONIZED PLANT REMAINS BASED ON STABLE CARBON AND NITROGEN ISOTOPE RATIOS. Analysis of identified prehistoric carbonized plants from Peru indicates that the processes of carbonization and fossilization do not scramble their $^{13}\text{C}/^{12}\text{C}$ and $^{15}\text{N}/^{14}\text{N}$ ratios. In contrast, the $^{15}\text{N}/^{14}\text{N}$ ratios of uncarbonized Peruvian plant specimens are significantly altered during fossilization. Naturally occurring differences in these isotopic ratios permit differentiation of prehistoric carbonized legumes (e.g., beans) from C_4 plants (e.g., corn) from C_3 plants (e.g., tubers). These observations form the basis of a method to identify carbonized plant remains—found either free in deposits or baked onto pot sherds—that do not retain sufficient plant structure to permit identification based on morphological criteria. (18)

DeNiro, Michael J. (see Schoeninger, Margaret J.) (57)

Denny, Sidney G., William I. Woods and Brad Koldehoff (Southern Illinois, Edwardsville) UPLAND MISSISSIPPIAN SETTLEMENT/SUBSISTENCE SYSTEMS IN THE CAHOKIA REGION. Although the traditional emphasis in Mississippian settlement/subsistence studies has been upon major riverine settings, recent evidence indicates that a substantial upland orientation existed as well. With respect to the Cahokia area, the upland portions of the system appear to consist of a variety of settlements varying in both form and function. Although the data indicate that these sites functioned in a broad range of extractive and exchange activities, this paper focuses upon primary production, including hunting-gathering and horticulture. Data derived from both survey and excavation are discussed, and a model of the upland settlement/subsistence system is presented. (6)

DePratter, C. B. (Georgia) PRIMARY SWAMP STOMPING OR MARSH/LAGOON EFFICIENCY ON THE SOUTHEASTERN U.S. COAST. Until recently, subsistence and settlement adaptations of prehistoric coastal populations of southeastern North America were poorly known. During the past 15 years, extensive excavation projects, numerous settlement surveys and fine-scale analysis of subsistence remains have resulted in increased knowledge of coastal lifeways. Concern for environmental reconstruction, examination of demographic factors and mounting evidence for repeated sea level fluctuations of plus or minus 1 m to 3 m has contributed to a preliminary understanding of culture process in this coastal region over the past 3,500 years. (44)

Derven, Daphne (U.S. Army Corps of Engineers, Ft. Worth) REGIONAL ASSESSMENT OF HISTORIC PRESERVATION AT CORPS OF ENGINEERS' PROJECTS. Projects operated or authorized by the U.S. Army Corps of Engineers have impacts on historic properties that vary in intensity, magnitude and duration. Consideration of these impacts on a regional level provides a coordinated, realistic and economical approach to the evaluation of cultural resources. A proposed pilot study on historic properties provides the framework for addressing regional research problems in the southwestern United States and developing predictive assessments and mitigation requirements. The criteria used to identify and rank the study units, U.S. Army Corps of Engineers' management needs, the organizational framework of the pilot study and the interaction between state and federal agencies is discussed. (20)

Dezzani, Raymond J. (see McCormack, William A.) (43)

Dibble, Harold L. (Pennsylvania) THE ROLE OF CONTROLLED EXPERIMENTS IN LITHIC RESEARCH. One of many approaches now used in lithic research, controlled experiments offer unique opportunities to isolate and describe behavior patterns in the production of chipped stone artifacts that directly reflect on the knappers. This paper reviews some of the goals, methodologies and results of controlled experiments, emphasizing the potentials and limitations of this approach for the interpretation of lithic assemblage variability. (43)

Dincauze, D. F. and M. L. Curran (Massachusetts, Amherst) PALEOINDIANS AS GENERALISTS: AN ECOLOGICAL PERSPECTIVE. It is argued that the expected adaptation for Paleoindian populations in the late glacial and early postglacial environments of New England should be a generalist one. This argument is developed from data in other disciplines which permit a qualitative description of the nature of recently deglaciated environments and of the postulated animal and human behaviors appropriate to such environments. Ecological theory and modeling applied to the reconstructed paleoenvironments permit inferences about strategic constraints and options. Flexible, diversified hunting and gathering strategies with seasonal variation rather than a specialized big game adaptation are strongly indicated. (54)

Dirst, Victoria (Wisconsin, Oshkosh) SOME OBSERVATIONS REGARDING ARCHAEOLOGICAL EDUCATION IN WISCONSIN. Archaeologists today recognize that they have a serious obligation to the profession to promote public understanding of the field. Yet, even though many professionals work arduously at public education, it seems that their efforts often fall short because there exists a basic conflict between what the archaeologists want to teach and what the public wants to know. Using examples from Wisconsin, this paper examines: 1) the questions that need to be answered; 2) the most effective means of addressing them; 3) the potentially undesirable effects of public exposure; and 4) the ways that we can acceptably present the conservation ethic. (10)

Donahue, J. (see Jorstad, T.) (21)

Downing, T. E. (see Sutro, L. D.) (7)

Doyel, David E. (Soil Systems, Inc.) HOHOKAM PALEOECONOMY IN THE MIDDLE NEW RIVER AREA, CENTRAL ARIZONA. Recent research in the New River drainage in central Arizona has documented the presence of a complex and diverse set of Hohokam settlements in association with agricultural and other subsistence-related features. These data are analyzed from within a

mental diversity, a complex cultural order, population density and previous settlement history, as these affect the spatial distribution of centers of political administration. The distortions affecting expression of the ideal model can be measured and factored out in successive alterations of the ideal, permitting a quantitative estimate of how closely the settlement pattern subscribes to a regular distribution of administrative central places. (14)

Fagan, Brian M. (Santa Barbara) MAKING ARCHAEOLOGY INTERESTING. Archaeologists have long puzzled over ways to make their research intelligible to the general public. A variety of methods are available to achieve this, methods that have been tried both in the classroom and on public media. These include audio-tutorial approaches. Innovative methods of public lecturing and working closely with museums and private collectors. Research into these topics is reviewed, and newly established strategies for communicating archaeology to a wider audience are discussed. (55)

Fairbanks, Charles H. (Florida) HOLOCENE CLIMATE AND CULTURE CHANGE IN FLORIDA. The Florida panhandle is one of the most humid areas in the United States, while the adjacent area of the Florida coast is climatically drier and apparently more unstable. This instability appears to be related to the "double sea breeze effect," the same mechanism that controls climatic change in the Yucatan Peninsula. The contrast between the Florida panhandle and the northwest Florida coast poses an interesting situation in which panhandle cultures remain relatively stable through time, while those on the northwest Florida coast wax and wane with climate. (37)

Fall, P. L. (see Thompson, R. S.) (8)

Farrell, Nancy (U.S. Army Corps of Engineers, Los Angeles) MANAGING CULTURAL RESOURCES FOR MILITARY CONSTRUCTION. Since October, 1980, the Los Angeles District Corps of Engineers' archaeologists have been managing a Cultural Resource Program for the construction of MX missile test facilities at Vandenberg Air Force Base, California. The usual planning process was complicated in this case by the fact that construction was already underway while the management plan was being developed. A brief survey of the program's history and implementation illustrates the primary requirements for success: 1) constant communication and coordination with agencies and contractors; 2) flexibility of scheduling, with quick response to changing construction needs; 3) a clear delineation of responsibility and authority; and 4) a cool head. (20)

Farriss, N. M. (Pennsylvania) CORPORATE FAMILY STRUCTURE IN COLONIAL YUCATAN. This paper postulates a corporate, hierarchical model of social organization for the Late Postclassic and Colonial Maya of Yucatan. The model, replicated at various levels, is based on the concept of survival as a joint enterprise directed by family elders and political leaders. Censuses, parish reports, Maya testaments and deeds of sale are among the written records used to explore this model at the basic social level of the household. These documents help to establish the household's size, composition and organization and, above all, assist in the analysis of the nature and degree of economic interdependence among household members. (7)

Fawcett, William B., Jr. (Massachusetts) THE EXPLOITATION OF BISON BY PLAINS INDIANS. Bison frequently have been viewed by archaeologists as an obvious and easy source of meat for Plains Indians. The social and ideological needs that may have encouraged communal bison hunting have been treated as secondary or residual facets of the primary goal of acquiring meat. The analytical scale over which the costs and benefits of bison hunting are measured is at the crux of this problem. At some scales or frequencies, communal bison hunting may have produced a net energy loss. This problem is addressed by determining what frequencies of exploitation might be feasible given various human and bison population characteristics. (48)

Feder, Kenneth L. (Central Connecticut) THE ROOTS OF IRRATIONALITY IN POPULAR ARCHAEOLOGY. An important aspect of archaeology rests in communicating the significance of the data and of the research results to a fascinated but often uninformed public. However, based on book sales, newspaper coverage and television presentations, it seems that the public is more interested in hearing about the more extreme and often pseudoscientific claims of those purporting to use archaeological data. Through questionnaires given to undergraduate students and professional teaching archaeologists, an attempt to understand the nature of the public's appetite for pseudoscientific claims is made. Also, the role of education in refuting or perpetuating pseudoscience in archaeology is assessed. (10)

Fiedel, Stuart J. (SUNY, Purchase) ORNAMENTS IN HUNTER-GATHERER BURIALS: DO THEY IMPLY RANKING? The presence of shell and bone ornaments in burials of hunting-gathering societies (e.g., Upper Paleolithic Europe, California) and incipient agricultural societies (e.g., Epipaleolithic Israel), has been interpreted as an indication of ranking according to inherited status. If correct, this inference casts doubt on traditional models of egalitarian social organiza-

tion among prehistoric hunter-gatherers. An assessment of evidence from burials in relation to evidence of population size and community layout and a brief review of ethnographic cases of ornament use in egalitarian societies lead to a more cautious appraisal of ornaments. (9)

Fish, S. K. (Arizona) CULTURE IN ENVIRONMENT: PALYNOLOGICAL INTERACTIONS. In an effort to understand pollen distributions in environmental systems where human activity plays an important role, an extensive set of modern samples was collected in highland Mexico. Least-disturbed stands of natural growth approximate pollen types and frequencies which would be produced by unmodified vegetation responding to climate and topography. Disturbed vegetation associated with agriculture and residence provided comparison and contrast. Results of the study reveal detectable effects of specific cultural activities on the pollen record. These effects are important for archaeological interpretations. Areas of caution in which interpretations of past regional vegetation might be confused with cultural modification also are identified. (8)

Fitting, A. Ferenci (Pittsburgh) THE NEOLITHIC GROUND STONE TOOL INDUSTRY FROM EASTERN HUNGARY. Neolithic ground stone tools from eastern Europe are an understudied artifact class despite the fact that these tools are valuable sources of information in other parts of the world. A study of such tools from eastern Hungary has produced a typological classification and geographical distribution pattern. The assumption is that ground stone implements were used to manufacture an array of wooden artifacts, of which none has survived in the study area. If that is true, the distributions of ground stone tools among sites also must reflect, to some degree, the manufacturing localities of a wide range of even more poorly known wooden artifacts. (47)

Folan, W. J. and Román Piña Chán (Campeche) THE CALAKMUL PROJECT: 1982-83. Recent activities in the Classic Maya Regional Center of Calakmul, Campeche, Mexico, indicate that this huge, partially walled urban area represents one of the largest, most heavily populated cities developed in ancient Mesoamerica. Preliminary indications suggest that this major Maya metropolis is encircled by a deep depression and is nestled at the lower end of a once 60 km by 10 km freshwater lake. The abandonment of Calakmul seems to have been triggered by climatic shifts at the end of the Late Classic, forcing the population to move toward an environment more conducive to survival for large, agriculturally based groups. (41)

Foss, J. E. (see Carbone, V. A.) (56)

Foster, Michael S. (Nickens and Associates) MESOAMERICA IN THE SOUTHWEST UNITED STATES: A VIEW FROM THE NORTHWEST COAST OF MEXICO. The northwest coast of Mexico remains one of the least studied areas of Mesoamerica. This area has long been cited as a major route for Mesoamerican goods, ideas and peoples into the American Southwest. It is suggested that contact between the two areas occurred at an early date and continued for a long period of time. The extent, nature and mechanisms of the interaction are poorly understood. This paper reviews existing arguments in light of new archaeological data from both the west coast of Mexico and the American Southwest. (45)

Fowler, William R., Jr. (see Earnest, Howard H., Jr.) (41)

Fradkin, Arlene (Florida) THE USE OF LINGUISTIC DATA IN PREDICTING THE ZOOARCHAEOLOGICAL RECORD: THE CHEROKEE INDIANS AS A CASE STUDY. Linguistic data may be used to predict as well as to supplement the analysis of faunal remains recovered from archaeological excavations. The language and culture of the Cherokee Indians living in eastern Tennessee during the 18th and early 19th centuries serve as the subjects for the present study. Cherokee linguistic information constitutes a basis for the formulation of hypotheses regarding earlier Cherokee animal utilization. The validity of these hypotheses is tested in the analysis of two large faunal samples recovered from the Cherokee Chota and Citico sites. (57)

Frisbie, Theodore R. (Southern Illinois, Edwardsville) FRANCISCAN MISSIONS AND THE CHACOAN PHENOMENON: COMMONALITY THROUGH PAUCITY. Mesoamerican pochteca-like presence in Chaco Canyon continues to be hotly debated. Antagonists frequently cite the paucity of Mesoamerican-derived cultural materials in support of their stance. This viewpoint can be shown to be erroneous through a comparative analysis of excavated historic Franciscan mission and prehistoric Chacoan sites. "Foreign" artifacts represent a small fraction of the material recovered, supporting a highly positive correlation for the hypothesis. Support is further enhanced by considering historically known and prehistorically inferred social, religio-political, economic and other factors. Patterned human behavior relevant to the archaeological record further substantiates a positive correlation. (45)

Frison, G. C. (Wyoming) CULTURAL INFERENCE FROM REASSEMBLY OF CLOVIS AND FOLSOM BIFACE MANUFACTURE DISCARDS. Reassembly of Folsom projectile point preforms from the Hanson and Agate Basin sites (Wyoming) which were broken and discarded during manufacture has provided a number of insights into the actual methods of fluting Folsom points as well as some possible cultural explanations for the fluting process. Reassembly of biface reduction flakes from a Clovis component at the Agate Basin site demonstrates a strategy of stone flaking that may prove to be a diagnostic of Clovis and, as a result, may be used to identify Clovis in contexts lacking diagnostics and/or reliable dates. (15)

Fritz, Gayle J. (North Carolina, Chapel Hill) A NEW LOOK AT DESSICATED PLANT REMAINS FROM THE OZARKS. Archaeological plant food remains from 13 dry bluff shelters in Madison County, Arkansas, were recently analyzed, the samples coming from larger assemblages of prehistoric remains excavated during the 1930s by the University of Arkansas Museum. Although some of the botanical specimens were examined by Melvin Gilmore in the mid-1930s, those results were never published. The full range of tropical and native eastern North American cultigens is represented, along with a variety of wild plant species. The report focuses on variations in the maize assemblage and on documentation of pale-seeded (domesticated) chenopodium (probably *Chenopodium berlandieri* ssp. *nuttalliae*) and amaranth (*Amaranthus hypochondriacus*). (25)

Fritz, John M. (New Mexico) VIJAYANAGARA, SOUTH INDIA: THE STRUCTURE AND SYMBOLISM OF RITUAL KINSHIP IN A PREINDUSTRIAL HINDU STATE (14TH THROUGH 16TH CENTURIES). The imperial capital of Vijayanagara embodied structural relations and symbolic categories according to which participants in the dramas of state understood and established their roles. Thus, rulers attempted to control the diverse polities of an essentially segmentary state. An international, interdisciplinary team has been investigating the material record of the city for the past three years. Recent work indicates that myth, landscape, astric models, the city plan, routes of movement, ritual, sculpture and differentiated royal functions were interrelated and mutually defined. Such symbolic wholes argue for the sacred and incorporative roles of the kings. (27)

Fuller, Michael J. (Washington, St. Louis) ABILA: A CITY-STATE IN JORDAN. The Decapolis, a group of city-states, existed along the eastern edge of the Roman Empire. Two seasons of systematic survey and excavation in and around the site have been aimed at: 1) establishing the sequence of occupation; 2) defining the range of social stratification; 3) examining the economic system; and 4) determining the impact of cultural diffusionism/migrations from outside the region. The city's wealth and power stemmed from its ties with the regional trade system, its industrial capabilities and the local agricultural produce. (17)

Fuller, Neathery B. (Washington, St. Louis) A LITTLE GARDEN AND A HOUSEFUL OF CORN. Small rural farmsteads in the Mississippi and Missouri River valleys represent the smallest social unit within the Mississippian culture. Excavations at Thornhill (23SL220) have uncovered a burnt house related to the Developmental/Early Mississippian period. Archaeobotanical analysis of the charred seeds suggests that small farmsteads produced surpluses of maize. Radiocarbon dates for the house are AD 680 ± 115 and AD 850 ± 70. Evidence of trade is supported by the presence of nonlocal lithic material and ceramics. (38)

Gagliano, S. M. (Coastal Environments, Inc.) PREHISTORIC MARITIME ADAPTATIONS, NORTHERN GULF OF MEXICO. Adaptations to coastal and estuarine environments by aboriginal peoples is considered within a framework of cultural areas and 13 natural systems. Settlement patterns and coastal adaptations have been influenced by late Quaternary climatic and sea level changes. People were present within the shore zone throughout much of the region by late Paleoindian times. First conclusive evidence of maritime adaptations is from the late Archaic. By this time, a pattern of semipermanent villages with special activity satellite sites had been established in some areas. Special strategies and technological adaptations related to resource procurement, environmental hazards and transportation were utilized. (44)

Gaines, Sylvia W. (Arizona State) THE SARG MODEL OF COOPERATIVE RESEARCH. The Southwestern Anthropological Research Group (SARG) is a unique example of cooperative research and data sharing. Founded nearly a decade ago, this voluntary organization has addressed questions of changing settlement patterns in the American Southwest. Phase I (1971-80), using a data base of ca. 2,500 sites from eight project areas, focused on a series of hypotheses concerning site locations and critical resources. Phase II research (1980-82) utilizing an expanded data base, was directed toward testing an environmental model of culture change which centered on site locating behavior in response to stress situations. Phase III (post-1982) will address organizational and integrative models of culture change. Future directions for this organization are identified. (16)

Gale, Nathan (see Gorenflo, L.) (14)

Gallagher, James P., Robert F. Boszhardt and Katherine P. Stevenson (Mississippi Valley Archaeology Center, Wisconsin, La Crosse) ONEOTA RIDGED FIELD AGRICULTURE IN SOUTHWESTERN WISCONSIN. Recent fieldwork in southwestern Wisconsin has revealed a series of *in situ* stratified ridged agricultural fields. These fields can be, and for the first time are, positively linked to the Oneota culture and can be dated accurately. Unlike other ridged fields in Wisconsin and Michigan, which apparently functioned primarily as microclimatic control devices, these structures probably were used for water control. The research adds new dimensions to concepts of Oneota subsistence and settlement patterns. (33)

Garber, Emily H. (New Mexico) HERDING, MOBILITY AND THE ARCHAEOLOGICAL RECORD. The concept of animal domestication, like the concept of pastoral nomadism, has been seen as a difficult one to make operational within archaeological research. The problems, however, may be more methodological than definitional. Most archaeological work in this regard has been centered on the site and its assemblage. Recent ethnographic and archaeological work indicates that more fruitful assessments of the complexities of subsistence organization among herders may be achieved through analyses of the relationships among sites. Several ethnographic cases are examined in an effort to evaluate the archaeological consequences of specific patterns of land use. (49)

Garber, James F. (Southwest Texas State) AN ANALYSIS OF ARTIFACT CONTEXT CONFIGURATIONS FROM THE SITE OF CERROS, NORTHERN BELIZE. Analysis of the Cerros artifacts has defined configurations of artifacts from several contexts ranging from domestic to ritual. During the Late Preclassic period at Cerros, there was a change from a nucleated to a dispersed settlement type. The definition of contextual configurations of artifacts demonstrates a shift in the kinds of material culture utilized as Cerros evolved from a nucleated village to a hierarchically organized ceremonial center. The definition of these assemblages may prove useful in comparing the types of activities carried out at these sites. (41)

Gardner, W. M. (Catholic) THE FLINT RUN PALEOINDIAN COMPLEX REVISITED. The Flint Run complex consists of several functionally different sites which interrelate to form a settlement system. Intrasite variation allows for activity area delineation, and stratification provides the opportunity to document change between the phases. Extension of the pattern into nearby areas has allowed for development of a Middle Atlantic model. In a quasi-deterministic fashion, the principal variable controlling site distribution is seen as the location of certain types of lithic material, but this must be viewed in conjunction with the site type and other resources. (54)

Gardner, William M. (Catholic) and Victor A. Carbone (National Park Service) HOLOCENE CLIMATE AND CULTURE CHANGE ON THE ATLANTIC COAST OF SOUTHEASTERN UNITED STATES. Several years of paleoclimatic and archaeological work in central Virginia have shown the area to be climatically sensitive and culturally variable. Early Holocene depositional episodes indicate a reasonable relationship to storms originating in the summer in the tropical Atlantic (as discussed by Wendland), xeric vegetation and flood plain deposition. Warmer intervals result in sparse upland vegetation, more frequent summer storms and, as a consequence of these, more valley deposition. Culture changes can, therefore, be correlated to climatic conditions by rates of deposition. (37)

Garza-Valdes, Leoncio A. (Texas, San Antonio) SPECIFIC ICONOGRAPHY OF OLMEC RULERS. There are many indications that Olmec society was a stratified one. In the period 1050-1000 BC, numerous examples of specific iconography are known, among which are: 1) La Venta (Altar IV, decorated earpools of Tomb C); 2) San Lorenzo (Calzadas carved); 3) Tlapacoya (Pillí blanco); 4) Tlatilco (Cafe negruzca); 5) Las Bocas; 6) Atlilhuayan; 7) Laguna de los Cerros; 8) San Jose Mogote; and 9) Chalcatzingo. The iconography consists of a Jaguar head and two crested snake heads (seen on the La Venta earpools, at the top of Altar IV and on the U-shaped Ruler Pectoral) or a paw-wing motif. The synchronism in these sites suggests that a specific ruler from La Venta is involved. In the iconography of these altars, the names of these king-priests are indicated. Balam Kukulcan is the suggested translation for the ruler named on La Venta Altar IV. (41)

Gasser, R. E. (Museum of Northern Arizona) CURRENT RESEARCH ORIENTATIONS IN THE ARCHAEOBOTANY OF THE SOUTHWESTERN UNITED STATES. Having already identified major prehistoric plant foods as well as a host of supplements, researchers are now concentrating on finer-grained analyses which include studies of: 1) plant husbandry; 2) variable plant use within a region; 3) specific work areas within sites; 4) site seasonality, function and longevity; 5) human adaptation to environmental stress; and 6) change through time. There has been more emphasis on refining collection techniques and closer examinations of species morphology, density and

distribution. Results of practical applications that respond to these research objectives are presented. (31)

Gero, Joan M. (Massachusetts, Amherst) LITHICS AND THE REPRESENTATION OF SOCIAL COMPLEXITY. The dramatic proliferation of material culture which accompanies sociopolitical complexity suggests that objects may play an essential role in defining, reproducing and changing the social order. This paper discusses the potential contribution of lithic tools in replicating and transmitting social information. Limitations of lithics in these areas relative to other material culture classes also are discussed. Lithic data from a Formative Peruvian assemblage are examined, and an argument is made for material culture classificatory schemes which are more sensitive to social process. (11)

Gibbon, Guy E. (Minnesota, Minneapolis) THE MISSISSIPPIAN PRESENCE IN MINNESOTA. The nature and distribution of Mississippian traits in Minnesota are discussed. Although Mississippian ceramic forms and style motifs, truncated pyramidal mounds and house forms are present in the state between ca. AD 950 and 1350, these traits seem to be elements in cultural complexes with Oneota or Woodland bases. Among the archaeological phases referred to are Silvernale, Blue Earth, Cambria, Orr and Great Oasis. The paper concludes with an evaluation of several acculturation processes that may have been occurring in Minnesota during this time period. (6)

Gibbon, Guy E. (Minnesota, Minneapolis) REALISM: A BETTER METAPHYSICS FOR ARCHAEOLOGY? Interpretation in any social science is necessarily guided by underlying metaphysical beliefs. Two metaphysical systems, realism and positivism, are examined, and the question is raised whether realism is a better metaphysics for archaeology than positivism. The argument is made that: 1) the metaphysical system one adopts does make a difference in the practice of archaeology; 2) metaphysical systems (such as behaviorism or Marxism) are best regarded as methodological tools called research programs; and 3) an awareness of these programs puts archaeologists in a position to assess research alternatives more critically. (32)

Gibson, E. C. (Harvard) HUNTER-GATHERER ADAPTATIONS OF THE LATE PERIGORDIAN. This study reevaluates four characteristics of the transition from Upper Perigordian to Magdalenian cultures in southwest France. These characteristics are: 1) some of the ecological and cultural processes involved in site formation; 2) recent quantitative analyses of lithic artifact technological variability; 3) indications of social organization (with an emphasis on part-time flintknapping specialists); and 4) evidence of exchange systems. The sites of Abri Pataud, Corbiac and Laugerie Haute Ouest are used to illustrate these data. This study suggests that cultural characteristics generally considered to be indicative of later prehistoric periods are present at least in an incipient form in the Late Perigordian. (58)

Gibson, Eric C. (see Adams, R. E. W.) (37)

Gifford, Diane P. (California, Santa Cruz) FAUNAL EVIDENCE FOR PREHISTORIC HERDING PRACTICES IN EAST AFRICA. Until the mid-1960s, archaeologists did not recognize the existence of cattle, sheep and goats in East Africa prior to Iron Age times (ca. AD 1200). Analyses of fauna from Late Stone Age and "Stone Bowl" sites have revealed that domestic stock was widespread in the region by the 1st millennium BC. Preliminary findings hint at several regionally distinct subsistence modes between 1000 BC and AD 1000. In the high grasslands of Kenya and Tanzania, cattle and small stock were very important. Reconstituted mortality profiles from such sites reveal interesting correspondences with modern slaughtering practices. (17)

Gifford, J. A. (see Clausen, C. J.) (25)

Gillespie, William B. (see Simmons, Alan H.) (53)

Gish, J. W. (Quaternary Palynology Research) and L. J. Scott (Palynological Analysts) EXPERIMENTAL PALYNOLOGY: GARDEN PLOTS AND WASHES OF ETHNOBOTANIC PLANTS. One of the most important aspects of archaeological pollen analysis is to achieve a better understanding of the mechanisms by which pollen, and especially ethnobotanic pollen, is culturally introduced into archaeological contexts. In this study the potential for retention of ethnobotanic pollen on food items is evaluated through the pollen washes of a variety of economically important plants. Factors involving garden activities are also considered through the study of pollen samples from modern gardens containing varieties of crops and weeds typically exploited by Southwestern culture groups. The results of this study are then compared to pollen data from prehistoric gardens. (8)

Glumac, P. (California, Berkeley) ON THE ORIGINS OF SOUTHEAST EUROPEAN COPPER METALLURGY. V. Gordon Childe posited that the appearance of metallurgy in this area was due to the influx of specialists from Anatolia. More recently, Colin Renfrew has presented a contrasting theory of autonomous local development. In the past decade, field and laboratory research has yielded more precise information on the incipient copper technology and permits a fuller evaluation of the two points of view. (47)

Glumac, Petar (see Anthony, David) (47)

Gnivecki, Perry L. (SUNY, Binghamton) SPATIAL ORGANIZATION IN A RURAL EARLY AKKADIAN FARMHOUSE. Recent excavation in southern Iraqi Kurdistan has provided the first example of a rural Akkadian (ca. 2334-2193 BC) farmhouse. Quantitative analysis reveals that spatial organization within an architectural setting may consist of a series of overlapping zones. These zones do not necessarily partition themselves according to discrete spatial contexts (e.g., rooms, courtyards), or to the distributions of artifact material classes or functional types. In this particular case, pattern recognition is analogous to a kaleidoscope as the scale of analysis or the investigated variables are shifted. (17)

Goad, Sharon I. (Louisiana State) POVERTY POINT: A GROUND-LEVEL VIEW. Various interpretations ranging from an early ceremonial center, an archaeoastronomy observatory, to a utilitarian site, have been proposed for the Poverty Point site. While excavations have been carried out sporadically on the site for over 40 years, no map of the site exists and very little is known about the relationship of the various ridge structures. This paper presents a comprehensive discussion of the sequence of ridge construction, the use and formation of the aiseways and the effects of 150 years of plowing on the ridge and mound structures. The results of this study suggest that the aboriginal construction of the site did not resemble the site as it is depicted today. (34)

Goldstein, Lynne (Wisconsin, Milwaukee) MIDDLE AND UPPER MISSISSIPPIAN: A QUESTION OF GEOGRAPHY, TIME OR ORGANIZATION? Archaeologists have discussed clinal variation in Mississippian societies as one moves north from Cahokia. Generally, those societies at the northern fringe are termed Upper Mississippian. Unique in this pattern is Aztalan, considered to be Middle Mississippian even though the general region is noted for Oneota (Upper Mississippian) sites. This determination has been made on the basis of particular artifact styles and architectural features. Using models of social organization derived from mortuary sites in the Lower Illinois Valley, Aztalan and some Oneota sites are examined to determine whether Aztalan best fits a model of Middle Mississippian organization, regardless of its artifact attributes. (6)

Goodyear, A. C. (South Carolina) PIECÈS ESQUILLÉS OR BI-POLAR CORES? LOOKING AT TOOLKIT ENTROPY AMONG PALEOINDIAN LITHIC ASSEMBLAGES. Like all mobile hunter-gatherers, Paleoindians would have faced the problem of raw material procurement and tool replacement as a normal function of their settlement systems. Procuring raw material from other tools and equipment, i.e., recycling, is a strategy common to hunter-gatherers depending on their situation. Bipolarly flaked artifacts, which have been called *piecès esquillés* among northeastern U.S. Paleoindian assemblages, are argued to be bipolar cores which represent a strategy of raw material procurement by recycling. Strong statistical evidence is presented showing that the number of bipolar cores on a site is inversely related to the amount of usable lithic raw material still present. (54)

Goodyear, Albert C. (see Tippitt, V. Ann) (56)

Gorenflo, L. and Nathan Gale (California, Santa Barbara) ON THE USE OF TRANSFORMED MAPS IN ARCHAEOLOGICAL INQUIRY: SOME EXAMPLES FROM CENTRAL MEXICO. Determining patterns of site interaction in the absence of direct evidence is a fundamental problem in regionally oriented archaeological research. Oftentimes the arrangement of settlements seems quite complex, and equally quite confusing. Some understanding of such patterns, however, may be gained by focusing upon basic spatial principles. By employing mathematical map transformations, both travel-time and energetic surfaces are developed for portions of the Basin of Mexico. This allows a proposal of the form that past settlement units assumed. Basic questions of ecological adaptation within spatial settlement units are then explored, and the place of information processing in sociopolitical evolution is assessed. (14)

Gorenflo, L. (see Church, Richard L.) (14)

Grady, J. (see Hester, James J.) (10)

Graham, R. W. (Illinois State Museum) PALEOENVIRONMENTAL GRADIENTS, FAUNAL RESOURCES AND CLOVIS ADAPTATIONS. The modeling of Clovis subsistence systems is hampered by the fact that there are no modern analogues for the late Pleistocene environments and biotas of North America. However, paleoenvironmental reconstructions demonstrate the existence of both latitudinal and longitudinal gradients in the environment during this time period. The distribution of biotas along these gradients was the result of individual species responding to their own tolerance limits, thus constituting ecoclines. These ecoclines established resource continua rather than discrete resource units. Gradient analysis of faunas from Clovis sites in the Southwest, Great Plains and Midwest reflect differences in utilization of the faunal resource continua. Toolkits from these Clovis sites, however, do not vary significantly. General similarities in the toolkits may reflect exploitation of ecological equivalents rather than specialization for one prey species (i.e., mammoth). (54)

Grayson, Donald K. (see Jones, George T.) (43)

Green, Dee (see Plog, Fred) (16)

Green, Margerie (Arizona State) CHIPPED STONE RAW MATERIALS AND THE STUDY OF INTERACTION: BLACK MESA, ARIZONA. Chipped stone raw materials are equally, if not better, suited to the study of interaction than are ceramics. General source locales for 95% of the chipped stone raw materials used prehistorically on Black Mesa were identified and should apply for much of the rest of the Four Corners region as well. Source data for artifacts from 97 sites are used to test a culture change model of increased interaction over time which has been posed as one of the causes for the abandonment of northern Black Mesa. (24)

Green, P. R. (U.S. Army-HQ TRADOC) THE ARMY AND CULTURAL RESOURCES MANAGEMENT: A MACOM PERSPECTIVE. The headquarters of the U.S. Army Training and Doctrine Command (TRADOC) is located at Fort Monroe, Virginia. As the major command (MACOM) office for 22 installations comprising some 2.1 million acres, HQ TRADOC assists installations in routine compliance procedures and the development of long-term preservation programs. Over the past two years, scopes of work, archaeological surveys and historic preservation plans designed to balance Army regulatory needs with current research problems have revealed important issues of survey methodology, sampling design, artifact processing, storage, display, preservation strategies and research goals, which are discussed. (13)

Greenfield, H. J. (CUNY Graduate Center) CHANGING ANIMAL EXPLOITATION IN LATER BALKAN HISTORY. Although the Balkans have been the focus of archaeological research for over a century, relatively little attention has been devoted toward understanding the processes leading to economic and cultural change. Until recently, change has been explained by recourse to population movement. New research in progress has focused on the evolution of animal food production systems and deals with problems of site seasonality, duration of occupation and productive specialization in the Neolithic through the Bronze Age. (47)

Grøgg, Susan (Michigan) SCHEDULING AND SUBSISTENCE: A STRUCTURAL ANALYSIS OF SWIDDEN FARMING. An underlying structure which supports local and regional interaction can be illuminated by evaluating relationships among: 1) the subsistence needs; 2) the scheduling of production/procurement activities; 3) the technological capabilities of a group; and 4) the ecology of domestic and wild foodstuffs. Using recently developed mathematical approaches in conjunction with general forest ecology, this paper examines: 1) how the scheduling of local subsistence activities affects the relationship among sites in a regional settlement system; and 2) how the regional system inversely constrains the structure of local subsistence activities. An example is drawn from Neolithic Europe. (14)

Grimm, Linda L. (Oberlin) THE COMPARATIVE STUDY OF TECHNOLOGICAL PATTERNS IN TWO UPPER PALEOLITHIC INDUSTRIES. This paper presents the results of a comparative study of technological patterns in two Upper Paleolithic industries from the open-air site of Solvieux (Dordogne, France). Methodologically, this research involves the analysis of formal similarities and differences across all categories of chipped stone remains (tools and debitage) as well as the delineation and comparison of lithic reduction sequences. The industries studied—the Beauronian (Level V) and an Upper Perigordian (Level M)—are separated by approximately 5,000 years of cultural development and thus provide an ideal basis for the precise definition of evolutionarily significant differences in technological patterns within the Upper Paleolithic succession. (58)

Gumerman, George J., W. Bruce Masse and David Snyder (Southern Illinois, Carbondale) PALAUAN COMMUNITY ARCHAEOLOGY. Palau, in the Western Carolines, was the scene of a series of surveys and excavations in 1980 and 1981 conducted in an attempt to understand the evolution of community systems. In addition to archaeologically derived data, late 19th and early

20th century ethnographies, historical documentation and informant information is used to reconstruct community organization. A traditional direct historical approach is used, working first with historic and protohistoric villages and then with what are presumed to be progressively older sites. Community systems are defined on both the large volcanic island of Babeldaob and on the presently uninhabited, uplifted coralline island. The earliest radiocarbon dates are in the AD 800–1000 range. (2)

Gumerman, George J. (See Dean, Jeffrey S.) (16)

Gunn, Joel (Texas, San Antonio) CLIMATIC CHANGE PROCESSES DURING THE HOLOCENE IN THE CIRCUM-CARIBBEAN AND ATLANTIC COAST. The understanding of solar and volcanic effects on climate has improved substantially in the last decade with the launching of the Solar Maximum Mission and the fortuitous eruption of two major volcanoes. Both historic and prehistoric data are available which allow a modeling of Holocene climatic changes. The models provide prehistorians with a powerful tool to study the effects of climate on culture change. A model for the circum-Caribbean, Gulf Coast and Atlantic Coast regions is presented. Effects on local climates are projected. (37)

Gunn, Joel (see Prewitt, Elton R.) (37)

Gyllenhaal-Davis, C. (Alabama) CULTURAL AND ENVIRONMENTAL FACTORS AFFECTING YIELDS IN SLASH-AND-BURN AGRICULTURE: EXPERIMENTAL ANALYSES. Three levels of cropping intensity were used in an experimental plot of maize and beans in Panama to examine the effects of weeding and intercropping on yields in slash-and-burn agriculture. Analysis of variance shows that subplots weeded less frequently had significantly lower yields. Multivariate analyses reveal that soil pH and steepness of slope also affect yields markedly. The species of weeds present also have a significant impact on yields. As predicted in the local folk taxonomy, grasses or "hot" species lowered yields more than did broad-leaved or "cold" species. (18)

Haase, William R. (Washington State) FACILITY INVESTMENT AT ANASAZI FIELD STATIONS IN SOUTHEASTERN UTAH. During late Pueblo II and Pueblo III, settlement patterns on Cedar Mesa, southeastern Utah, are characterized by dispersed habitations and seasonally utilized field stations. Habitations are defined by pit structures or surface room blocks. Field stations lack these characteristics, but can contain such facilities as milling stones, hearths and slab-lined storage cists; at times, they are limited to sherd and lithic scatters. As distance between contemporaneous habitations and field stations increases, the diversity and number of facility types present at field stations increases as well. Travel time and field maintenance time are offered as explanations. (53)

Hackenberger, S. (see Croes, D. R.) (42)

Hagstrum, M. B. (California, Los Angeles) PREHISTORIC CERAMIC CRAFT SPECIALIZATION IN THE AMERICAN SOUTHWEST: A TEST CASE IN THE UPPER RIO GRANDE VALLEY, NEW MEXICO. Standardization and efficiency in pottery decoration are used to measure specialization in two ceramic types from the Upper Rio Grande Valley of the American Southwest, Santa Fe/Wiyo B/W from the Coalition period (AD 1200–1325) and Bandelier B/G (Biscuit B) from the Classic period (AD 1325–1600). Standardization in vessel decoration is assessed by gesture and design element variability. Efficiency in vessel decoration is assessed by number and diversity of gestures and by number of brush strokes. These measures demonstrate that the decoration of Biscuit B is more standardized and more efficiently executed, and they suggest increased craft specialization in the Classic. (53)

Hale, H. S. (Florida State Museum) ASSESSMENT OF LIVE MEAT WEIGHTS OF MARINE MOLLUSKS BASED UPON THE MEASUREMENTS OF THE SIZE OF THE VALVES. Samples of more than 25 species of mollusks were collected live from King's Bay, Georgia, and the nearby Gulf. Size relationships of edible meat to shell size for each species have been determined. Based on these samples, more than 140 regression formulae have been generated to aid archaeologists in assessing amounts of edible meat that could have been recovered from midden samples of marine mollusks. This technique has made it possible to reevaluate the importance of mollusks in the seasonal diets of inhabitants of the King's Bay, Georgia area. (1)

Haley, Harold B. (VAMC & Baylor, Houston) ICONOGRAPHY OF MANTEÑO SPINDLE WHORLS. Manteño culture was present on Ecuadorean Manabi coast from AD ± 500 to Conquest. Characteristic art forms include small spindle whorls with distinctive designs. Examination of fish, iguana and serpent designs on many torteros show defined characteristics that are also seen as geometric designs. Fish characteristics are diamond shape, V tail, eyes, spines and

scales; each characteristic is seen in relation to the other in geometric forms not presented as fish. Similar step-by-step sequences are seen for iguanas and serpents. Functions and meanings of these zoomorphic-to-geometric transformations will be made. (46)

Hally, David J. (Georgia, Athens) VESSEL ASSEMBLAGES AND FOOD HABITS: A FORMAL AND FUNCTIONAL ANALYSIS OF TWO PREHISTORIC VESSEL ASSEMBLAGES. Vessel form analysis of pottery from the Savannah phase Beaverdam Creek site in northeastern Georgia has resulted in the definition of a vessel assemblage composed of 16 morphological vessel types. Comparison of this vessel assemblage with that from the late Lamar Barnett phase component at the Little Egypt site in northwestern Georgia reveals interesting similarities and differences. The two assemblages are stylistically quite different, but are composed of a similar array of vessel forms. It is argued that the latter reflects the existence of similar food preparation and consumption patterns in the two cultures. (56)

Hamblin, N. L. (Maya Study Group, Tucson) REEF FISHES, CRABS, SHARKS, STINGRAYS AND SEA TURTLES: BASIC RESOURCES OF THE COZUMEL MAYA. Analysis of fauna from eight sites on the island of Cozumel, Mexico, has yielded over 8,600 specimens representing some 965 reef fishes, sharks, stingrays, crabs and sea turtles. These animals ranked first in the prehistoric economy, surpassing even mammals in numerical importance. Although marine fauna were primarily of dietary significance, the present data also suggest utilization as artifacts, especially in ceremonial contexts. Deductions concerning fishing techniques, exploitation of microenvironmental zones, food preparation practices, changes through time and variations due to cultural context are also discussed. (1)

Hamilton, N. D. (Pittsburgh) and D. R. Yesner (Southern Maine) MARITIME ADAPTATIONS IN WESTERN MAINE: THE GREAT DIAMOND ISLAND SITE. Late Archaic through Late Woodland remains have been recovered from the stratified, multicomponent Great Diamond Island site, located in Casco Bay, southwestern Maine. Material cultural remains and faunal data indicate an apparent high occupational intensity during the Early and Middle Woodland periods. Faunal remains are utilized to suggest the local subsistence strategy and seasonality. Radiocarbon dating provides the temporal framework for interpretation of material culture and subsistence remains. These data are used, in turn, to reconstruct local maritime adaptations during the Woodland period. (4)

Hamilton, N. D. (see Yesner, D. R.) (4)

Hamilton, N. D. (see Doyle, R. A., Jr.) (4)

Hammond, Norman (Rutgers) INVESTIGATIONS AT NOHMUL, BELIZE, 1982-83. The major Maya site of Nohmul, the largest site known in the region, was first reported by Thomas Gann early this century. Subsequent work by the Corozal Project in 1973-74 and 1978 demonstrated a sequence from late Early Formative to Early Postclassic, including a terminal episode of Yucatecan intrusion. Work in 1982-83 has concentrated on mapping the large settlement area, on test excavations within the settlement and on major excavations in the ceremonial precinct, including the massive "acropolis." Results of this work are described and evaluated. (41)

Handsman, R. G. (American Indian Archaeological Institute) SOCIAL INEQUALITY AND ALIENATION: THE CULTURAL CONSTRUCTION OF VALUE AND HISTORY. Historical archaeologists continue to ignore the emergence of capitalism. This paper examines this dilemma through a framework provided by Marx's labor theory of value and demonstrates how early capitalism's relations of inequality encompassed alienation. A variety of data are used to show why premodern industrial economies were not capitalistic and how early entrepreneurs redefined the production of capital, learning to exploit others and legitimize themselves. All of these processes are reflected in 19th century archaeological records and also are represented by the appearance of ideotechnic artifacts and the invention of the domain of history. (19)

Hanen, M. and J. Kelley (Calgary) INFERENCE TO THE BEST EXPLANATION IN ARCHAEOLOGY. This paper explores the notion of inference to the best explanation as a possible model for hypothesis or theory selection in archaeology. We conceive of this as essentially a form of eliminative inference, in which the best explanation is selected from among alternatives. The criteria appropriate to such selection are discussed with reference to two examples. One of these considers a feature at Cihuatlan, El Salvador, initially believed to be a Postclassic metal smelter; the other deals with Emil Haury's analysis of a migration to Point of Pines, Arizona, from the Kayenta region. Both examples stress the importance of identifying evidenced relevant to the hypothesis under consideration. (32)

Hantman, Jeffrey (see Neitzel, Jill) (16)

Harbottle, G. (see Weigand, P. C.) (45)

Hard, R. J. (New Mexico and Ft. Bliss) A MODEL OF HUNTER-GATHERER ADAPTATIONS IN THE CHIHUAHUA DESERT. In order to implement the inventory investigation aspect of the Ft. Bliss Historic Preservation Plan, a model of adaptations has been constructed for the period from 6000 BC to AD 1100. The model proposes how the dominantly hunting and gathering adaptation would be organized from season to season, as well as proposing what evolutionary changes would occur throughout the period. This behavioral model suggests that certain categories of sites will occur in certain environments at certain time periods. The content of several of the proposed site categories is then deduced in order to evaluate the model with inventory investigations. (13)

Harding, Anthony F. (Durham, United Kingdom) RESOURCES, TRADE AND SUBSISTENCE IN THE SOUTHEAST EUROPEAN BRONZE AGE. The study of the Bronze Age in southeast Europe has been predominantly concerned with typological analysis and comparative chronology. While in themselves these provide low-order information, they can be used as data in estimates of production and distribution of goods in the Bronze Age world. The evidence for metal production, for long-distance exchange and for subsistence can, seen in conjunction, be used to make suggestions as to the scale of the socioeconomic units involved. (3)

Hargrave, M. D., D. Billings, N. Lopinot and G. Oetelaar (Southern Illinois, Carbondale) THE BRIDGES SITE: A SMALL MISSISSIPPIAN VILLAGE IN INTERIOR SOUTHERN ILLINOIS. During 1982, intensive excavations were conducted at the Bridges site located near Crooked Creek, a tributary of the Kaskaskia River, in Marion County, Illinois. The complete excavation of this site, which is approximately 50 miles (80 km) east of the American Bottom, revealed a Late Woodland component and a small Mississippian village. Extensively rebuilt wall trench structures are distributed in a circular pattern around a plaza, indicating an established, planned community. Research is focused on changes in subsistence patterns, chert utilization, intrasite organization, culture history and the chronology of late prehistoric occupation of interior southern Illinois. (33)

Harris, J. W. K. (Milwaukee) and J. D. Clark (Berkeley) RESULTS OF ARCHAEOLOGICAL RESEARCH IN THE MIDDLE AWASH, ETHIOPIA. In 1981, a multidisciplinary palaeo-anthropological research group began the survey of sedimentary deposits in the Middle Awash Valley of Ethiopia. This survey showed that the Middle Awash deposits represent one of the longest successions of fossiliferous (including hominids) and artifact-bearing strata known in Africa. This report discusses the age, context and characteristics of the archaeological occurrences. Based upon this survey and preliminary observations from superficial and excavated contexts, the Middle Awash study area provides one of the few opportunities for making a detailed study of archaeological traces for hominid activities over the last million and a half years. (17)

Harris, J. W. K. (see Kroll, E. M.) (15)

Harold, F. B. (Texas, Arlington) CHATELPERRON AND GRAVETTE POINTS: A COMPARATIVE ANALYSIS. Chatelperron points (or knives) and Gravette points are the "fossil directors" of the Chatelperronian and Upper Perigordian traditions of the Upper Paleolithic. In the course of a research project on the Chatelperronian, 1,316 Chatelperron and 216 Gravette points were examined, and observations were recorded on such variables as dimensions and measures of shape, type and placement of retouch and macrowear traces. The two samples were found to differ significantly in respect to several variables, with implications for tool function and the relationship between the two industries. (58)

Hasenstab, Robert J. (Massachusetts, Amherst) THE APPLICATION OF GEOGRAPHIC INFORMATION SYSTEMS TO THE ANALYSIS OF ARCHAEOLOGICAL SITE DISTRIBUTIONS. One limitation to the analysis of archaeological site distributions is the control of spatial variability in the parameters conditioning prehistoric settlement and archaeological recovery. A method appropriate for the processing of spatial data is the use of geographic information systems. Such systems consist of environmental and cultural information coded into gridded "computer maps," amenable to analysis by digital image processing techniques. This capability permits the integration of large numbers of sites, broad expanses of terrain and diverse collections of variables into sophisticated models of archaeological prediction. The technical basis, inherent problems and potential applications of the method are reviewed. (35)

Hastorf, C. A. (Minnesota) NEW DIRECTIONS IN ANDEAN ARCHEOETHNOBOTANY. Plant use and agricultural practices are critical variables in the major Andean research issues of cultural development, political expansion and plant domestication. Despite the excellent preservation of archaeobotanical remains on the coast of Peru and the steady recovery of organics in the Sierras, it has only been recently that systematic archaeobotanical collections have been stressed in An-

dean research. These recent studies illustrate the informative economic and ecological data potentially available to the Andean archaeologist. Increasing emphasis on sampling, recovery and analysis of archaeobotanical remains in Andean research will provide important and necessary data for all future research goals. (31)

Hastorf, C. A. (see DeNiro, M. J.) (18)

Hatch, James W. and Rebecca Storey (Penn State) MORTUARY RESEARCH METHODOLOGY FOR THE PHASE II EXCAVATIONS AT COPAN, HONDURAS. Following a brief review of past analyses, this paper outlines a program for mortuary research to be conducted at Copan. Tangible elements in the disposal program (e.g., artifact accompaniments, grave type and location) provide a basis for reconstructing major components in the social system while disease, stress and nutrition are addressed through both general and specific attributes on skeletal remains. Individually and in concert, these analyses are expected to provide important details concerning Maya demography and social organization in the Copan Valley. (52)

Haviland, W. A. (Vermont) MUSICAL HAMMOCKS AT TIKAL: PROBLEMS OF RECONSTRUCTING HOUSEHOLD ORGANIZATION. This paper describes a technique which has been used with some success to understand household composition at the Classic Maya site of Tikal. Briefly, a few cross-cultural regularities from ethnology are applied to the burial and architectural data from Group 2G-1. The resultant model fits the situation reasonably well: hypothetical ages assigned to the "actors" required by the model allow for the birth of offspring at reasonable times in their parents' life spans, do not require people to live to unbelievable old ages and fit the available time-frame of the time-spans defined for Group 2G-1. (7)

Healan, Dan M., Janet M. Kerley and George J. Bey III (Tulane) OBSIDIAN EXPLOITATION IN A POSTCLASSIC CITY: TULA, MEXICO. Archaeological data recovered at Tula, Hidalgo, Mexico, are used to construct a tentative model of obsidian exploitation which has implications for: 1) the role of obsidian in Tula's florescence during the Early Postclassic; and 2) current theory regarding obsidian exploitation among state-level societies. Data are based upon research that includes surface survey within Tula and at rural sites in the surrounding area and the excavation of a core-blade workshop within a larger workshop zone at Tula. (11)

Healy, Paul F. (Trent) ANCIENT MARITIME ADAPTATIONS OF THE INTERMEDIATE AREA. Investigations of the maritime-cultural adaptations by prehistoric groups in the Intermediate Area have only recently begun. Appropriate data therefore are limited to a small group of sites, but these occur on both the Atlantic and Pacific coasts and from Honduras to Colombia. As such, this paper provides an overview of the current evidence for regional maritime adaptations with a special focus on procurement strategies (particularly evidence of subsistence activities), settlement patterns (including coastal vs. inland site variation) and exchange practices. Where data permit, a diachronic perspective, revealing continuity or change in coastal adaptations, is employed. Lastly, some suggestions for future regional research on this topic are highlighted. (44)

Hegedus, Katalin (Hudson, New Hampshire) INDICATIONS OF SOCIAL DIFFERENTIATION IN THE NEOLITHIC OF THE CARPATHIAN BASIN. In the evolution of the Middle and Late Neolithic in the Carpathian Basin, a weakening of tribal structure and the beginning of preurban development are evidenced by the hierarchy of settlements. The process reached its climax during the late Neolithic Tisza culture. Craft specialization, agricultural intensification, the appearance of metallurgy and intensified trade are the basic milestones of this economic-social development. These changes made possible the accumulation of valuables by some individuals, as shown by depot finds and by burial goods. Rank insignia and their cheap clay replicas further suggest social differences, i.e., the coexistence of an emerging aristocracy and its subjects. (3)

Henderson, A. Gwynn (see Pollack, David) (49)

Henning, Dale R. (Luther) ATTENUATED MISSISSIPPIAN SITES NEAR "DOWNTOWN" CAHOKIA. A number of sites, both residential and mortuary, which are contemporaneous to the period of Mississippian florescence, but offering evidence for only attenuated interrelationships with the major center, have been located near that center on the lower Missouri and Big River valleys. The suggested patterns of interrelationships are explored and interpreted. (38)

Henrickson, Elizabeth F. (Toronto) MULTIDIMENSIONAL SCALING (MDS) OF STYLISTIC RELATIONSHIPS AMONG CERAMICS OF THE GREATER MESOPOTAMIAN CHALCOLITHIC. Changing patterns of stylistic similarity among painted pottery assemblages produced during the early and middle Chalcolithic (ca. 4500-3000 BC) in the central Zagros highlands of western Iran and

adjacent Mesopotamia lowlands are delineated. A combination of quantitative (MDS of relative frequencies of motifs for over 40 assemblages) and qualitative approaches (ware and settlement distributions) are utilized. Natural and cultural factors which may have influenced the exchange of stylistic information are suggested. An interpretive model is then derived which best accounts for the observed patterns of stylistic similarity during each phase. (17)

Hession, E. A. (National Park Service) SURVEY AND DATA MANAGEMENT OF CULTURAL RESOURCES IN THE RICHARD B. RUSSELL DAM AND LAKE PROJECT. Survey of the project area has been accomplished under a multistage research design. Initial sample surveys provided baseline data on the density and distribution of cultural properties. Analysis of archaeological and geomorphological data was used to develop a strategy to locate and evaluate deeply buried archaeological sites in flood plain settings. A cultural resources data bank has been established, which includes a rapid response color graphic capability. Statistical analyses have been undertaken to develop a preliminary model of prehistoric settlement patterns. The data bank is available to researchers interested in pursuing prehistoric settlement pattern studies in the southern Piedmont. (56)

Hester, James J. (Colorado) and James Grady THE COLORADO ARCHAEOLOGICAL AWARENESS YEAR—AN EXPERIMENT IN PUBLIC OUTREACH. The Colorado Archaeological Awareness Year is a voluntary project jointly sponsored by the Colorado Archaeological Society, Colorado Council of Professional Archaeologists and the Colorado Historical Society. Throughout 1983, archaeological events such as publications, museum exhibits, lecture series and field trips are scheduled by a variety of museums, local societies and other institutions in the state. Coverage of these events by the media is to be arranged by a salaried events coordinator. The purpose of the program is to increase public awareness of archaeological values. The development of the project is reviewed and its effectiveness evaluated. (10)

Hester, Thomas R. (Texas, San Antonio) and Harry J. Shafer (Texas A&M) PRODUCTION AND DISTRIBUTION PATTERNS IN ANCIENT MAYA CHERT TOOL INDUSTRIES. Ancient Maya chert tool workshops in the geographically restricted chert outcrop zone of northern Belize have revealed remarkable examples of standardized mass production of both utilitarian and nonutilitarian artifacts. Quantitative estimates place the level of production into the millions of specimens; production is most intensive in the Late Preclassic but continues into the Early Postclassic period. The distribution of the craft products includes areas of raised-field agriculture at Pulltrouser Swamp, while exchange of nonutilitarian artifacts may have reached as far as Tikal and El Mirador. A socioeconomic model of the organization of production, distribution and exchange is addressed. (11)

Hicks, Ronald, Jeanette E. Buehrig, Donald R. Cochran, William R. Wepler and Alan Samuelson (Ball State) EXCAVATION AND SURVEY IN MOUNDS STATE PARK, INDIANA. Since 1979, investigations in response to the need for archaeological resources management planning for Mounds State Park have confirmed the locations of three plowed-out Middle Woodland earthworks and revealed new information about their natures. In addition, a comprehensive survey has indicated extensive settlement in Early Archaic times, with a similar pattern in the Late Woodland, but little evidence for occupation at the time of construction of the enclosures. This pattern is compared with recent evidence from elsewhere in east-central Indiana and some similarities are noted. (33)

Hinsdale, Clark (Center for American Archaeology) PUBLIC PARTICIPATION IN ARCHAEOLOGY. Public participation programs in archaeology have met with varying success. A hindrance to the improvement of such programs is the lack of communication among those who have experimented with public participation. The Center for American Archaeology has for over 15 years been actively experimenting with various types of public participation. At its current state of evolution, the public program is a self-supporting, year-round operation that conducts research while educating large numbers of students of widely varying ages. This paper outlines the development of the program, the problems faced and the lessons learned. (55)

Hirth, Kenneth G. (Kentucky) EPICLASSIC URBAN DEVELOPMENT AT XOCHICALCO, MEXICO. The results of the Xochicalco Urban Mapping Project are presented which clarify the size and growth of this important Epiclassic center. Xochicalco is an example of an independent regional polity which developed on the fringe of Teotihuacan control and eventually competed with the large center toward the end of the Classic period. This paper explores the relationship between Teotihuacan and Xochicalco and as such helps to further understanding of cultural development in Central Mexico at the end of the Classic. (41)

Hodder, Ian (Cambridge) HOUSE AND BURIAL SYMBOLISM AS SOCIAL STRATEGIES IN THE EUROPEAN NEOLITHIC. It is argued that existing studies of megalithic tomb construction in the

Neolithic of western Europe have failed to consider the symbolism of the monuments themselves. Formal analogies within prehistoric Europe suggest that the tombs often evoked houses of a particular type. It is suggested that the architectural symbolism was appropriate in a society in which the predominant social tensions involved an elaboration of the domestic world as well as conflict between maternal and paternal lines. (27)

Hofman, Jack L. (Tennessee, Knoxville) CONTEXTUAL ANALYSIS OF AN ARTIFACT AGGREGATE IN MID-HOLOCENE TERRACE SEDIMENTS, MIDDLE TENNESSEE. Systematic trenching of Holocene terraces along the Duck River revealed numerous artifact-bearing strata generally associated with buried paleosols. Scattered river gravels are often found with the artifacts. This paper attacks methodological problems of evaluating the horizontal and vertical depositional and postdepositional disturbances of the artifacts at one such site in order to provide a baseline for interpreting artifact patterning from a behavioral perspective. Refitting chipped stone pieces provides one line of evidence used to argue that artifacts at the Cave Spring site were not redeposited by the river, but that they had undergone postdepositional vertical displacement. (15)

Hofman, J. L. (see Brackenridge, G. R.) (26)

Holman, J. A. (see Clausen, C. J.) (25)

Holstein, Harry (see Nance, C. Roger) (50)

Howard, Ann Valdo (Arizona State) and Douglas B. Craig (Arizona) THE ORGANIZATION OF INTERREGIONAL SHELL PRODUCTION AND EXCHANGE IN SOUTHERN ARIZONA. The spatial organization of Hohokam shell production and exchange in southern Arizona is examined. Differences are apparent in the nature and degree of participation by various subgroups that constitute the so-called core and peripheral areas. The role of these subgroups in the exchange system is seen to change between the Preclassic and Classic periods. These changes, it is argued, may reflect structural and organizational shifts in the Hohokam regional system. (53)

Howell, Kenneth W. (Denver) CRITERIA FOR USING REMOTE SENSING TECHNOLOGIES ON ARCHAEOLOGICAL PROJECTS. The heavily wooded valleys and dense ground cover characterizing much of the Taos area frequently obliterates all traces of major architectural features. Surface indications of pit houses, for instance, are minimal even though they comprise a major component of prehistoric occupation. These conditions demand methods to overcome problems of site location, definition of type and extent of subsurface features, among others. Remote sensing technologies can provide a cost- and time-effective means of enhancing the archaeological data base. Criteria for their selection and application under conditions of low-level surface visibility are discussed. (29)

Hummer, Anne G. (see Peebles, T. C.) (50)

Hunter-Anderson, Rosalind L. (New Mexico) FROM VARIETY TO REDUNDANCY IN HOUSE TYPES AND OTHER CHANGES IN THE USE OF SITE SPACE AMONG PREHISTORIC HORTICULTURISTS IN THE U.S. SOUTHWEST. Factor analyses of 46 stone tool assemblages excavated from pit houses in the vicinity of Reserve, New Mexico, dating from ca. 300 to 900 AD, indicate that a greater variety of house types occurred in the earlier sites, and that an adaptive shift from winter dependence on stored wild foods to stored cultigens accompanied the decrease in house type variety. A decrease in house size and a tendency toward rectangular shape through time reflect a change in regional settlement and in the spatial organization of household activities. The selective context for these changes is suggested. (9)

Hurst, David C. (see Nance, C. Roger) (50)

Hurt, W. R. (Indiana) MARITIME ADAPTATIONS IN BRAZIL. During a known period of ca. 8,000 years, the coastal populations of Brazil had to adjust to major changes in sea level with accompanying variations in the abundance of the marine food supply, such as mollusks and fish. There are, and probably always were, north-south fluctuations in the local natural resources. At least four major types of adjustment are now known to archaeologists that vary in the relative proportion of fish to mollusks, plus variations in the manner of disposal of the kitchen refuse, whether in the form of mounds or in horizontally dispersed middens. (44)

Isbell, William H. (SUNY, Binghamton) NEW SYMBOLS AND NEW THOUGHTS: IDEOLOGY AND THE RISE OF ANDEAN EMPIRE. In the Central Andes, expansionist empires originate during the Middle Horizon. The archaeological record shows that two organizationally dissimilar polities, one

centered at Huari and the other at Tiwanaku, developed more or less simultaneously. In spite of their differences, the two earliest empires shared a single iconography. This implies not only contact between the two, but the existence of a single ideological tradition. The stylistic variability and distribution of Huari and Tiwanaku art suggests that its history has been seriously misunderstood. The vastly important evolutionary role of the ideology represented by the icons can only be appreciated in light of the reinterpreted history of Huari-Tiwanaku art and interaction. (5)

Jackson, B. (see Stocker, T.) (11)

Jackson, Claude V. and Mark A. McConaughy (Illinois State Museum) RENCH SITE STRUCTURAL EVIDENCE AND ASSOCIATED CERAMIC REMAINS. Features from Late Archaic, Late Woodland and Mississippian contexts have been encountered at Rench. Most features are refuse/storage pits containing Weaver ware ceramics. However, several pits produced a hitherto undescribed late Late Woodland ware that superficially resembles Late Bluff in the lower Illinois Valley and Bauer Branch ceramics of west-central Illinois. One refuse pit has produced Mississippian pottery. Other features encountered include one Archaic hearth, nine Late Woodland burials and 15 Late Woodland rock concentrations (hearths?). The remains of at least three ovoid Weaver huts were delineated based on post mold patterns. (23)

Jackson, H. Edwin (Michigan) SUBSISTENCE STRATEGIES OF A POVERTY POINT COMMUNITY. Past attempts to explain the mode and organization of the subsistence system of the Poverty Point culture (1500-500 BC) in the Lower Mississippi Valley have had to rely upon inference drawn from evidence of apparent high population density and social complexity, since archaeological materials from this time period have generally not been preserved. Recent excavations at the J. W. Copes site (16MA47) in northeastern Louisiana have produced both well-preserved faunal and archaeobotanical remains. These data provide a basis for examining the nature of Poverty Point subsistence strategies and also the participation of one community in the Poverty Point settlement system. (34)

Jackson, S. T. (see Carbone, V. A.) (56)

Jaehnig, M. E. W. (Washington) AN INTRODUCTION TO THE CHIEF JOSEPH DAM CULTURAL RESOURCES PROJECT: 1977-83. The project area includes 279 sites along a 45-mile stretch of the Columbia River between Chief Joseph Dam and Grand Coulee Dam in Douglas and Okanogan counties, north-central Washington State. During 1977-78, 79 sites were tested, and from 1978-80, 17 sites were excavated, in order to mitigate the loss of cultural deposits resulting from a pool raise of the reservoir behind Chief Joseph Dam. Overall goals of this large-scale research project are to elucidate the paleoenvironmental and archaeological record within the parameters established by a mitigation program and to suggest areas for further inquiry. (36)

James, S. E. (Woodward-Clyde), R. Knudson (Woodward-Clyde), A. Kane (Colorado) and D. Breternitz (Colorado) PREDICTING SITE SIGNIFICANCE: MANAGEMENT APPLICATIONS OF HIGH-RESOLUTION MODELING. Predictive models are used both for research and CRM purposes. Agencies often use models to guide decisions about impacts and mitigation plans. General patterns of predicted site location have been used, appropriately or inappropriately, as proxies for information content and hence significance of resources. Using high-resolution modeling and decision analysis, models may be built to predict directly the information content and relative significance of presently unlocated resources. An example is presented of a management-oriented model for the northern Anasazi area, using multiple regression analysis coupled with utility functions and a high-resolution digitized data base on an automated graphic system. (50)

Jefferies, R. W. (Southern Illinois, Carbondale) and W. J. Woods (Southern Illinois, Edwardsville) SOIL ANALYSIS AS A MEANS OF INVESTIGATING CHANGING PATTERNS OF SITE UTILIZATION. Investigations in the Carrier Mills Archaeological District, Saline County, Illinois, focused on a complex midden deposit. Artifacts in the midden indicate that deposits are attributable to Middle Archaic through Late Woodland occupations but that the most intensive activity occurred between 4000 and 3000 BC. Major changes in site utilization are indicated after 3000 BC. A variety of physical and chemical analyses of soil were conducted to provide data on the origin and development of the midden deposits. Interpretations of these and other related considerations and a model for diachronic utilization of the District are presented. (33)

Jelinek, Arthur J. (Arizona) THE ROLE OF TYPOLOGY IN LITHIC ANALYSIS: EXAMPLES FROM THE MIDDLE PALEOLITHIC. A typology is a tool for the objective comparison of archaeological collections. The particular variables in any typology should be related to the problems that the comparison is intended to explore. Paleolithic archaeologists working in western Europe and the

Levant have made extensive use of the typology formulated by François Bordes in the description and comparison of Lower and Middle Paleolithic collections. This paper discusses the nature of variability that is basic to the Bordes typology and the relevance of that variability to the problems to which it has been applied. The possibility of alternate typologies for some of these problems is introduced. (43)

Johannessen, Sissel (Illinois) UNIFORMITY AND DIVERSITY IN MISSISSIPPIAN PLANT USE. The analysis of plant remains from the Range, Julien, Turner and BBB Motor sites on the American Bottom provides a basis for discussion of patterns of Mississippian plant use. Intersite comparison of the plant assemblages evince a uniform cultural pattern of the cultivation of a complex of crop plants, the collection of wild resources and the use of wood for fuel and construction. Some variations in the proportions and composition of the plant remains have implications for land use and special site function. Comparison of the Mississippian pattern to that of the Late Woodland reveals a close similarity, yielding no evidence that the shifts in cultural configuration which are evident between these two periods were accompanied by any marked changes in subsistence. (6)

Johnson, Eric S. and Thomas F. Mählstedt (Massachusetts Historical Commission) COLLECTIONS ANALYSIS AND CULTURAL RESOURCE MANAGEMENT: AN EXAMPLE FROM SOUTHEASTERN MASSACHUSETTS. A large, private archaeological collection from Fall River, Massachusetts, recently was analyzed to upgrade the prehistoric site records of the Massachusetts Historical Commission. The collection and accompanying notes have supplied information on past and present land use, present site integrity, site boundaries, stratigraphy, features and cultural/temporal components. Comparison of this assemblage with others previously inventoried in eastern Massachusetts has contributed valuable information on regional changes in settlement patterns through time. Additionally, a number of research topics at both site-specific and regional levels have been suggested. (35)

Johnson, Jerald J. (California State, Sacramento) POSSIBLE CRITERIA FOR ARCHAEOLOGICALLY DISTINGUISHING A CULTURAL BOUNDARY BETWEEN TWO CLOSELY RELATED ETHNOGRAPHIC WINTUN POPULATIONS. The presentation concerns the U.S. Army Corps of Engineers' Cottonwood Creek project in the coast range adjacent to the northern Sacramento Valley in California. The proposed Dutch Gulch Lake on the Middle and North forks of Cottonwood Creek was the homeland of the Bald Hills Wintu and the proposed Tehama Lake on the South Fork of Cottonwood Creek was occupied ethnographically by the northern Hill Nomiaki Wintun. Archaeological field work has revealed a substantial variation in the size, physical characteristics and location of the prehistoric sites in the two areas, and several hypotheses are presented to explain these observed differences. (20)

Johnson, Patti J. (U.S. Army Corps of Engineers, Sacramento) FORT HUNTER LIGGETT AND ARCHAEOLOGICAL ENLIGHTENMENT. Recent surveys of a large military installation have provided insight into the relatively unknown settlement of the Salinan Indians and their predecessors. The Salinan were a coastal group whose occupation in the interior valleys has long remained unstudied. The surveys have located villages, milling stations and numerous examples of rock art, some of which are in a rather unique environmental setting. In addition, the area is the location for a large Spanish mission development during the 1800s. Research potential is unlimited. In view of the presence of ethnohistoric remains, the interrelationship between the mission and Indians will undoubtedly prove especially fruitful. (20)

Jones, A. Trinkle (Arizona State) AGRICULTURAL COMMUNITY STRUCTURE ON WALHALLA GLADES, GRAND CANYON, ARIZONA. Past surveys on the Walhalla Glades area on the North Rim of the Grand Canyon recorded hundreds of small masonry structures. In 1981, a resurvey with a sample fraction of 18% established that fully 55% of the sites included formal soil and water control features. Larger structures are found along ridge lines at intervals with small field houses and extensive water control features dispersed evenly out and downhill from these. Locational analyses of the agricultural systems and differentiation of ceramic and lithic collections are used to test Vivian's (1974) model on soil and water control strategies in the Anasazi Southwest. (53)

Jones, A. Trinkle (see Most, Rachel) (16)

Jones, George T., Donald K. Grayson and Charlotte Beck (Washington) FUNCTIONAL TOOL DIVERSITY AND SAMPLE SIZE IN SURFACE ASSEMBLAGES FROM THE STEENS MOUNTAIN REGION, SOUTHEASTERN OREGON. The Steens Mountain Prehistory Project has collected approximately 160,000 artifacts from the surface of an area centering on Steens Mountain in southeastern Oregon. Some 12,000 of these objects were contributed by low-density scatters located between those higher density phenomena traditionally termed sites. Regression analyses show that much of the variation in numbers of functional tool classes displayed by both

low-density and high-density scatters is a function of sample size. Such procedures as analyses of residuals and slope are used to analyze this relationship and to give insight into those aspects of functional diversity that are not explained by sheer numbers of artifacts counted. (43)

Jones, Kevin T. (Utah) EVOLUTIONARY ECOLOGY AND THE FORAGER-COLLECTOR CONTINUUM. Using the Aché of eastern Paraguay as an example, the forager-collector continuum is examined in the context of evolutionary ecology. It is posited that a foraging strategy is optimal where resources are relatively randomly distributed spatially and seasonal variability is low. A collecting strategy should be favored where resources are distributed in patches and when seasonal variability in resource availability is great, especially if there are periods of time when any resource acquisition is severely limited. Foraging systems therefore should be readily addressed using diet-breadth models, whereas collecting systems should only be predictable in terms of patch choice models. Most systems are expected to employ a mix of these strategies. (48)

Jorstad, T., J. Donahue, T. East and J. M. Adovasio (Pittsburgh) DISTRIBUTION OF CULTURAL MATERIAL WITHIN AN AEOLIAN SEQUENCE, CINNAMON CREEK RIDGE, NORTH DAKOTA. Cinnamon Creek Ridge is on the Unglaciated Missouri Plateau 11 km west of the Little Missouri River. Nearly continuous aeolian deposition has occurred since late Wisconsinan time which is draped over an erosional topography on the Paleocene Sentinel Butte Formation. Cultural features of these deposits range in age from Late Prehistoric (1250 BP) to Early Archaic (5500 BP). Approximately 3 m of fine sand to silt-sized sediment occurs on the surface of the ridge. Artifact concentrations on the surface are found only at the edge of the ridge or along roadways where erosion has occurred. Below the surface, cultural material is typically concentrated in two, and up to four, paleosols. (21)

Joslin-Jeske, Robert and Rochelle Lurie (Northwestern) THE BIPOLAR MYSTIQUE. The presence of large, pitted limestone slabs and smaller, igneous/metamorphic pitted cobbles in association with large amounts of chipped stone debris in some horizons at the Koster site indicates that bipolar flaking technique was used to some extent during the Middle Archaic. Yet chert artifacts and debris do not seem to exhibit characteristics of bipolar flaking discussed in the literature. A series of experiments conducted with Burlington chert is performed using free hand-hammer percussion and hard-hammer with anvil percussion. Flakes produced by these methods are examined in a blind test to see if the two manufacturing techniques can be distinguished. (43)

Judge, W. James (Chaco Center), John D. Schelberg (Chaco Center) and Richard Effland (ACS) ORGANIZATIONAL VARIABILITY. The SARG data bank can be used to investigate the nature of organizational variation within and between projects. One measure of organizational variability is the degree of the site hierarchy as manifested by the sites within a settlement system. Given the character of the archaeological data, site area or the number of rooms can be used to reconstruct site hierarchies. One useful technique is the rank-size rule which can be used to assess the overall structure of the system both synchronically and diachronically. After site stratification, the organizational and spatial character of individual project data sets are investigated and compared. (16)

Kaiser, Timothy (Berkeley) SPECIALIZATION, PRODUCTION AND SOCIAL CHANGE IN THE BALKAN NEOLITHIC. Social change in the Balkan Neolithic involves changes in the division of labor, among which the emergence of craft specialization is frequently cited. Using the criteria of various models of specialization, this paper examines the evidence for specialist potters in southeast Europe. No convincing case can be made. However, a large body of specialized knowledge is manifested in ceramic assemblages which reflect differentiation in the activities of production and consumption. These activities are conducted on a household basis and show considerable variability both within and between sites. (3)

Kamp, Kathryn A. (see Whittaker, John C.) (43)

Kane, A. (see James, S. E.) (50)

Kann, Veronica M. and Tom Sussenbach (UI-UC) ECOLOGICAL AND IDEOLOGICAL PERSPECTIVES ON THE EVOLUTION OF POWER AMONG THE GULF COAST OLMEC IN FORMATIVE MESOAMERICA. The Olmec evolved into Mesoamerica's first complex society in an area typified by a highly diversified tropical forest environment. An appreciation for the opportunities and constraints presented in this environmental setting in terms of agricultural risk and diversity and the role these had upon the Olmec trajectory can greatly aid in explaining Olmec ideology and its references to power. Viewing power as perceived control of valued resources, especially those related to agricultural production, can elucidate major features and uses of the Olmec ideological system. An argument is presented for the recognition of the interplay and mutual rein-

forcement of ecology and ideology for the Olmec power system and its development through time. (41)

Kaplan, L. (see Rapp, G., Jr.) (51)

Kardulias, P. Nick (Youngstown State) ETHNOARCHAEOLOGY AS SURVEY SUPPLEMENT: AN EXAMPLE FROM THE SOUTHERN ARGOLID, GREECE. The purpose of this modern site survey was to gain insights that would be helpful in interpreting the function of sites delineated during the three field seasons of the Stanford Argolid Exploration Project. An examination of various contemporary rural sites was undertaken in a selected valley that had previously been the subject of archaeological reconnaissance. A series of forms were prepared in order to facilitate the recording of applicable information on site size, artifact distribution and the function of structural elements. When available, informants were interviewed to obtain a more complete account of site function. The types of modern sites examined included farmhouses, chapels, animal folds, isolated agricultural storehouses, lime kilns and garbage dumps. The investigation has led to some significant observations about the nature of site formation processes in the region. (17)

Kay, M. (Arkansas) CLUES TO LITHIC TECHNOLOGY, SITE ACTIVITY AND GEOMORPHOLOGY: MENDED STONE ARTIFACTS FROM RODGERS SHELTER AND PHILLIPS SPRING. An intensive program of matching bifacial artifact fragments has resulted in invaluable new information about the processes of chipped stone tool manufacture, use and discard behaviors. In and of themselves, these data would justify the considerable effort spent in systematically comparing the fragmentary artifacts. But, in addition, a major benefit has come in the identification of stratigraphic contacts and a more comprehensive understanding of taphonomic processes operating against the archaeological records of Rodgers Shelter and Phillips Spring, two deeply buried Archaic sites in the western Ozark Highland of Missouri. (15)

Kehoe, Alice B. (Marquette) CHECK-STAMPED CERAMICS AND CHECKERED INTERPRETATIONS ON THE NORTHERN PLAINS. Beginning with Mulloy, check-stamped ceramics have been considered a trait of the Mandan-Hidatsa-Crow ethnic groupings. Southern Prairie Province check-stamped sherds have been interpreted as representing migration (Byrne) or seasonal bison-hunting forays (Syms) from the Middle Missouri. Late strata in the Felt site (EcNm-8), south-central Saskatchewan, include a relatively large sample of check-stamped sherds but seem unlikely to represent migration, hunting or trade from the Middle Missouri. Occupation by Algonkian-speaking Atsina is hypothesized. (21)

Kelley, J. (see Hanen, M.) (32)

Kelley, J. Charles (Sul Ross) THE MOBILE MERCHANTS OF MOLINOS. Crucial to the problem of Mesoamerican-Southwestern interaction is an understanding of the routine operation and process of extension of the Postclassic Mixteca-Puebla mercantile operation in northwestern Mexico. Analysis of archaeological collections from Postclassic trade centers in Durango, Mexico, provides significant new data. Especially important is the site of Cañon de Molinos, where people of the Aztlan culture of the West Coast and the Chalchihuites culture lived together, blending their diverse ceramic traditions. (45)

Kelly, John E. (Illinois, Urbana-Champaign) CAHOKIA AND ITS ROLE AS A GATEWAY CENTER IN INTERREGIONAL EXCHANGE. The Cahokia site situated on the Mississippi flood plain near St. Louis, Missouri, represents the largest and most complex Mississippian center. Previous studies have described Cahokia as an urban center or central place. Another major aspect of Cahokia is the establishment of Early Mississippian settlements to the north. A recent article on external trade during the Formative period of Mesoamerica has provided another way in which to view Cahokia's links with its frontier to the north. Basically, this approach utilizes the concept of gateway communities which are similar to dendritic market networks. This paper examines Cahokia's role as a gateway center and the socioeconomic basis for its development. (6)

Kelly, Marcia K. (Washington State) MORPHOLOGICAL VARIATION OF MICROBLADES FROM THE NARVESTAD SITE, SOUTHWEST WASHINGTON. Microblades are often used as evidence for technological change and population movement in the Pacific Northwest. However, in order to substantiate such interpretations, microblade variability must be understood. Replication of microcores and bifaces from the Narvestad site demonstrates that pressure and percussion-produced microblades are difficult to distinguish from fortuitously produced microblades. Fortuitous microblades are selected from replicated biface debitage to compare with replicated microblades. Discriminant analysis is employed to determine measurements, discriminating among pressure, percussion and biface microblade classes. The results show that pressure microblades are the most distinct whereas percussion and biface microblades exhibit similar morphology. (43)

Kelso, G. K. (Boston) EXPERIMENTS IN THE RELIABILITY OF COPROLITE POLLEN SPECTRA. Palynological studies of coprolites have been used on the assumption that differences in the amounts of pollen recovered from archaeological feces reflect differences in the quality of pollen ingested during separate 24- to 36-hour intervals. Experimental data indicate that pollen transit time in the human gastrointestinal tract differs from that of associated food remains. In coprolites this results in a predictable pattern of absolute pollen frequencies which accurately reflect the quality of pollen ingested in approximately one of three focal pollen samples. The absolute pollen frequencies of the remaining samples reflect only residence time in the gastrointestinal tract. (8)

Kent, Susan (Iowa, Ames) CULPRITS IN IRON DEFICIENT ANEMIA ON PREHISTORIC SOUTHWESTERN POPULATIONS—A MULTIVARIATE APPROACH. A growing dependency on a primarily vegetarian (and especially maize) diet is generally accepted as the prime mover for the high incidence of iron deficient anemia found among some prehistoric Southwestern agriculturists. A multivariate approach to the factors causing iron deficient anemia is examined and the conclusion that maize is but one of many variables involved in the rise of iron deficient anemia through time among the Anasazi is suggested. Other factors, such as sedentism, village life and diseases, are seen as important, if not more important than their diet, for causing the anemia seen in prehistoric Southwestern populations and elsewhere. (22)

Kenton, Sannie L. (U.S. Army Corps of Engineers, Sacramento) HISTORIC PRESERVATION AT KNIGHTS FERRY, CALIFORNIA, AND THE NATIONAL HISTORIC PRESERVATION ACT AMENDMENTS OF 1980. With the passage of the 1980 Amendments, federal agencies are now authorized to expend project funds for historic preservation activities not otherwise included as mitigation. Stabilization of the historic Tulloch Flour Mill and Powerhouse at Knights Ferry, California, offered the Sacramento District its first opportunity in this area. This paper examines the criteria for formulation of stabilization plans and specifications from both a structural and aesthetic viewpoint, coordination and review procedures with state and federal agencies and development of plans for public access and interpretation. (20)

Kenyon, Victoria B. (Boston) and Patricia F. McDowell (Oregon, Eugene) ENVIRONMENTAL SETTING OF PREHISTORIC SITES IN THE MERRIMACK RIVER VALLEY, NORTHERN NEW ENGLAND. Preferred environmental settings for habitation by the prehistoric occupants of the Merrimack Valley of New England are recognized through statistical analyses. Univariate distributions and bivariate examination of pairs of variables show that site location changed through time. Logit regression analysis, a multivariate technique, allows prediction of site locations and temporal associations. Among the significant variables are proximity to minor natural features, soil characteristics, elevation and aspect. Methods of data collection, results of statistical manipulation and applicability of the predictive model are addressed. (4)

Kerley, Janet M. (see Healan, Dan M.) (11)

Kerley, Janet M. (see Santley, Robert S.) (11)

King, F. B. (Illinois State Museum) ARCHAEOBOTANICAL REMAINS FROM THE RENCH SITE. The bulk of the archaeological materials at the Rench site were recovered from Weaver focus features. Carbonized plant material represents over 40 taxa and suggests site usage at least during the summer-fall period. Cultivated plants represented at the site include maize, pepo squash and sumpweed. Possible cultigens include chenopod, cf. maygrass and *Polygonum erectum*. Important wild food plants were blackberry, hawthorn, black cherry, hickory nut, hazelnut and grape. Numerous seeds of a wild grass (cf., *Glyceria*) suggest that it was also used for food and may have served as a substitute for seeds and other species (maygrass, sumpweed) that might have been less common or less easily cultivated here than in the lower Illinois and Mississippi valleys to the south. (23)

King, J. H. (Arizona State) RESULTS OF REPLICATIVE EXPERIMENTS IN PIT HOUSE CONSTRUCTION AT THE GILA HERITAGE PARK. During 1981-82, several full-scale replicas of Hohokam pit houses from Pioneer, Sedentary and Colonial periods were constructed at the Gila Heritage Park, a facility owned and operated by the Gila River Indian community near Phoenix, Arizona. Technological, material and labor analyses of the experimental reconstructions provide insights into architectural details and behavioral complexes normally not detectable in the archaeological record. Implications of the experiments have been tested against data from several excavated Hohokam sites. (25)

King, Thomas F. (Advisory Council on Historic Preservation) AN OVERVIEW OF ARCHAEOLOGICAL LAW AT THE FEDERAL LEVEL. Over the last 80 years, and especially in the last

decade, a considerable body of law has developed at the federal level protecting archaeological and other historic properties. In addition to the relatively well known permit laws, such as the Archaeological Resources Protection Act, and the project review requirements springing from the National Historic Preservation Act and National Environmental Policy Act, preservation is built into a variety of general land management and financial assistance statutes and to some extent into the tax code. A comprehensive federal policy toward preservation is gradually emerging. (28)

King, Thomas F. (see Carucci, James) (2)

Kintigh, K. W. (Arizona) BUT THIS ISN'T A POINT PATTERN: MOSAIC ANALYSIS AND THE STRUCTURE OF HOHOKAM VILLAGES. Spatial analysis in archaeology has largely been limited to the analysis of point patterns. However, archaeologists are concerned with distributions of objects that cannot be considered points. Following Ammerman, techniques of mosaic analysis drawn from the ecological literature are applied to the problem of estimating the number and the spatial distribution of houses on large Hohokam sites. Various techniques are tested by simulating the placement of sample pits and trenches on completely excavated areas of the site of Snaketown, and the results are then extended to develop estimates for the areas that have not been exhaustively stripped. (14)

Kintz, E. R. (SUNY, Geneseo) NEIGHBORHOOD (CHINA) AND WARD (CUCHETEL) IN A CLASSIC MAYA METROPOLIS: COBA, QUINTANA ROO, MEXICO. Landa's description of 16th century Maya towns as centered around the temples, with nobles residing nearby and the lower class on the town's periphery, has been central to discussion of Classic Maya social, political and economic organization. Doubtless, the settlement pattern of complex Maya centers during the Classic period is represented by a general model of concentric zones. However, data from Coba suggest organization in contiguous neighborhoods and wards. Differentiation of intrazonal clusters of households, neighborhoods and wards reflects more precisely the sociopolitical and economic organization of Coba and perhaps indicates patterns discernible in other Classic Maya lowland cities. (7)

Klesert, Anthony L. (Centuries Research, Inc.) A PREDICTIVE MODEL OF SITE POTENTIAL IN THE RIO GRANDE NATIONAL FOREST, COLORADO. A predictive model of site location is developed for the Rio Grande National Forest, Colorado. The model derives environmental criteria by which regions of the Forest may be determined to have high, medium or low potential for aboriginal sites. Univariate statistics are employed to derive these areas. Fourteen environmental variables are examined and, from these, three diagnostic variables emerge. These variables (low slope, low vertical distance from nearest permanent water and non-wooded vegetation) are then compared in terms of their relationship to each other and criteria for defining relative areas of potential may then be ascertained. (50)

Klippel, Walter E. and William B. Turner (Tennessee) PREHISTORY AND HOLOCENE LAND SURFACE CHANGES IN THE NASHVILLE BASIN. The archaeological record along the Duck River in middle Tennessee has been greatly influenced by changing Holocene environments. Fluvial processes as well as colluvial action, for example, have concealed and stratified both rockshelters and open sites over the past 12,000 years. An assessment of these phenomena, taken in conjunction with other evidence of environmental dynamics, has resulted in more credible interpretations of the prehistoric human activity in the area. Natural and cultural depositional episodes at a stratified multicomponent Archaic shell midden (40ML139) serve as a case study. (26)

Knapp, A. Bernard. (California, Berkeley) and Tamara Stech (Pennsylvania) COPPER PRODUCTION AND INTERNATIONAL EXCHANGE: THE RISE OF COMPLEX SOCIETY ON CYPRUS. Agricultural and developmental economists have shown that "primitive" economies frequently react to the opening of new and larger markets by shifts in the organization and magnitude of production factors. In the case of Bronze Age Cyprus, the causes of change and innovation apparent in the archaeological record in the period from about 1700-1500 BC can be explained by appealing to this formal economic model. Increased production of copper at/near the mines, coupled with an effective intraisland transportation system, satisfied the demand for copper from external markets and stimulated demographic and cultural changes on the island. (17)

Knappman, Elizabeth F. (William Morrow Publishers) WHAT PUBLISHERS LOOK FOR IN ARCHAEOLOGY BOOKS. This talk describes the economics of book publishing today and how recent changes in the industry have made it more receptive to works of science. It identifies qualities publishers look for in archaeology books for the public and offers guidance to writers who want to publish through trade houses. The speaker is senior editor of William Morrow Publishers and has formerly been an editor with Doubleday, Natural History Press and Collins of London. She was the editor for Struever's *Koster*, Deetz's *In Small Things Forgotten*; *The Archaeology of Early American Life*, Leakey's *People of the Lake* and Mead's *Culture and Commitment*. (55)

Knight, George C. (Washington, St. Louis) MISSING PERSONS, ARCHAEOLOGY AND FUNCTIONALISM. Functionalist explanation has received thorough treatment in anthropological, sociological and philosophical literature. Philosophers of science allow that functional explanation involves description of needs and their satisfaction. In anthropology and sociology, the explanation makes reference to manifest or latent purposive social action. Functional explanations in the biological sciences relate more to evolutionary theory—specifically, natural selection. With an adaptationist concept of culture, archaeology may seem closer to the latter explanatory framework, especially with regard to structural aspects of the archaeological record. However, the explanation still requires an inference about social behavior, creating implications that necessitate a broader philosophical treatment. (32)

Knight, J. A. (Maine Institute of Quaternary Studies) TOWARD AN UNDERSTANDING OF CALCINED BONE ASSEMBLAGES: AN EXPERIMENTAL APPROACH. Calcined (burned) bones are often the only type of faunal remains recovered from sites in regions with acidic soils. Calcined bone assemblages constitute a neglected and little understood data base. To understand better calcined bone assemblages, an experimental approach is necessary to elucidate the taphonomic processes responsible for the formation of the assemblage. The skeletons of certain mammals, birds and fish were burned under controlled conditions, and the compression strength of representative burned elements was measured to reproduce a calcined bone assemblage experimentally. Element/element part frequencies and fragmentation patterns of the experimental assemblage were then compared with an archaeological assemblage from the Hirundo site (73-9) located in Penobscot County, Maine. (57)

Knudson, R. (see James, S.E.) (50)

Kohler, T. A. (Washington State) THE HISTORY AND PRACTICE OF PREDICTIVE MODELING. The literature on predictive locational modeling of archaeological sites is buried in unpublished reports in agency files or in other limited distribution forms. This literature is reviewed to show the diversity of approaches used, the regions in which predictive models have been attempted and the extent to which these models have been validated. Current disagreement on the appropriate roles for predictive models in archaeological research and cultural resource management will continue until there is greater consensus on appropriate methods and a larger corpus of validated models. (50)

Kolb, Charles C. (Penn State, Erie) COMMERCIAL ASPECTS OF CLASSIC PERIOD "THIN ORANGE" WARE. *Alpha/Core* Thin Orange, a luxury ceramic produced outside of the Basin of Mexico but in demand at the Classic center of Teotihuacan and other large settlements has been tensively analyzed since 1890, but especially during the last 15 years. Importation hypotheses advanced since 1934 are reviewed, and several are verified by modern technological studies, including NAA. Major importation theories are synthesized and critiqued using Basin of Mexico data collected by Sanders, Parsons and others (1965-82). Several alternative commercial/importation models are suggested. (41)

Koldehoff, Brad (see Denny, Sidney G.) (6)

Konrad, V. A. and R. Black (Maine, Orono) COMPARATIVE SOIL CHEMICAL IDENTIFICATION OF HUMAN ACTIVITY AREAS AT NORWAY BLUFF AND MUNSUNGUN LAKE, MAINE. Soils on a Paleoindian to historic sequence in two locales are analyzed for chemical enrichment. Focused analysis of soil samples for pH, Mg, P and Ca on eight discrete sites defines spatially coincident anomalies in areas of chemical enrichment predetermined by preliminary soil analysis. Excavation substantiates some anomalies consistent with human activity area whereas others define drainage and tree-throw features. In addition to guiding excavations on the extensive combined site areas, soil chemical analysis previews and aids explanation of activity area patterns and establishes both synchronic and diachronic characteristics of local anthrosols. (40)

Kornfeld, Marcel (Culturological Research, Laramie) and Stephen A. Chomko (Paleo-Environmental Consultants, Denver) PRE-SHOSHONEAN RODENT UTILIZATION. Site 48LN787, located in southwestern Wyoming, consists of two possible structures, three hearths, two organic stains and associated chipped and ground stone tools. Radiocarbon dates and diagnostic projectile points indicate and occupation of about 1100 BP. The fill from two of the hearths contains the osteological remains of approximately 50 small mammals, the majority of which are Richardson's ground squirrel (*Spermophilus richardsonii*). Analysis of the skeletal elements indicates a systematic pattern to the processing of this species. Utilization of rodents as a food resource has parallels in the ethnographic literature for the Great Basin and Plains. These results enhance the understanding of pre-Shoshonean subsistence activities. (57)

Kosse, Krisztina (Maxwell Museum of Anthropology) NEOLITHIC LAND USE AND SETTLEMENT IN EASTERN HUNGARY. Tentative reconstructions of Körös and Alföld Linear Pottery land use can be made through the interpretation of observed patterns of site distributions, ecological evidence and ethnographic parallels from the area. Changes, which include a shift from sheep to cattle/plg domestication, heavier reliance on agriculture and increased specialization are discussed. Differences in the size and distribution of the Late Linear Pottery settlements are interpreted as indications of an incipient settlement hierarchy. Although archaeological evidence is limited, the emergence of a simple settlement hierarchy is consistent with other developments in Late Linear Pottery land use and also with subsequent changes in settlement pattern in the period following the Linear Pottery culture. (3)

Krass, Dorothy Schlotthauer (Massachusetts, Amherst) RESOURCE MANAGEMENT IS A CULTURAL ISSUE. Sweden's National Inventory of Ancient Monuments is probably the most successful archaeological survey in the world. Its everyday operations provide an interesting contrast to the workings of cultural resource management surveys in the United States. But its history and its relationship to the society as a whole provide the most intriguing—and most transferable—lessons for American anthropologists. (10)

Kriebel, Carol (Arizona) NORTHERN RIO GRANDE SETTLEMENT PATTERNS. Cultural developments in the northern Rio Grande, which culminated in large 13th and 14th century multiroomed pueblos such as Pot Creek Pueblo, can be traced beginning ca. AD 900. Recent survey in the Taos District reveals site concentrations that suggest increasing population through time. Though a generalized Rio Grande pattern seems to exist for both northern and midareas, survey data indicate the occurrence of independent, localized developments in the north on a scale not previously known. Factors affecting site selection, the relationship of small villages to large pueblos and settlement patterns contrasting the north and middle Rio Grande are examined. (29)

Kroll, E.M. (Madison), J.W.K. Harris (Milwaukee) and H.T. Bunn (Madison) REFITTING THE SEQUENCE OF SITE FORMATION EVENTS AT ARCHAEOLOGICAL SITES AT KOOBI FORA, KENYA. Refitting and other analytical techniques have been used to investigate the site formation histories of Plio-Pleistocene archaeological assemblages recovered from different sedimentary contexts at Koobi Fora, Kenya. Refitted sets and size-frequency data illustrate the horizontal and vertical spatial patterns of stone artifacts and fossilized bones in contrasting channel and flood plain depositional environments. These data help to distinguish patterns attributable to hominid behaviors, geological and other processes. (15)

Kvamme, Kenneth L. (California, Santa Barbara) A COMPUTER APPROACH FOR WIDE-AREA PROBABILITY SURFACE MAPPING OF ARCHAEOLOGICAL SITE PRESENCE. Predictive models of archaeological site location have developed rapidly in recent years; probabilities of site presence can now be estimated at specific loci from simple map measurements. The techniques are not without problems: 1) measurements of parameters are highly variable between investigators; and 2) measurements are time-consuming, making wide-area applications difficult. The ultimate extension of this work rests in the computer, which can: 1) virtually eliminate measurement error; and 2) provide wide-area mapping of site presence probabilities at low cost. The computer utilizes digital terrain and Landsat data with specialized software that calculates the environmental predictor variables and performs wide-area probability mapping. (50)

Lackey, Louana M. (American) NO DEPOSIT, NO RETURN: THICK THIN ORANGE AMPHORAE AS ONE-WAY SHIPPING CONTAINERS. Thin Orange was a widely distributed Mesoamerican Classic period luxury ware of unknown origin. During the Metepec phase at Teotihuacan (AD 600-750) other, more utilitarian forms made of Thin Orange paste began to appear. Termed "Thick," or "Coarse," Thin Orange, this ware was more heavily tempered than "regular" Thin Orange and forms seem limited to large amphorae. It is argued that these vessels were made in southern Puebla to export any of several plant substances used for medical, manufacturing or ceremonial purposes by the Aztecs. These substances are still used for many of these same purposes in southern Puebla today. (41)

Lahti, E. (Maine, Orono) VENUS OF MUNSUNGUN: A CERAMIC PERIOD SITE AT THE MUNSUNGUN-CHASE LAKES THOROUGHFARE, NORTHERN MAINE. The Venus of Munsungun (154-5), a Ceramic period site, is located on an old beach surface 2 m above Munsungun Lake. Excavations revealed two lithic workshop/habitation loci. Diagnostic stone artifacts from area A include small, side-notched projectile points and spurred end scrapers. Subsistence hunting and trapping is implied by beaver, deer and moose bone. Area B yielded triangular points with convex bases which have no resemblance to other known regional projectile point styles. (40)

La Lone, D.E. (DePauw) and M. La Lone (California, Los Angeles) THE INCA STATE IN THE SOUTHERN HIGHLANDS: THE QUESTION OF THE STATE LANDS. Although the rise, expansion and destruction of the Inca state occurred over a relatively short period of time, ethnohistorical analysis offers insights into the processes of state expansion. The object of this paper is to explore variations over both space and time in the role of the state lands. Examination of documents from specific regions allows a perspective on Inca state lands which is quite different from the monolithic impression given in the traditional Spanish chronicles. (5)

La Lone, M. (see La Lone, D.E.) (5)

Larson, Daniel O. (California, Santa Barbara) SETTLEMENT PATTERN VARIABILITY IN THE SOUTHERN GREAT BASIN. Nine hundred previously recorded sites, including pueblos, open occupation sites and rock art sites, form the basis for a study of late prehistoric settlement patterns in Clarke County, Nevada. A two-step research program involved: 1) analysis of the available archaeological information; and 2) identification of analogous ethnographically known settlement patterns. The data base consisted of computerized information on site type, location and environmental setting for the previously recorded archaeological sites. This research systematically organizes the southern Great Basin archaeological record and directs future researchers working toward the explanation of that record. (35)

Larson, Mary Lou (California, Santa Barbara) THE EARLY PLAINS ARCHAIC: DROUGHT RESPONSE TO THE NORTHWEST PLAINS? The archaeological record of the Early Plains Archaic (7000-4500 BP) on the Northwest Plains is significantly different from that of the preceding period. One explanation for these differences includes environmental change resulting in an altered resource base. Since the region is arid, behavior of hunter-gatherers in arid lands is reviewed. Specific responses to resource variability include changes in mobility, migration, territoriality, social strategies and access to resources. An outline of these responses, which are applicable to the archaeological record, is developed and applied to the issue of Early Plains Archaic adaptation in north-central Wyoming. (21)

LeBlanc, Catherine J. (New Mexico, Albuquerque) ARCHAEOLOGICAL AND ETHNOHISTORICAL DATA ON THE SOCIOPOLITICAL ORGANIZATION OF THE LATE INTERMEDIATE PERIOD HUANCA. Recent work on Late Intermediate period Huanca ceramics has led to a clearer understanding of changes in population distributions in the Yanamarca Valley of the central Peruvian highlands. This settlement pattern data as well as other archaeological data and information from two 16th century documents on the pre-Inca Huanca shed light on the sociopolitical organization of the Late Intermediate period Huanca. The ethnohistorical documents also provide information on the factors involved in the concentration of wealth and the centralization of political authority. (46)

LeBlanc, S.A. (Mimbres Foundation) SOUTHWESTERN REGIONAL DYNAMICS BETWEEN AD 900-1300. The period AD 900-1300 witnessed concurrent changes in regional cultural dynamics over much of the Southwest, including the Chaco, Hohokam, Mimbres and Casas Grandes area. These changes have generally been interpreted as isolated and locally explainable events. Instead, it is argued that sociopolitical factors affecting the region as a whole are primarily responsible for these changes. A part of the failure to perceive these changes as related is a misunderstanding of the nature and timing of various cultural events. The facts are briefly reviewed. (45)

Lenhardt, D. (see Alexander, L.S.) (34)

Lentz, David L. (Alabama) PLANT MACROFOSSILS FROM THE ARCHAEOLOGICAL SITES OF THE LOWER SULACO RIVER DRAINAGE, HONDURAS. Recent excavations of the Cajon Archaeological Project have unearthed a variety of carbonized plant remains that were deposited by the prehistoric inhabitants of the Sulaco River Valley during Late Classic times. Some of the plant remains discovered were: *Acrocomia* sp. endocarps, *Byrsonima* sp. stones, *Calocarpum* sp. endocarps, *Simarouba* sp. stones, *Spondias* sp. stones and *Zea mays* L. kernels. The data indicate that a broadly based subsistence pattern was practiced, which included domesticated as well as wild foods. (18)

Leonard, Robert D. (Washington, Seattle), Catherine M. Cameron (Albuquerque) and F.E. Smiley (Southern Illinois, Carbondale) DIVERSIFICATION IN ANASAZI LITHIC ASSEMBLAGES: IMPLICATIONS FOR THE STUDY OF SOCIAL AND TECHNOLOGICAL CHANGE ON BLACK MESA. Increases in the diversity of material types have been documented in lithic assemblages ranging temporally from Basketmaker II through middle Puebloan times, a span of 2,500 years, on Black Mesa, northeastern Arizona. The applications of measures of diversity to prehistoric lithic raw materials and tool assemblages has revealed significant patterns and aided in the quantification

of directional change. Fluctuations in diversity can be linked to changes in social and technological organization. This paper seeks to explore patterning and variability in Anasazi lithic assemblages and suggests possible explanations for increased diversity over time. (24)

Leone, Mark P. (Maryland, College Park) **EARLY AMERICAN CAPITALISM AND ITS IDEOLOGY.** The archaeology of 18th century Annapolis, Maryland, reveals the remains of commercial, entrepreneurial and manufacturing activities. Early industrial archaeological records show mass-produced goods, a variety of status items, a range of accommodations from rich to poor and all the normal remains from an early capitalist and mercantile society. The archaeology and the texts also reveal systems of measurement of time and space needed to rationalize mass production and to legitimize the segregation of life's activities. Each of these categories and domains encompassed one another and help to substantiate an exclusive focus on profit-making. (27)

Lepper, B.T. (Cloumbus) and J. McMahon (Maine, Orono) **FLUTED POINT SITES AT THE MUNSUNGUN-CHASE LAKE THOROUGHFARE, NORTHERN MAINE.** Two Paleoindian sites, the Fluted Point site (154-14) and Windy City (154-16), occur 18 m above the surface of a kame terrace. Archaeological materials occur just below the surface in colluvial sediments that overlie kame terrace sands and gravels. Excavations at these workshop/habitation sites have produced debitage, bifaces, scrapers, fluted point preforms and broken fluted points. (41)

Lerner, Shereen (Arizona State) **THE UTILITY OF PLANWARE CERAMICS IN STUDIES OF TIME AND SPACE.** In studies of the prehistory of the American Southwest, decorated ceramics have often been used in research dealing with interaction, exchange and the development of chronologies for sites within a region. However, in many areas of the Southwest there exists a dearth of decorated pottery. In these areas, plainware ceramics provide the major source of information concerning the time of occupation, availability of local materials for ceramic production and the exchange and interaction of a variety of items. This paper discusses the utility of plainware ceramics in developing a relative time framework for sites in central Arizona. The use of a variety of tempering materials provides information pertaining to the local production of the ceramics and the existence of exchange. (12)

Leventhal, R.M. (SUNY, Albany) and A.A. Demarest (Harvard) **THE USE OF ARTIFACT DISTRIBUTIONS TO IDENTIFY COPAN HOUSES.** The Harvard University Settlement Pattern Project at Copan, Honduras, focused upon identification of the household group and the function of individual structures within that group. While architectural form and change have been utilized with the Copan data, a complementary approach, discussed in this paper, utilizes artifact distribution as the main source of information. The differential distribution of artifacts in direct association with buildings, features and plaza groups provides clues to structure identification and social organization within and among households. (7)

Levy, Janet E. (North Carolina, Charlotte) **RANK AND RELIGION IN PREHISTORIC CHIEFDOMS.** Recent useful discussions of prehistoric chiefdoms have emphasized origins of economic and political relationships within such societies. Religious ritual also plays an important role in such ranked societies, both in the maintenance of social organization and in fluctuations of social complexity. These internal fluctuations are perhaps and common as any straight-line evolution or devolution in social complexity and are linked to the interrelationships of ritual and social organization. Archaeological remains of European Bronze Age societies provide illustrations of these complex interrelationships. Further, these data and interpretations suggest pragmatic ways of evaluating the often difficult evidence of prehistoric religion. (3)

Lewarch, Dennis E. (South Carolina) **THE UNFULFILLED PROMISE OF GEOGRAPHICAL APPLICATIONS IN ARCHAEOLOGY.** Reviews assessing archaeological application of geographical methods outline recurring problem areas, including outdated models, the nature of archaeological data and data requirements of geographic techniques. Examination of recent products suggests that these same deficiencies persist. Promising new techniques under development in geography require critical evaluation prior to application in archaeological contexts. Three means of assessing potential methods are suggested: 1) the conservation ethic; 2) potential contribution of geographic concepts to development of archaeological theory; and 3) the role of the techniques in contemporary geography. Extant geographic applications are evaluated within this framework as a means of demonstrating research potential of new techniques. (14)

Lewis, B. (see Edging, R.) (6)

Lewis, B. R. (Illinois, Urbana) **FIRE ON THE BAYOU: CULTURAL ADAPTATIONS IN THE MISSISSIPPI SOUND REGION.** Human adaptations to the Mississippi Gulf Coast environment over at least the last 3,500 years of prehistory centered primarily around the hunting and gather-

ing of estuarine resources. Most habitation sites appear to have been seasonally occupied by groups who were primarily adapted to noncoastal environments. During the Colonial period, the local coastal adaptations of Euro-Americans and Native Americans differed markedly. Settlements of the former consisted mainly of sea-oriented, sedentary villages; those of the latter were inland-oriented and were typically dispersed, small seasonal coastal encampments with permanent villages located in the interior. (1)

Lightfoot, K.G. (Stony Brook) **RESIDENTIAL MOBILITY AND ORGANIZATIONAL CHANGE: AN EXAMPLE FROM LONG ISLAND.** Several implications for changing patterns of residential mobility are explored in this paper. Recent research on contemporary hunters and gatherers suggests that organizational changes often occur during the shift to sedentarism. This paper examines the period of sedentarism on Long Island and evaluates whether a fundamental restructuring of the organizational parameters of local groups occurred at this time. (19)

Limp, W.F. (Arkansas Archeological Survey) **LOCATION CHOICE AND SETTLEMENT PREDICTION.** Increasingly powerful methodologies are being applied to the problems of archaeological site prediction. Selection and application of appropriate data categories and techniques is not simply a methodological matter but must be fully grounded in theory. For a phenomena to be successfully predictable, it is necessary that it be produced by an underlying regular process. Location choice theory addresses the processural regularities of the behavioral context of settlement location selection. Application of choice theory based settlement prediction is considered, using two major studies from the Midwest and Southeast. (50)

Lindsay, Alexander J., Jr. (Arizona, Tucson) **EXPLAINING AN ANASAZI MIGRATION TO EAST-CENTRAL ARIZONA.** Arizona W:10:50 (Arizona State Museum) is a multiple-component, town-size, Western Pueblo site at Point of Pines, Arizona. A cluster of rooms within this site share several historical and cultural attributes, called the Maverick Mountain phase. Emil W. Haury describes this phenomenon as a 13th century migration from the Kayenta-Hopi region to Point of Pines. The migrants settle and prospered here for about two decades. This era ended with a catastrophic burning of the migrant settlement, leaving a unique collection of behaviorally sorted materials. The W:10:50 data are compared with other contexts of similar remains and a model is proposed to explain the Anasazi migration. (53)

Livingston, S.D. (Washington) **MULTISITE FAUNAL ANALYSIS: THE CJDCRP DATA BASE.** Analysis of faunal remains recovered at the Chief Joseph Dam Project in eastern Washington has yielded a significant faunal data base. Although the project area is limited to those sites adjacent to the Columbia River, a variety of site types and depositional environments are represented, offering an opportunity to examine some of the theoretical and methodological issues in faunal analysis from a large and varied data base obtained under uniform collection procedures. Environmental and biogeographical problems are suggested by this data that indicate a need for future investigations of a broader regional nature. (36)

Lohse, E. S. (Washington) **TPOLOGY AND CHRONOLOGY: A METHODOLOGICAL IMPERATIVE.** Construction of a cultural sequence based on a large collection of projectile points recovered at 18 archaeological sites on the upper Columbia River presents problems in formal classification and correlation with previously defined types. Traditional attributes of form are used to create 18 morphological types. By plotting the temporal and spatial distribution of these morphological types and applying multivariate statistical analyses relating formal attributes to sample specimens from established types, historical types are defined. This differentiation of descriptive types from historical types facilitates both the recognition of formal variability and the determination of formal similarity. (36)

Lopinot, N. (see Hargrave, M.D.) (33)

Louthan, B.D. (Bureau of Land Management, Moab) **A CAVEAT FOR LAND-USE APPLICATIONS OF SITE PREDICTION MODELS.** Predictive models for archaeological site locations are rapidly being incorporated into land-use planning via agency procedures, contracts, environmental impact statements and interagency memoranda of agreement. Because there has been little or no gestation or testing of such models by traditional academic or research projects, uncertainties exist as to the appropriate uses of such predictions. Applications in environmental impact analysis, land-use planning and allocation and development of research designs and mitigation plans are examined; recommendations are made for effective and valid use. (50)

Low, R. (Edmonton) and S.G. Oliver (Maine, Orono) **THE BLUE RIBBON SITE: A MIDDLE ARCHAIC COMPONENT AT THE MUNSUNGUN-CHASE LAKES THOROUGHFARE, NORTHERN MAINE.** The Blue Ribbon site (154-7) is located 6 m above Munsungun Lake on a terrace composed of fluvial sands and gravels. Excavation of colluvial sediments which overlie the terrace gravels

yielded lanceolate projectile points with expanding bases, stemmed points, oval and crescentic bifaces and *pièces esquillées*. Two large hearths composed of fire-cracked rocks were uncovered which suggest the presence of house structures. Charcoal from beneath the fire-cracked rocks yielded a radiocarbon date of 5035 ± 65 BC (SI-5113). (40)

Lucius, William A. (Toronto) ANNA O. SHEPARD AND CURRENT TECHNOLOGICAL APPROACHES TO CERAMIC ANALYSIS. Anna O. Shepard pioneered the technological approach to ceramic analysis prior to World War II. Yet only recently have her ideas been seriously implemented. The reasons for the lag between the development and the acceptance of this approach are discussed in terms of the history of archaeology and the changing goals of archaeological research. The logical consequences of the application of her framework of inquiry to ceramic production are reviewed with reference to current investigations of the Dolores Archaeological Program of southwestern Colorado. (12)

Luedtke, B.E. (Massachusetts, Boston) NEW PERSPECTIVES ON MASSACHUSETTS CERAMICS. Massachusetts ceramics have proven resistant to typing, in part because of the predominance of multicomponent sites and a lack of radiocarbon dated assemblages. This lack of established types is actually an advantage to Massachusetts archaeologists, because it allows us to approach ceramic data without the usual blinders imposed by previously defined categories. This paper discusses ceramic data from several sites in the lower Merrimack River Valley, using the assumption that different ceramic attributes are related to totally distinct cultural subsystems and that they therefore change at different rates and in response to different pressures. (4)

Lurie, Rochelle (Northwestern) KOSTER SITE LITHIC TOOL CATEGORIES AND SUBSISTENCE-SETTLEMENT CHANGE. Chipped stone and ground stone tool categories from the Koster site represent an essentially conservative technology; they persist with little variation in form throughout the Middle Archaic sequence. During this period there are indications that the subsistence-settlement pattern of which the site is part changes. These lithic categories are described and compared to assemblages from other Midwestern Archaic sites, and suggestions are made for alternative ways to evaluate small-scale changes in technology which may monitor subsistence-settlement shifts. (43)

Lurie, Rochelle (see Joslin-Jeske, Robert) (43)

Lyman, R. Lee (Oregon State) MORTALITY PROFILE ANALYSIS IN ZOOARCHAEOLOGY: IMPLICATIONS OF THE 18 MAY 1980 ST. HELENS ERUPTION KILLED CERVIDS FOR SAMPLE ADEQUACY. Age profile analysis was adapted to paleontological problems in 1953. Systematic studies of mortality profiles as represented by prehistoric faunas are now regularly made. Determination of whether a particular profile represents catastrophic or attritional mortality and what a profile means in terms of prehistoric hunting and scavenging practices depend upon the frequencies in which particular age classes are represented. The catastrophic mortality of cervids within the blast zone of Mount St. Helens, Washington, provides a unique opportunity to examine the effects of sample size upon the morphology, and hence subsequent interpretation of, mortality profiles. (57)

Lyneis, Margaret M. (Nevada, Las Vegas), James H. Cleland (Wirth) and Claude N. Warren (Nevada, Las Vegas) FORT IRWIN CALIFORNIA: RESEARCH AND MANAGEMENT IN THE FACE OF MASSIVE DAMAGE. The National Training Center in the Mojave Desert introduced large-scale tank maneuvers into an area of broadly distributed prehistoric remains. The historic preservation plan for Fort Irwin must choose between two management strategies: 1) block mitigation; and 2) spot protection. Regional site evaluation and selective data recovery followed by unrestricted military use may be better suited to both the research goals of hunter-gatherer archaeology and military needs. Spot protection by avoidance of sites within active maneuver zones appears to be more consistent with historic preservation policy. However, it exacts a high cost in site-by-site evaluation, fencing and monitoring. (13)

Mackey, Carol J. (California State, Northridge) and Alexandra M. Ulana Klymyshyn (California, Santa Barbara) EXPANSION IN THE ANDES: A CHIMU AND INCA COMPARISON. Explanations of the nature of the Chimú Empire and the process of its expansion have generally been based on interpretations of Inca expansion derived from the available ethnohistoric data. In this paper, a model of the mechanisms of Chimú expansion is presented on the basis of archaeological data from the Chimú capital and provincial centers. This model of Chimú expansion is then compared with existing discussions of Inca expansion. In conclusion, possible explanations for the differences between the two empires are examined. (5)

Madas, Dimitrije (Institute for the Protection of Cultural Monuments, Kragujevac, Yugoslavia) SOCIAL STATUSES IN RURAL MEDIEVAL SERBIA. The development of social relations in a medieval village (Slavkovic, Yugoslavia) between the 13th and 15th centuries AD is reflected in

the cemetery which formed around the village church. The 109 graves excavated so far exhibit a surprisingly wide variety of burial practices, allowing a large range of social statuses to be inferred. (47)

Mahlstedt, Thomas F. (see Johnson, Eric S.) (35)

Mallory, J.K. (Penn State) OBSIDIAN PRODUCTION AND USE AT COPAN, HONDURAS. The control of specialized production among the prehistoric Maya is the focus of recent research conducted at the site of Copan, Honduras. The degree to which such production was centralized and contributed meaningfully to economic stratification and political dominance is evaluated using data from excavations in both the elite residential precinct and other areas of the Copan Valley. (52)

Maloney, Edward R. (see Phagan, Carl J.) (43)

Malpass, M.A. (Wisconsin, Madison) STYLISTIC VARIATION IN THE PRECERAMIC LITHICS OF PERU. Nonfunctional variation in stone tools has been identified both in different emphases on unifacial vs. bifacial techniques of tool manufacture and in different classes of projectile points. The former reflect fundamentally different ways of making tools which cannot be accounted for functionally. The latter represent possible visual symbols of group affiliation that were useful in the formation of subsistence alliances and mating networks. A tentative model is presented to explain the lithic variability seen in the early preceramic assemblages of the central and northern coastal regions and adjacent highlands of Peru. (43)

Manion, Elizabeth (Utah) PREHISTORIC OCCURRENCE OF METASTATIC CARCINOMA. This paper presents an account on an elderly Basketmaker female (AD 600-700) excavated in 1981 near Recapture Wash, southeastern Utah, diagnosed with probable metastatic carcinoma originating in the breast (soft tissue cancer spreading from a primary visceral locus through the blood stream to the bony skeleton). This particular case is important for the following reasons: 1) only a few skeletons affected with metastatic carcinoma are reported in the archaeological literature; 2) only two of four cases from North America are from the Southwest; and 3) this may be the only currently known case of prehistoric breast cancer in North America. (22)

Manson, Joni L. (Southern Illinois) STYLISTIC VARIABILITY IN VINČA CERAMICS FROM DIVOSTIN, YUGOSLAVIA. Analyses of microstyle variability are relevant to the study of craft specialization, exchange, residence units, population movements and other aspects of prehistoric social organization. Decorated Vinča ceramics from Divostin, Yugoslavia are at present being studied in terms of stylistic variability for the purposes of determining whether: 1) individual potters can be identified on the basis of decoration; and 2) particular design styles are associated with particular houses. The preliminary results of this study and their implications for Neolithic social organization at Divostin are discussed. (3)

Marks, Anthony E. and Phillip Volkman (Southern Methodist) CORE RECONSTRUCTIONS AS A MEANS OF DOCUMENTING TECHNOLOGICAL CHANGE: THE MIDDLE TO UPPER PALEOLITHIC TRANSITION IN THE LEVANT. Traditional wisdom holds that the transition from Middle to Upper Paleolithic in the Levant was achieved through a slow displacement of Levallois method by an Upper Paleolithic "punch" blade technology, such that Levallois method was present well into the Upper Paleolithic. Using extensive core reconstructions from the stratified site of Boker Tachtit in the Central Negev, Israel, it has been possible to document a quite different type of technological transition. The observed shift is from an already developed, opposed platform Levallois point core reduction strategy with little appreciable change in the nature of the blanks produced. It is suggested that the adaptive nature of this change may be elevated efficiency in tool production per unit of raw material necessitated by increased mobility of the local inhabitants. (15)

Marshall, Richard A. (Mississippi State) REUSE OF SPECIFIC HOUSE LOCATION IN MISSISSIPPIAN CULTURE: A SOUTHEAST MISSOURI EXAMPLE. A southeast Missouri Mississippian culture example of reuse of a specific parcel of ground within a planned village has been recorded. No less than 16 different structures have occupied this one parcel, exhibiting some differences in construction approaches. The village is a well laid out, compact, probably fortified, satellite town to the Cairo Lowland phase Lilbourn ceremonial center located at the southern tip of Sikeston Ridge, New Madrid County. The find carries interesting implications for the social and ceremonial organization and technical aspects in house building for the local Mississippian culture. (38)

Martin, Terrance J. (Michigan State) AN OSTEOLOGICAL ANALYSIS OF WHITE-TAILED DEER AND A NEW METHOD FOR ESTIMATING MNI VALUES. Postcranial measurements from 53 in-

dividual white-tailed deer exhibit distinctive osteometric relationships for 246 possible element pairings. Regression analysis reveals that measurements on most elements can be estimated accurately from an element of known size. This information is applied to deer bones from 19 refuse deposits of the 18th century at the Fort Ouiatenon site (Indiana) and comparison is made to the traditional "most abundant element approach" of calculating MNI values. The new method is demonstrated to produce higher information returns, not only on MNI estimates, but also on estimates of live weight and edible meat weight. (57)

Mathien, Frances Joan (National Park Service, Albuquerque) EXTERNAL CONTACT AND THE CHACO ANASAZI. For several years it has been suggested that the rise of the Chaco phenomenon was, at least in part, a response to Mesoamerican influence. Much of this interaction may have been through economic exchange. Data obtained from recent studies in the Chaco area is examined, using models derived from economic anthropology, to evaluate the impact of Mexican groups on the Chaco Anasazi. It is possible to suggest the frequency of interaction among various culture groups from Mexico and inferences are made regarding the type of exchange that could have taken place. (45)

Matthews, Meredith H. (Dolores Archaeological Program) and Bruce F. Benz (Wisconsin, Madison) INQUIRY INTO BEHAVIORAL AND ECOLOGICAL MODELS THROUGH INTENSIVE ANALYSIS OF MACROBOTANICAL REMAINS. Macrobotanical remains recovered from an intensively sampled floor of a burned Pueblo I pit house excavated by the Dolores Archaeological Program are analyzed on two levels of inquiry: 1) to establish general parameters for interpreting the density and distribution of such remains as they relate to inferred activities on an occupation surface; and 2) to present a case for the archaeological documentation of human-environmental interaction through examination of four select genera of remains (*Amaranthus* sp., *Chenopodium* sp., *Nicotiana* sp., *Portulaca* sp.). Hypotheses generated as a result of these inquiries address human behavioral and ecological models. (24)

Mayer-Oakes, William J. (Texas Tech) FLUTED PROJECTILE POINTS IN THE AMERICAS AS SEEN FROM THE ECUADORIAN ANDES. Recent studies of Early Man projectile points from El Inga and other Ecuadorian sites suggest that fluting was independently invented in South America, probably several thousand years earlier than the Clovis fluted horizon in North America. Ecuadorian fluting was based on two stemmed point forms rather than the lanceolate form. El Inga data suggest that fluting developed through stages of: 1) basal thinning; 2) true fluting; 3) pseudo-fluting; and 4) prepared platform multiple channel flaking. This development at one site encompasses all of the several fluting developments known from limited stage occurrences at the large number of North American sites. A review of selected North American sites is presented in terms of El Inga stages. (46)

McBride, K. A. and N.F. Bellantoni (Connecticut) A SYSTEMS APPROACH TO LATE WOODLAND-CONTACT PERIOD CULTURE CHANGE IN THE LOWER CONNECTICUT RIVER VALLEY. The effect of European contact upon the aboriginal cultures of southern New England is the focus of much recent research. Controversy centers around: 1) the nature of contact and postcontact changes in aboriginal social and economic systems; 2) explanation of these changes; and 3) ethnohistoric literature as a model of precontact aboriginal settlement-subsistence systems. Five years of regional surveys of prehistoric and historic settlement in the lower Connecticut River Valley suggest that the single-cause models often used to explain Contact period culture change are inadequate. Qualitative and quantitative tests of ethnohistorically derived models for both the Late Woodland and Contact periods indicate that while European trade and settlement are important factors in influencing aboriginal cultures at this time, they are inadequate explanations of the changes observed in the archaeological record. Apparently, some changes in aboriginal trade networks and settlement-subsistence systems during the Late and terminal Late Woodland periods were the result of processes independent of European contact. Processes associated with contact further modified settlement and subsistence patterns. (4)

McClung de Tapia, E. (Mexico) ARCHAEOBOTANICAL RESEARCH IN TROPICAL NORTH AMERICA. The outstanding results of archaeobotanical research in the region of tropical North America are discussed in the context of: 1) their impact on archaeological methodology; and 2) their contribution to knowledge about environmental conditions and plant use in the past. The goals of archaeobotany are considered in terms of their real economic and technical feasibility and in terms of past sociocultural developments characteristic of the region in question. (31)

McConaughy, Mark A. (Illinois State Museum) PRELIMINARY ASSESSMENT OF THE FAP-405 HIGHWAY SALVAGE PROJECT AT THE RENCH SITE. The 1980-81 excavations at the Rench site were conducted under the auspices of the Illinois Department of Transportation. These excavations have provided a stratified sequence of Late Archaic, Late Woodland and Mississippian re-

mains. Nineteen radiocarbon dates from the site provide a firm basis for dating the various occupations at Rench. These dates and associated cultural data are summarized in the ecological framework in which they occurred. Preliminary results of the project are assessed in terms of the prehistory of the Central Illinois Valley and, on a broader perspective, its relationship with the rest of Illinois and the Midwest. (23)

McConaughy, Mark A. (see Dwyer, James P.) (23)

McConaughy, Mark A. (see Jackson, Claude V.) (23)

McCormack, William A. (California, Berkeley) and Raymond J. Dezzani (California State, Hayward) A COMPARATIVE ANALYSIS OF AN ASSEMBLAGE OF HANDAX-LIKE ARTIFACTS FROM THE PITCHILINGUE SITE NEAR LA PAZ, BAJA CALIFORNIA. The discovery of crude handax-like bifaces near Pitchilingue, Baja California, raises questions about the origins of a possible "pre-projectile-point horizon" in North America. The Pitchilingue site is geologically dated to about 6000 years BP comparable to radiocarbon dates for nearby "handax"-bearing cave sites also containing projectile points. The Pitchilingue bifaces are compared metrically with those from the cave sites and, to assess the possibility of morphological similarity between unrelated assemblages, with Old World handaxes. These comparisons show the assemblages to be indistinguishable. It is concluded that in technologically simple assemblages, morphological similarities between culturally unrelated industries are likely and that a number of sites tentatively assigned to the "pre-projectile-point horizon" probably represent functional variants of later industries. (43)

McDowell, Patricia F. (see Kenyon, Victoria B.) (4)

McElrath, Dale (Wisconsin, Madison) MISSISSIPPIAN CHERT EXPLOITATION: A CASE STUDY FROM THE AMERICAN BOTTOM, SOUTHWESTERN ILLINOIS. Patterns visible in the method and manner of lithic manipulation provide clues concerning the nature of prehistoric societies. In this instance, the chert recovered from a series of Mississippian sites located in the American Bottom, spanning the period AD 950-1300, is examined within a temporal/spatial framework. A reconstruction of the lithic productive program is offered, which is in turn used to make observations concerning those aspects of Mississippian culture which articulated directly with this facet of technology and economy. (6)

McGhee, Robert (National Museum of Man, Canada) PREHISTORIC MARITIME ADAPTATIONS IN ARCTIC CANADA. Maritime adaptations made possible the original occupation of Arctic Canada and was an important element in all subsequent occupations. By 2000 BC Paleo-Eskimos were using sea ice as an extension of the land and hunting sea mammals as the only major food resource of the winter season. The use of boats and pelagic hunting became important only with Eskimo immigration about AD 1000. Important changes in both Paleo-Eskimo and Eskimo adaptations can best be explained as responses to changes in the extent and seasonal duration of various forms of sea ice. (44)

McGuire, Randall H. (SUNY, Binghamton) WHAT A WORLD SYSTEMS MODEL WILL NEVER TELL US ABOUT MESOAMERICAN-SOUTHWESTERN INTERACTION. There is a new bandwagon about in Southwestern archaeology—the world systems model. The variety of researchers and views it accommodates suggest it is either a very powerful conceptual tool or extremely vacuous. An empirical consideration of hypotheses accounting for the origins of the Pueblo IV Kachina Cult implies that the latter is the case. Although the world systems model is a useful heuristic device, it can never resolve the key debates concerning Mesoamerican-Southwestern interactions. (45)

McMahon, J. (see Lepper, B.T.) (40)

McMahon, J. (see Stead, W.G.) (40)

McManamon, F.P. (National Park Service) PREHISTORIC SETTLEMENT SYSTEMS IN COASTAL NEW ENGLAND. Recent interpretations of prehistoric settlement systems in coastal New England and adjacent areas suggest that wide differences existed both spatially and temporally. However, these interpretations typically are based upon single site data or data from a few, sometimes poorly recorded collections. Furthermore, current interpretations are usually proposed as widely applicable to large chunks of, or even all of, the coast. If correct, such a pattern of relatively rapid and substantial changes indicates similar shifts in overall human adaptation. Alternatively, the diverse systems promoted by different interpretations might be part of a single generalized adaptation that included a wide variety of activities and settlement types in coastal New England. Data from a relatively large number of archaeological sites and subsite concentra-

tions investigated between 1979-82 by the Cape Cod National Seashore Archaeological Survey explores this question. Specifically, the data analyzed relates to the variation in season of occupation, intensity of occupation and the range of activities among the concentrations. (4)

McSwain, Rebecca (Arizona) LITHIC ARTIFACTS AND THE INTERPRETATION OF MIXED CONTEXTS IN A PRECLASSIC MAYA TOWN. It is often the case that most lithic items from prehistoric Maya sites occur in chronologically and functionally mixed contexts as a result of redeposition and rebuilding activities. Although such contexts do not offer any possibility for the discovery of artifacts in loci of original deposit or use, the lithics in these contexts may provide useful information regarding community and regional socioeconomic arrangements. This possibility is illustrated in the analysis of lithics from Cuello, Belize, using cross-contextual comparisons of such data as raw material distribution among tool types and manufacturing and processing techniques. (11)

Mehrer, Mark W. (Illinois, Urbana) MIDDLE MISSISSIPPIAN ARCHITECTURE IN THE AMERICAN BOTTOM AREA. Previous assumptions about Mississippian architecture have concentrated on chronological change with minimal concern for functional distinctions. These assumptions are reexamined vis-à-vis new data from several Mississippian components in the American bottom area of Illinois that date from ca. AD 950-1350. These components exhibited a variety of architectural patterns that are examined for functional as well as chronological distinctions based on structure size, shape, location and internal components. A proposed typology of Mississippian architecture is based on data from these sites and comparable sites in the American Bottom and surrounding areas. Intrasite and intersite variation are examined with consideration for possible social implications. (6)

Meighan, Clement W. (California, Los Angeles) PREHISTORIC USE OF THE OCEAN IN THE CALIFORNIAS. California and Baja California have 2,500 mi of coastline fronting on the Pacific and the Gulf of California. Widely variable adaptations to the maritime environment were developed along this coast, ranging from little or no use of the sea, to littoral exploitation, to fully developed maritime fishing (southern California). Exploitation of the littoral and the first shell middens began about 9,000 years ago. Full maritime adaptations began about 4,000-5,000 years ago, leading (on the southern California coast and offshore islands) to one of the most successful hunting-gathering populations in human history. (44)

Meltzer, D.J. (Washington) VARIATION IN EASTERN FLUTED PROJECTILE POINTS. The remarkable diversity in the morphology of the eastern United States fluted projectile points is analyzed and characterized. From this, it is apparent that much of the variation that is attributed to temporal significance is likely the result of technological processes and/or curation of the toolkit. Certain patterns do appear that indicate broad trends in the spatial and temporal distribution of late Pleistocene and the adaptive strategies of the Paleoindian groups. (54)

Merbs, C.F. (see Clausen, C.J.) (25)

Michels, Mark (Archaeological Conservancy) THE PROTECTION OF ARCHAEOLOGICAL RESOURCES IN NEW MEXICO. This symposium paper discusses the origin and effectiveness of the federal legislation to protect archaeological sites including the Antiquities Act of 1906 and the Archaeological Resources Protection Act of 1979. Sample cases are discussed relevant to these laws. Selected state and local legislation are also discussed in relationship to federal legislation and the problems of protecting archaeological sites on private, state and federal lands. (28)

Michlovic, Michael G. (Moorhead, Minnesota) THE CANNING SITE AND THE ARCHAIC ON THE NORTHEASTERN PLAINS. Excavations at the Canning site (21NR9) on the Minnesota-North Dakota border provide information about the Middle to Late Archaic people on the Northeastern Plains. This bison processing site adds force to developing ideas about the persistence of life-ways in the prehistoric Northern Plains prior to the introduction of agriculture and settled villages. Radiocarbon dates, floral, faunal, soils and lithic analyses provide a temporal, environmental and technological context for understanding this occupation. (21)

Miller, Patricia E. (Penn State) JASPER SOURCING METHODOLOGY AND RESEARCH DESIGN. Seven jasper sources in the northeastern United States, including Flint Run, Virginia, Iron Hill, Delaware and four quarries of eastern Pennsylvania jasper have been characterized in terms of their chemical composition through the use of neutron activation analysis. Discriminant analysis applied to the resulting data indicates that source identification can be made with a high rate of success. The application of the sourcing methodology to archaeological research in the study area involves the development of a problem-specific model of procurement and exchange behaviors and the determination of spatial correlates for model testing. Questions of

ritoriality, type of procurement strategy and the presence or absence of sociopolitically motivated exchange are discussed in terms of an eight-member taxonomic model and correlated distributions of lithic debitage and finished tools. (43)

Milner, George R. (Illinois, Urbana) DETERMINANTS OF VARIATIONS IN HEALTH AMONG SELECTED WESTERN ILLINOIS MISSISSIPPIAN POPULATIONS. Studies of prehistoric health contribute to an understanding of past disease patterns and the processes involved in cultural change. Patterns of disease stress varied among the late prehistoric populations of eastern North America; such variability can be attributed to differences in past cultural systems influencing the composition of diets and the transmission of pathogens. Data from Illinois Mississippian habitation sites and skeletal series are used to illustrate the manner in which subsistence strategies, settlement characteristics and the degree of population interaction contributed to differences in the health of American Bottom and Central Illinois River Valley populations. (6)

Milner, George R. (see Prentice, Guy) (33)

Moeller, Roger W. (American Indian Archaeological Institute) THE TEMPLETON SITE: 10,000 YEARS IN THE SHEPAUG VALLEY. Templeton (6LF21) is a stratified, multicomponent site in the Shepaug Valley of Washington, Connecticut. In addition to its well-known, deeply buried, undisturbed Paleoindian component, recent excavation has revealed a single occupation Late Archaic component and a possible Early or Middle Archaic chipping cluster. Several score Late Archaic bifaces are associated with locally available cobble cores of quartz, quartzite and other lithic, as well as debitage from all stages in the manufacturing process. (4)

Moffat, Charles R. (Illinois, Urbana) MISSISSIPPIANS IN THE UPPER KASKASKIA DRAINAGE: THE SHELBYVILLE RESERVOIR INVESTIGATIONS. As a result of research carried out from 1960-61, 21 Middle Mississippian sites are known in the Shelbyville Reservoir, a U.S. Army Corps of Engineers project located in the Kaskaskia Valley north of the terminal moraine of the Wisconsin glaciation. Most of these sites are small villages, but four sites include mounds. Fifteen radiocarbon dates show that the Mississippian occupation lasted from AD 1000-1500. Recently completed ceramic and lithic analyses indicate that this Mississippian variant is closely related to the Vicennes culture of the Wabash Valley, but some interaction with Cahokia is also indicated. (6)

Morenon, E. Pierre (Rhode Island, Providence) ENVIRONMENTAL DIVERSITY AND PREHISTORIC SITE LOCATIONS: RHODE ISLAND CASE STUDIES. Predicting prehistoric site locations in homogeneous environments or in regions where critical resources are abundant and evenly distributed is difficult. Expected relationships between a number of resources (fresh and salt water, soil fertility as well as plant and wildlife potential) typical to Rhode Island and the Narragansett Basin are evaluated. This control information, representative of the present environmental diversity in this area, is compared to similar information for site locations derived from a variety of sources, including avocational site records, Historical Preservation files, large highway and small contract project site information. Conclusions about regional survey methods and native American uses of the Narragansett Basin are presented. (50)

Moseley, Michael (Field Museum of Natural History) and James B. Richardson III (Carnegie Museum of Natural History/Pittsburg) FISHING VS. FARMING IN THE PERUVIAN PRECERAMIC. Recently, various authors have argued that a maritime economy could not support the level of complexity reflected in late Preceramic sites on the Peruvian coast. The direct evidence for a maritime economic system and the lack of evidence for a major agricultural component during the Preceramic is stressed. This is placed within the context of a changing Holocene environment. The implications of recent evidence for a radical shift in climate pre-5000 BP for understanding the origin of maritime societies are discussed. (44)

Most, Rachel and A. Trinkle Jones (Arizona State) ADAPTATION AND ENVIRONMENTAL DIVERSITY. It is hypothesized that the relative diversity of an environment affects the location of different site types in relation to arable land. SARG data sets from Tijeras Canyon, New Mexico, and Black Mesa and Long House Valley, Arizona, are used. An environmental diversity measure which is independent of site data is developed and used to rank the test areas. Data on arable land and site type are inspected and measures taken to insure comparability. Finally, changes in the uses of arable land for each site type through time are compared between areas. (16)

Mujica, Elias (see Wheeler, Jane C.) (46)

Mulholland, Mitchell T. (Massachusetts, Amherst) COMPUTER ENHANCEMENT OF EXTANT ARCHAEOLOGICAL SITE RECORDS. In a regional study of southern New England, computer enhancement techniques were used to increase the analytical value of extant prehistoric site

records. Data from over 5,000 sites were researched from professional and public archives, cultural resource management surveys, museums, historical documents and amateur records. Using mapped environmental data, 40 additional variables were added to the site data base. These included climatic data, pollen isopols, geological variables and forest data. Computer-generated site distributional maps were produced and used to evaluate several stereotypical assumptions concerning prehistoric cultural behavior which have been traditionally projected from local observations to the regional picture. (35)

Mulholland, S. (see Rapp, G., Jr.) (51)

Muller, J. and J. Stephens (Illinois, Carbondale) MISSISSIPPIAN AND ITS FRONTIERS. A unitary concept of Mississippian has obscured the variation in social and economic organization of Mississippian societies. A more profitable approach to understanding Mississippian societies is to examine them in terms of the local environmental conditions that led to their development. Northern Mississippian societies show patterns that are significantly different in scale and organization from more "central" Mississippian societies. Eastern Mississippian societies in Tennessee and Kentucky are also distinct from the Mississippian societies of the Ohio and Lower Mississippi valleys. Some hypotheses about Mississippian variation and local environments are presented and related to differences in settlement pattern and organization. (6)

Munsell, D.A. and L.V. Salo (U.S. Army Corps of Engineers) YOU BET THE RENT ON A 0.2 PER-CENT SAMPLE!? In 1977 and 1978, the U.S. Army Corps of Engineers, Seattle District, sponsored a National Register eligibility testing program for prehistoric sites at the Chief Joseph Dam project in north-central Washington. The program estimated the cost of data recovery at 18 prehistoric habitation sites. But the data recovery fieldwork proved that analysis and reporting costs had been underestimated by about half. Quantities of recovered artifacts greatly exceeded projections from survey counts. This variance may be the result of low sampling intensity and small cell size in the face of clustered artifact dispersion. Implications of these findings for testing programs designed to develop data recovery estimates are explored. (36)

Munson, Cheryl Ann (Indiana, Bloomington) VARIATION IN REGIONAL SETTLEMENT ORGANIZATION AND COMMUNITY BEHAVIORS: A COMPARISON OF THE MISSISSIPPIAN ANGEL AND CABORN-WELBORN PHASES. Hierarchical settlement types (town, large village, small village and hamlet) are compared and contrasted for two Mississippian phases in the Lower Ohio Valley. Differences in community plans, the presence of mound constructions, defensive constructions, mortuary behavior and materials indicative of interregional exchange are noted for different settlement types of the Angel phase (AD 1050-1450), which has been characterized as having a nucleated settlement pattern and the Caborn-Welborn phase (AD 1400-1700), which has a dispersed regional settlement pattern. (6)

Muto, Guy R. (D&M Enterprises) GEOSCIENCE PERSPECTIVES ALONG THE UPPER TOMBIGBEE. Preliminary investigations of fluvial geology, soil stratigraphy, soil morphology, pollen stratigraphy, paleontology and fluvial dynamics show the nature of past macroenvironments and illustrate the nature of change in the upper reaches of this fluvial regimen. A sequence of over 10,000 years is developed and several explanations for conflicting lines of evidence are explored. The structure and function of multidisciplinary teams are explored. (26)

Myers, Emlen (Binghamton) INHERENT PRODUCTION RATES OF POTTERY MANUFACTURING TECHNIQUES AND THEIR USE IN SOCIAL INFERENCE. Recent ethnographic work on traditional potters of Morocco provides information on production rates which are possible with hand-coiling and with wheel-assisted pottery manufacture. Used in combination with inferred consumption rates and historically known transport conditions, knowledge of the production rates allows for the construction of a production-distribution model which accounts for the existence and distribution in space of both the hand and the wheel techniques in medieval Morocco. Twelfth through 15th century Islamic commonware pottery from the site of Qsar es-Seghir provides the archaeological data base. Implications for a general understanding of the transformation of hand-building into wheel-throwing industries are discussed. (12)

Nagle, Christopher (Brandeis) LITHIC RAW MATERIALS PROCUREMENT AND EXCHANGE IN DORSET CULTURE ALONG THE LABRADOR COAST. The Dorset Paleo-Eskimo inhabitants of Labrador, from 2500 to 600 BP, employed various lithic materials in their technological repertoire. Results of an investigation of the joint distributional patterns of cherts, soapstone, nephritic jade, schist and quartz from sites in the region are presented. The pattern exhibited by each material is analyzed in the context of distance to geologic source, manufacturing processes, site function and other potential social or ideological determinants. This information provides the background for evaluating the existence of exchange networks and the relative usefulness of utilitarian and social explanations in understanding Dorset lithic procurement strategies. (43)

Nance, C. Roger (Alabama, Birmingham), Harry Holstein (Jacksonville State) and David C. Hurst (Alabama, Birmingham) EVALUATION OF MULTIPLE REGRESSION MODELS PREDICTING ARCHAEOLOGICAL SITE DISTRIBUTIONS AT FORT McCLELLAN, ALABAMA. A cultural resource management plan for Fort McClellan, Alabama, was based on predictions generated from multiple regression analysis of the numbers of sites per unit and the inventories of four classes of artifacts per unit after a detailed survey of 47 units, each 1 km square (approximately 30% of the fort). Predictors include various topographic, geologic and other environmental variables obtained for all survey units in the fort. Subsequently, eight additional units were surveyed and the regression models were tested through comparison of predicted vs. field-derived values. (50)

Neitzel, Jill and Jeffrey Hantman (Arizona State) AN EVALUATION OF DEMOGRAPHIC RECONSTRUCTIONS ON THE COLORADO PLATEAU. The dominant research emphasis of SARG has been the impact of change in the natural environment on patterns of land use and demography. The analytical techniques employed to monitor environmental change are perhaps unparalleled in terms of their sophistication and precision. However, the same cannot be said for control of unique archaeological variables, particularly those of chronology and population reconstructions. This paper presents revised population curves for three SARG areas which are based on replicable and more precise chronological methods and concepts. These curves are then used to reassess the degree to which patterns of demographic change are related to environmental fluctuations. (16)

Netherly, P.J. (Amherst) WANDERING SHELLFISH: NEW INSIGHTS INTO INTRAREGIONAL DISTRIBUTION NETWORKS FROM SOUTHEASTERN COASTAL ECUADOR. Edible mollusks from mangrove swamps that once lined the arc of the Gulf of Guayaquil, were an easily harvested, abundant and constant human food resource. In 1978, site rescue efforts in the Arenillas Valley and portions of the Zarumilla Valley identified over 525 sites, several of which were tested. Systematic excavation was conducted in 1982-83. Surprisingly, a number of these inland riverine sites, ca. 15-45 km from the coast, have extensive shell middens of the Chorrera-Jambeli and early Jambeli period. Extensive circulation of shellfish and presumably pelagic fish reflects an episode of socioeconomic and perhaps political cohesion for this area. (46)

Neusius, Phillip D. (Dolores Archaeological Program) CHANGING USE OF ANASAZI PIT STRUCTURES IN THE DOLORES RIVER VALLEY: A MICROWEAR PERSPECTIVE. Pit structure utilization changed considerably during the Anasazi tradition in the Dolores River Valley. During the earlier Basketmaker periods the pit structure was used as a primary habitation facility. In the later Pueblo periods there was an increase in residential density which resulted in the need for integrative mechanisms. Pit structures came to be used as facilities for institutions having integrative functions. Microwear analysis of the functional variability in flaked lithic assemblages from pit structures occupied during these periods provides an interesting test of assumptions about the changing use of these facilities. (24)

Newman, Jay R. (Southern Methodist) NORTHERN RIO GRANDE PATTERNS OF LITHIC PROCUREMENT AND USE. Lithic procurement in the northern Rio Grande encompasses several distinct varieties of raw materials, including Taos Plateau volcanics (five rhyodacite localities), Taos Range volcanics (pink and gray rhyolites), Jemez Mountains obsidians (Polvadera Peak and Cerro Toledo rhyolites), Grants obsidian, Cerro Pedernal chalcedony and local Taos-area cherts and quartzites. Data from Taos Plateau and northern Jemez quarry sites are presented. Lithic utilization is analyzed and compared for Pot Creek (Mound 4, ca. AD 1275) and Sagebrush Pueblos and for Cerrita, a smaller multicomponent site (ca. AD 1100). Regional lithic procurement systems are outlined and temporal intrasite and intersite patterning are examined. (29)

Nichols, Deborah L. and Shirley Powell (Southern Illinois) PHYSICAL ENVIRONMENT, TECHNOLOGY AND CULTURAL CHANGE: THE BLACK MESA ANASAZI. Cultural evolutionary theory predicts a variety of behavioral responses to environmental uncertainty and perceptions of risk. Data from Black Mesa, northeastern Arizona, are used to characterize the physical and social environment experienced by the Anasazi occupants of the region. Technological and organizational responses to variation in this environmental setting are assessed. (24)

Nickens, Paul R. (see Chandler, Susan M.) (50)

Noble, Vergil E. (Michigan State) FUNCTIONAL CLASSIFICATION AND INTRASITE RESEARCH IN HISTORICAL ARCHAEOLOGY. During the past decade, several attempts have been made to impart order to the vast material culture of the Historic period (e.g., those of Stone, South and, most recently, Sprague). Although these classification schemes differ in many respects, each employs functional categories to organize the data. Further, their utility is limited to such purposes as intersite comparison and systematic description. Problems inherent in functional classifications are discussed with regard to the complexities of human behavior and ar-

archaeological deposition. An alternative approach to the problem, employing intrasite distributional analyses, is proposed. (49)

Nurkin, G. H. (Nassau County) **THE CONSERVATION OF ARCHAEOLOGICAL RESOURCES IN THE UPPER MISSISSIPPI RIVER VALLEY.** The statutory framework developed for the conservation of archaeological resources is dependent upon the interrelationship between federal and state legislation. Although these laws were primarily enacted to regulate the excavation and the removal of archaeological artifacts, they do not effectively protect archaeological resources from the activities of landowners or developers. State statutes enacted within a five-state region illustrate the inherent problem in conserving archaeological resources on a state level. The ineffectiveness of this framework derives from its failure to analyze archaeological resources within a regional setting. National archaeological legislation provides the effective protection for the nation's archaeological heritage. (28)

O'Brien, Patricia J. (Kansas State) **CULTURAL TAXONOMY: CAHOKIA AND THE CHIEFDOM.** Modern cultural evolutionary theory is dominated by the band-tribe-chiefdom-state paradigm. The concept of the chieftom has been applied to Poverty Point, Hopewell and Middle Mississippian. The implications of this use of the chieftom concept for three structurally different systems reveal either: 1) the meaningless of the concept and a major flaw in the band-tribe-chieftom-state paradigm; 2) one of them is a chieftom and the other two are something else; or 3) they are all complex ranked systems requiring taxa enlargement. This dilemma can be resolved through the use of Steward's concept of the cross-cultural type. The more complex taxonomic system generated will allow the development of a different model of cultural evolutionary theory. Cahokia is an example of what is called "Ramey Society." (6)

Oetelaar, G. (see Hargrave, M.) (33)

Oliver, J.S. (Institute for Quaternary Studies) **SHIELD TRAP CAVE: AN ANALOGUE FOR THE INTERPRETATION OF CAVE FAUNAS.** Shield Trap Cave (24CB91) is a stratified pit cave located in the Pryor Mountains of Montana. The physical, subterranean isolation of this animal trap from the surface ecosystem restricts the taphonomic processes at work to primarily geological processes and eliminates cultural and most biological activity. Thus, the trap is ideally suited for constructing analogues of geological processes active in caves and their effects on cave faunas. Preliminary analyses indicate that isolated, individual bone modifications created by the active geological processes are similar to modifications created by both man and carnivores, though the overall patterning of damages is distinct. (57)

Oliver, S. G. (see Low, R.) (40)

Oliver, S. G. (see Reinhart, R.) (40)

Olsen, Stanley J. (Arizona, Tucson) **THE HORSE IN ANCIENT CHINA.** Equids had their beginnings in the Eocene of North America. By the close of the Pleistocene they had spread throughout much of the world. The horse, depicted in the Paleolithic cave paintings of Europe is strikingly similar to the later Przewalski's horse of the Asian Steppes. This small, native horse of Mongolia and China was crossed with the larger western horses that were introduced into China by way of the Silk Route, eventually resulting in the animals commonly depicted in later Chinese art. Most of the newer and more important archaeological discoveries relating to the use of the horse by the Chinese were unavailable to outside workers before the 1970s. These data are included. (57)

O'Rourke, M. K. (Arizona) **ADOBE BRICK: A HISTORIC SOURCE.** Adobe bricks were analyzed for pollen content from three historic structures in Tucson, Arizona. The Elias house utilized manure and straw as temper in the adobe brick. Pollen contained in this material was 75% grass, accounting for grass pollen found in the adobe brick. The Brockman house, built in two phases, containing pollen consistent by type and amount within a single building phase, but variable between them. Pollen from a single building at Fort Lowell yielded no useful information, but mineral content of the adobe brick varied from that of the other two buildings, suggesting provenience of brick fabrication. (8)

Orquera, Luis (Asociacion de Investigaciones Antropologicas) and Ernesto Piana (CADIC) **PREHISTORIC MARITIME ADAPTATION AT THE MEGALLANIC-FUEGIAN LITTORAL.** Principal archaeological manifestations of this study area include the Englefield, Bahia Buena, Punta Santa Ana, Lancha Packewaia and Tunel sites. Maritime adaptation is present from at least 6000 BP. Several field seasons at the last two sites suggest that a littoral adaptation here is present from 6150 BP. Thereafter, a relatively stable littoral adaptation can be traced through four components up to contact. Some important ecological changes occurred, but they do not imply different economic adaptations. Reasons for this long-term regional stability are discussed. (44)

Pailes, R. A. (see Whitecotton, J. W.) (45)

Parker, S. (Arkansas Archeological Survey) **A COMPARISON OF STATISTICAL METHODS USED IN PREDICTIVE SITE LOCATION MODELS.** In the last few years, various applications of predictive locational modeling of archaeological sites have been attempted in a variety of environmental settings, utilizing a number of different statistical methodologies. The approaches have included multiple regression, logistic regression, discriminant function analysis, as well as such techniques as trend surface analysis and Kriging. The methodologies are compared as to their respective data bases, weaknesses and strengths, resulting output and appropriateness for archaeological data. (50)

Parry, William J. (Michigan) **PROCUREMENT, PRODUCTION AND USE OF CHIPPED STONE TOOLS IN AN EARLY FORMATIVE VILLAGE.** Chipped stone artifacts from 15 excavated early Formative households at San José Mogote, a large village site in Oaxaca, Mexico, have been analyzed. The analysis shows that households were organized in three or more larger units, possibly corporate descent groups. Households within each unit cooperated in procurement of lithic materials and shared parttime craft specializations. Every household produced flake tools, but bifaces were manufactured only by specialists. Other craft specialties are inferred through functional analysis of the stone tools. (11)

Patay, Pál (Hungarian National Museum, Budapest) **SOCIAL STRUCTURE OF THE COPPER AGE IN THE CARPATHIAN BASIN.** The most thoroughly researched prehistoric inhabitants of the Carpathian Basin are those who lived in the middle plain area of the Basin in the Middle Copper Age. To date, 800 graves from this period and area have been excavated. Burial customs have been observed and studied. The results of these studies allow the reconsideration of some questions concerning the Middle Copper Age social system: division into tribes, divisions within the tribes according to ranks and professions, number of people living in the communities, relations between women and men, grown-ups and children, etc. Recent excavations provide data useful for the student of settlement form. (3)

Pearsall, Deborah M. (Missouri, Columbia) **THE PEÑON DEL RIO PROJECT: APPLICATION OF PHYTOLITH ANALYSIS TO THE STUDY OF RAISED FIELD AGRICULTURE IN THE GUAYAS BASIN, ECUADOR.** Research at the Peñon del Rio site and its system of raised agricultural fields by the Escuela Politécnica del Litoral provides an opportunity to test the utility of phytolith analysis in reconstructing the nature and development of an intensive agricultural system. This research can be discussed from four viewpoints: 1) research design; 2) sampling strategies in residential and field areas; 3) preliminary results of soil and comparative analyses; and 4) evaluation of the utility of phytolith analysis in agricultural reconstruction. (39)

Pearsall, D. (see Rapp, G., Jr.) (51)

Pebbles, T. C. (Northern Arizona) and Anne G. Hummer (Metcalf-Zier Archaeologists) **DISCRIMINANT ANALYSIS IN SITE PREDICTIVE MODELS: PROBLEMS AND PROSPECTS.** Based on the experience of producing four site location models, perceived limitations are outlined. The models are based on sample surveys of the Eastern Powder River Basin, The Bear River Divide, the Green River Basin and the Washakie Basin of Wyoming. Focus is on how and why these models work or do not work. Specific areas covered include variables selection and measurement, sampling procedures and minimum site population. Suggestions which may help alleviate some of these problems are presented. (50)

Peter, K. J. (Washington State) **MULTIPHASE SAMPLING AND DETERMINATION OF ECONOMIC ACTIVITIES: AN EXAMPLE FROM THE HOKO RIVER ROCKSHELTER.** The Hoko River Rockshelter, as the only rockshelter/habitation site of its size thus far discovered on the Northwest Coast of North America, represents a unique site for the region. The site is characterized by thick (3-4 m) cultural deposits consisting of both occupational surfaces and an extensive midden. To test simulation models predicting economic decision making patterns against the archaeological record, a multiphase sampling and collection strategy was employed. Ranging from trench excavations to auger transects, each phase of this strategy provides distinct, but complementary information indicative of economic activities manifested at the site. (42)

Petersen, James B. (Pittsburgh) and Marjory W. Power (Vermont) **A MIDDLE WOODLAND EXCHANGE NETWORK IN NORTHERN NEW ENGLAND.** A model of prehistoric exchange in northern New England and the wider Northeast is presented for the Middle Woodland period, ca. 100 BC to AD 1000. A Middle Woodland exchange network is reconstructed, and mechanisms for this network are hypothesized using lithic data from the stratified, multicomponent Winooski site, located in the Lake Champlain drainage of northwestern Vermont. Changes in this network, whereby the availability of nonlocal raw materials was greatly reduced, are explained in the con-

text of evolving cultural boundaries in the terminal Middle Woodland period, ca. AD 900 to 1000. (4)

Petersen, J. B. (see Doyle, R. A., Jr.) (4)

Petry, D. E. (Mississippi State) PALEOSOL/CULTURAL RELATIONSHIPS IN THE TOMBIGBEE FLOOD PLAIN OF NORTHEAST MISSISSIPPI: A PEDOLOGICAL PERSPECTIVE. Pedological studies of cultural sites in the Tombigbee River flood plain have revealed well-developed paleosols and unique soil morphology related to prolonged cultural disturbance. Paleosols and unique soil morphology related to prolonged cultural disturbance. Paleosols buried by fluvial sediments indicate discrete periods of pedogenic stability in a current fluvial environment. Previous surface horizons of occupation superjacent to the paleosols have been buried by fluvial sediments. These soils are readily distinguished by thick, humus rich, dark reddish-brown epipedons (surfaces) which resulted from prolonged habitation and cultural activity. The morphological expressions of the buried soils reveal conditions prevailing during a discrete time period in contrast to soil exposed on residual features which reflect cumulative effects. (26)

Phagan, Carl J. and Edward R. Maloney (Dolores Archaeological Program) FLAKED LITHIC TOOLKIT COST: A METHOD FOR RELATIVE MEASUREMENT. An economic approach to understanding prehistoric subsistence systems requires some method of monitoring and evaluating various aspects of system cost. This paper presents a method for measuring the relative costs of raw material procurement and production technology for the flaked lithic component of tool assemblages. These two aspects of toolkit cost are evaluated separately and in combination for 80 Anasazi sites from the Dolores Archaeological Program. Toolkit cost variability is associated with temporal and organizational development during the period AD 600-900. (43)

Piana, Ernesto (see Orquera, Luis) (44)

Pinsky, Valerie (Cambridge) ARCHAEOLOGY AND CRITIQUE: IMPLICATIONS FOR UNDERSTANDING DISCIPLINARY CHANGE IN AMERICAN ARCHAEOLOGY. Despite scepticism about the relevance of philosophical discourse to archaeological practice, philosophy of science has a crucial role to play in providing a critical and historical framework within which to define disciplinary objectives and an aligned methodology. In order to rectify the limitations imposed here by positivist-derived frameworks, a critical, historically sensitive "postempiricist" philosophical framework is elaborated and the commitment to anthropological objectives examined in light of this framework. (32)

Piperno, Dolores R. (Temple) A COMPARISON AND DIFFERENTIATION OF MAIZE AND WILD GRASS PHYTOLITHS: USE OF MORPHOLOGICAL CRITERIA. Morphological and size characteristics of cross-shaped phytoliths from maize (*Zea mays* L.) are compared to those from 50 wild grasses. A few species of wild grasses have phytoliths as large as maize. The three-dimensional configurations of cross-shaped phytoliths from maize, however, are different from many wild grasses including those with large phytoliths. It appears that a combination of phytolith size and morphological criteria can identify archaeological maize. These criteria are applied to prehistoric deposits from Panama to identify maize in two sites containing Monagrillo ceramics. (39)

Plog, Fred (New Mexico State) and Dee Green (U.S. Forest Service) EXPLAINING REGIONAL VARIABILITY IN THE PREHISTORIC PLATEAU SOUTHWEST. The SARG data base documents a pattern of substantial interregional variation in the timing of major prehistoric cultural events. The periods of time during which population increased, high population densities, evidence of hierarchical settlements, the use of water and soil control devices, etc., are summarized for different regions. Explanations for the varied timing of these events are evaluated in relation to the environmental setting of the different regions, changes in the magnitude of environmental risk and the development of exchange and alliance systems linking different regions. (16)

Pollack, David and A. Gwynn Henderson (Kentucky, Lexington) CONTACT PERIOD DEVELOPMENTS IN THE MIDDLE OHIO VALLEY. Contact period artifacts and their contexts from Hardin Village (15Gp22) and Lower Shawneetown (15Gp15), two Contact period village sites located in Greenup County, Kentucky, are compared and contrasted to illustrate aspects of material culture change that took place in the Middle Ohio Valley from ca. AD 1650 to 1750. The nature of these changes are examined for the information they may provide on acculturation processes. (49)

Pollock, S. G. (Southern, Maine) DISTRIBUTION AND ORIGIN OF CHERT IN THE MUNSUNGUN LAKE FORMATION, NORTHERN MAINE. Bedded chert occurs as a subsidiary but prominent sedimentary facies in the dominantly volcanic and volcanic/clastic formation. The color of the chert varies but is mostly red and gray; it occurs as cryptocrystalline, color-laminated and color-

mottled units 10 m-12 m thick. Thin beds of cherts are interbedded with lithic wacke; these sequences are commonly several tens of meters thick. The cherts occur at different stratigraphic horizons and are laterally persistent over variable distances. The origin of these cherts is presumably a reflection of depositional environment, biological productivity, sea water chemistry and diagenesis. (40)

Potter, Parker B. (Brown) TEXT AND CONTEXT: THE MEANING OF CERAMICS IN 19TH CENTURY ROCKBRIDGE COUNTY, VIRGINIA. In using ceramic artifacts and the historical documents necessary to assign values (economic or otherwise) to particular attributes of ceramic items, historical archaeologists often lose sight of the larger behavioral or systemic context of which ceramic items were formerly a part. The paper shows how textual analysis of historical documents (rather than a search for "objective" inventories of objects and attributes) demonstrates the small part played by ceramics in the lives of 19th century residents of Rockbridge County, Virginia. Further, the paper proposes an analytical framework that accords ceramic artifacts a degree of analytical weight commensurate with their place in any particular economic system of the historical past. (49)

Powell, Mary L. (Northwestern) THE PEOPLE OF NODENA, A LATE MISSISSIPPIAN COMMUNITY IN NORTHEAST ARKANSAS. The Nodena skeletal series, excavated a half century ago, represents one of the largest population samples (N = 228) available from a complex chiefdom in the southeast United States on the eve of the DeSoto entrada (ca. AD 1350-1500). In the present work, osteological analysis focuses upon adult cranial and dental features, due to the nature of the series. Population-specific discriminant functions are derived from cranial, mandibular and dental metric data to aid in future analyses of neighboring series. The Nodenans, like other well-acculturated "heartland" Mississippians in Alabama, exhibit fewer dental pathologies and severe developmental disturbances than contemporaneous horticulturalists in more marginal environments in Ohio and Illinois, suggesting that the biological "cost" of the Mississippian lifeway was not uniform throughout the eastern woodlands. (22)

Powell, Shirley (see Cordell, Linda S.) (16)

Powell, Shirley (see Nichols, Deborah L.) (24)

Power, Marjory W. (see Petersen, James B.) (4)

Prentice, Guy and George R. Milner (Illinois, Urbana) HOUSEHOLD PRODUCTION FOR TRADE IN THE ARCHAEOLOGICAL RECORD: EVIDENCE FOR COTTAGE INDUSTRIES IN SOUTHWESTERN ILLINOIS. Recent excavations of prehistoric Mississippian period features comprising single-family habitation units (households) in the American Bottom, Illinois, provide evidence for parttime manufacturing of trade items at the household level. The bases for the identification of such industries at the household level are presented and are compared with evidence for craft specialization at the large town-and-mound centers of the American Bottom. The possible social, political and economic factors supporting cottage industries in Mississippian society are also discussed. (33)

Prewitt, Elton R. (Prewitt and Associates) and Joel Gunn (Texas, San Antonio) HOLOCENE CLIMATE AND THE CENTRAL TEXAS CHRONOLOGY. A new, high-resolution cultural chronology for central Texas is correlated with the Holocene climatic sequence. Central Texas is on the prairie forest ecotone of North America and is therefore very sensitive to minor climatic excursions. The information load and population densities of various phases correspond to projected climatic periods so strongly as to suggest a high degree of climatic influence on central Texas culture history. Of particular interest is the Round Rock phase which indicates a major population increase during a warm and moist interval. (37)

Price, T. Douglas and Melissa Connor (Wisconsin, Madison) STRONTIUM DISCRIMINATION IN WHITE-TAILED DEER. Reconstruction of prehistoric human diets through the analysis of trace elements in human bone has been hampered by the absence of: 1) comparability among different locales; and 2) a standard for determining the range in local environmental strontium. Ion-coupled plasma atomic emission spectrometry is used to determine parts per million for eight elements in bone samples from 53 deer in south-central Wisconsin. Dietary strontium is determined by analysis of plant materials from the same area. This information is used to infer prehistoric strontium levels in the environment. In addition, the use of strontium levels in white-tailed deer provides a base for comparison with human skeletal materials from the eastern United States. The study provides an important refinement in methods of dietary reconstruction. (57)

Prinz, Beth (Carlow) USING LITHICS TO RECOGNIZE CULTURAL CONTINUITY: AN APPLICATION TO THE BALKAN MESOLITHIC-NEOLITHIC. Reduction strategy is an aspect of lithic

technology which can arguably be called style. The "style" in which stone tools are produced is independent of intended function and can therefore reflect cultural (and population) continuity bridging major and rapid economic transformations. Technological style, as reflected in stone tools, supports the hypothesis of population and cultural continuity from Mesolithic to Neolithic in the Lower Danube Valley. The developed method generally should be applicable for testing whether different lithic assemblages were produced by the "same" or different people. (43)

Proctor-Weiss, Rebecca (Washington, St. Louis) NORTHERN RIO GRANDE PAINTED WARES: A REEVALUATION. Painted wares recovered from northern Rio Grande sites represent a ceramic tradition beginning ca. AD 950 and include local Kwahe'e Black/White and Santa Fe Black/White as well as introduced red wares and polychromes such as Wingate and St. John. The Black/White ware chronology was essentially developed in the Middle Rio Grande and may not be appropriate or even temporally equivalent to events in the north. Examination of the frequency of types and their temporal distribution within stratified and surface contexts suggests an alternative scheme for the northern Rio Grande Black/White ceramic assemblage. (29)

Provost, P.J. (see Beynon, D.E.) (33)

Purdue, J.R. (see Styles, B.W.) (23)

Purdy, Barbara A. (Florida, Gainesville) RESPONSIBILITIES OF EXCAVATING ARCHAEOLOGICAL WET SITES. Archaeological wet sites that contain nearly complete representative samples of plant and animal remains are rare. Most archaeologists are not trained to excavate these sites, nor do they know how to process or conserve the fragile organic specimens recovered. This paper discusses the excavation, conservation and analytical methods employed in studying artifactual and biological materials from Hontoon Island, Volusia County, Florida. Using these procedures, one can undertake excavations at water-saturated sites without destroying the valuable information they contain. (34)

Quilter, Jeffrey (Ripon) CERRO MEDIA LUNA AND CULTURAL PROCESSES IN THE LOWER CHILLON VALLEY, PERU. The first phase of a long-term study of the Lower Chillon Valley has concentrated work at the temple site of Cerro Media Luna. Previously thought to date to the Preceramic period, the site was primarily used during the early intermediate period (Lima 4-5). The shift in major site locations from El Paraiso to Cerro Culebras to Castillo El Palmo and Media Luna is discussed in terms of changing economic and political processes on the central coast. (46)

Quitmyer, I.R. (Florida State Museum) PREHISTORIC ADAPTATIONS TO ESTUARINE SYSTEMS AT KING'S BAY, GEORGIA. Analysis of ethnozoological materials from King's Bay, Georgia, illustrates little change in subsistence strategies from AD 200 to European contact. Analysis of faunal remains recovered with fine screen demonstrates that subsistence strategies relied heavily upon estuarine resources. A large portion of the meat diet was obtained from invertebrates, but vertebrates from the estuary also figured into the acquisition of resources. Preliminary analysis of annual growth lines of the clam *Mercentaria mercenaria* enables one to predict season of exploitation and perhaps season of site occupation. This inquiry illustrates that humans were taking advantage of high biomass organisms which occur on a seasonal basis. (1)

Quitmyer, I.R. (see Wing, E.S.) (1)

Raffensperger, Carolyn (Dolores Archaeological Program) ANASAZI RITUAL DURING PUEBLO I: THE DOLORES EXAMPLE. The Anasazi ritual system is described and analyzed as it changed through time. The primary data set is from the northern Anasazi inhabiting the Dolores River Valley during Pueblo I. Ritual architecture and artifacts reflect both Anasazi ideology and social organization. It appears that ideology remained stable while social organization underwent rapid, dramatic change from AD 800-900. It is suggested that these changes are related to increases in both population and climatic instability. (24)

Ramenofsky, Ann F. (Washington) THE INTRODUCTION OF EUROPEAN DISEASE AND ABORIGINAL POPULATION COLLAPSE. Because European disease could have spread between native groups independently of Europeans, population structures could have drastically altered prior to documentation and sustained European presence. The archaeological record is, thus, an appropriate vehicle for examining the controversial issues of the timing and magnitude of appropriate population loss from the introduction of infectious disease. Ordinal trends in regional aboriginal population loss from the introduction of settlement records from central New York, the Lower Mississippi Valley and the Middle Missouri, demonstrate a catastrophic population loss that precedes regional colonizing efforts. The nature of the collapse requires that archaeologists reevaluate their use of the historic record. (22)

Ramirez, Constance Werner (Headquarters, Department of the Army, Office of the Chief Engineer, Washington, D.C.) THE ARMY AND ARCHAEOLOGY. The Department of the Army has been developing an historic preservation planning policy to meet the requirements of the National Historic Preservation Act of 1966, as amended. This policy seeks to incorporate the protection of significant archaeological sites into the military mission and the Army's land-use policy. Army regulations define the planning components and sequences of activities that lead to: 1) legally and scientifically responsible scopes of work; 2) archaeology performance standards; and 3) education of Army staff to archaeological values. The Army's goal is to achieve compliance with public laws through the implementation of land management strategies appropriate to the significance of identified or predicted sites and cultural systems and to the specific impact of Army activities upon those cultural resources. (13)

Rapp, G., Jr. (Minnesota), S. Mulholland (Minnesota), L. Kaplan (Boston), D. Pearsall (Missouri), E. Coughlin (Harvard) and I. Rovner (North Carolina State) PROBLEMS OF THE APPLICATION OF PHYTOLITH ANALYSES TO ARCHAEOLOGY. Phytolith analyses have significant potential in environmental and agricultural reconstructions. Among the major problems facing researchers are: 1) the lack of an adequate morphological classification of phytoliths and a common system for description of phytolith morphology; 2) the need for a better understanding of morphological variation; 3) statistical methods for complex phytolith assemblages in archaeological sediments; 4) a lack of knowledge about natural geographic variation in phytolith assemblages; 5) the lack of adequate reference collections and data banks; and 6) counting statistics. (51)

Rasson, J. (Wilkes) DEVELOPMENT OF AN INTERACTION SPHERE IN CENTRAL YUGOSLAVIA. The interpretation of the Bosnian-Dalmatian Neolithic can be extended to intergroup relations in stateless societies in general. Three stages of development are seen: 1) low rates of interaction seen in both trade goods and shared artifact styles (ceramics); 2) increasing rates of interaction, understood as communication through symbols; and 3) high rates of interaction in other aspects of material culture. Such interaction spheres are discussed in terms of energy costs, and their eventual replacement is explained in terms of trade-off between social complexity and maintenance of the interaction sphere. (47)

Rathje, W. L. and G. D. Stone (Arizona) DILUTION IS NOT THE SOLUTION: COMMENTS ON ARCHAEOLOGICAL THEORY AND THE PUBLIC. Although the public maintains a high level of interest in the topic of extinct cultures, anthropological archaeologists have generally failed to make accessible their most interesting ideas, and have thus allowed ideas from other disciplines as well as from pseudoscholars to gain the public ear. Archaeologists need not focus on exotic artifacts, tall tales or human interest stories to captivate the public imagination; the rephrasing of many of the issues and theories with which we are actually concerned can and should provide the basis of healthy rapport with the lay audience. Examples are given of how recent archaeological thinking on such topics as societal collapse and the rise of elites can be stated so as to be accessible yet not unduly diluted. (55)

Rathje, W.L. (see Driftwood, Col. R.F.B.) (55)

Ratray, Evelyn C. (Instituto de Investigaciones Antropologicas, UNAM) BURIAL PRACTICE AT TLAJINGA 33, TEOTIHUACAN. An analysis of the burial offerings from the controlled, large-scale excavation of a multiphase Teotihuacan apartment compound, Tlajinga 33, affords a unique opportunity to study mortuary practices in a single locus over a span of time (i.e., Early Tlamimilolpa through Early Metepec phases, AD 300-700). Variability of mortuary practice on a specific time level and shifts in mortuary practice can now be documented. Comparisons are made between practices at this low-status compound and those at La Ventilla B and Tetitla, both of which are closer to the main ceremonial center and of distinctly higher status. (30)

Read, Dwight W. (California, Los Angeles) GLOBAL FEATURES OF THE SPATIAL DISTRIBUTION OF GREAT BASIN SITES IN THE MX PROJECT AREA. The 2,000 or so sites identified from previous research in what is now the MX Project region in Utah and Nevada are used to establish broad patterns of spatial use at the level of whole social/cultural systems as represented through settlement locations. The global properties of the spatial distribution of sites in the region are identified through use of a modified Poisson distribution that compensates for lack of probabilistic sampling in the data. Site spatial distribution is interpreted through a model of site formation as a process involving repeated use of the same locality. (35)

Redding, R.W. (Michigan) OPTIMAL FORAGING MODELS AND THE ANALYSIS OF FOOD PRODUCING GROUPS. Archaeologists have made almost no attempt to employ models based on optimal foraging theory to elucidate behavior among food producers. Applications of optimal foraging models to human groups have assumed a goal (e.g., energy offtake) and tested whether the group is optimizing. A more intrusive approach with food producers is to assume they optimize

and test alternative goals. Difficulties in applying such models to food producers include: 1) group control over the abundance of the food resources; and 2) the exchange of surpluses for alternative food resources, goods and services. An example illustrates the use of optimal foraging models with food producers. (48)

Reher, Charles A. (Wyoming, Laramie) IMPLICATIONS OF A CERAMIC ASSEMBLAGE FROM THE POWDER RIVER BASIN. Although rare on the Western Plains, ceramics were one of the more common items recovered from the Wagensen site, a large stone circle village in the central Powder River Basin. The Wagensen ceramic assemblage is apparently related to ceramic traditions of the Middle Missouri River area. Preliminary analysis of the assemblage calls for a serious reappraisal of Middle Missouri-Western Plains interaction, especially with regard to the nature and date of late Prehistoric population movements. Related implications discussed involve the current debate about Western Plains Crow pottery, the date of certain ceramic attributes and the nature of grassland adaptation in general. (21)

Reid, GERAL (Massachusetts, Amherst) "... TO CUT OFF THE ARMS OF OUR ENEMIES": RETHINKING NATIVE PARTICIPATION IN THE FUR TRADE. The ecological perspective that dominates the study of hunter-gatherers in the Northeast leads to the perhaps erroneous conclusion that a breakdown of native society preceded the development of the fur trade. While local ecological relations were important, there is justification for greater emphasis on long-distance ecological interaction during prehistoric times. This paper overcomes some limitations of the ecological perspective and suggests a more complex and dynamic pattern for native society. This has important implications for understanding native participation in the fur trade. These issues are explored in a general way and with specific reference to the Montagnais. (19)

Reid, Kenneth C. (see Artz, Joe Alan) (50)

Reinhart, R. (Albany) and S.G. Oliver (Maine, Orono) THE BATHTUB SITE: AN EARLY OR MIDDLE ARCHAIC COMPONENT AT THE MUNSUNGUN-CHASE LAKES THOROUGHFARE, NORTHERN MAINE. The Bathtub site (154-17) is a workshop-habitation site situated 25 m above Munsungun Lake. Brightly colored red and green chert flakes and artifacts occur just below the forest mat in the top of a glacial till deposit. Excavations yielded diagnostic, well-made side-notched projectile points, lanceolate points, end scrapers and biface preforms. Charcoal collected from a disturbed hearth has been submitted for dating. Calcined bone fragments found in the hearth suggest small mammal procurement was practiced. (40)

Reitz, E.J. (Georgia) USE OF ESTUARINE RESOURCES BY HISTORIC PEOPLES. Analysis of zooarchaeological data from two Spanish 16th century sites indicates that use of estuarine resources was not the same at both places. St. Augustine, Florida, is located in a Carolina Province estuary, while Puerto Real, Haiti, is located in a Caribbean setting. Estuarine and terrestrial resources are different at both places, as are parameters affecting domestic livestock. These differences required adaptations in the colonial subsistence strategies. At St. Augustine, subsistence followed an aboriginal pattern while at Puerto Real it did not. These strategies are discussed in energetic terms and a predictive model for colonial coastal subsistence is offered. (1)

Renfrew, Colin (Cambridge, United Kingdom) THE SOCIAL CONTEXT OF METALLURGICAL INNOVATION. Evidence for the independent invention of copper metallurgy in southeast Europe is presented in relation to the hypothesis that early metal working in general was less a technological innovation than a social one, where demand rather than technological skill determined the pace of development. It is argued that the same is true for early working in copper and other metals in most contexts of worldwide early metallurgical development. (3)

Rensberger, B. (*Science* 82) WHAT MAKES ARCHAEOLOGY NEWS? Sixteen years as a science writer for newspapers (mainly *The New York Times*) and an editor (*Science* 82) have shown that stories on the human past are among the most popular. In a sense, the best reason for doing archaeology is to inform and enlighten the public. But not every archaeological development makes a good story. If the ancient peoples don't come alive through the words or if the old ways of life can't be related to today's, the stories won't appeal broadly. In that case, archaeologists end up only talking to themselves. (55)

Rice, D. S. (Chicago) CLASSIC TO POSTCLASSIC MAYA DEMOGRAPHIC TRANSITIONS. One of the more dramatic demographic transitions to have occurred in aboriginal Mesoamerica took place during the Classic Maya "collapse" in Peten, Guatemala. Archaeological data from a three-year program of settlement surveys in the Central Peten lakes region are presented in an effort to explicate that transition. Continuities and discontinuities in settlement densities and settlement structure from the Late Classic through Early Postclassic periods are discussed. A model is pro-

posed to explain the domestic and sociopolitical reorganization of indigenous Peten Maya populations at the close of the Classic period. (7)

Richardson, D.A. (Utah) STATUS AND RITUAL ITEMS: THE DISTRIBUTION OF HOPEWELLIAN ARTIFACTS. Two classes of nonutilitarian artifacts are defined: 1) status items, artifacts used to enhance or display the status of an individual or group; 2) ritual items, artifacts necessary in the ritual or religious activities of a society. It is argued that these two classes of artifacts will be distributed in very different ways within and between archaeological sites. Status items will be distributed very unevenly; ritual items will be distributed more evenly. The implications of these artifact distributions for the nature and purpose of exchange networks are discussed. The distribution of Hopewellian artifacts, along with supporting ethnographic data, is used to illustrate these relationships. (33)

Richardson, James B. III (Carnegie Museum of Natural History/Pittsburgh) PREHISTORY AND PALEOENVIRONMENTS OF MARTHA'S VINEYARD: SOME PRELIMINARY OBSERVATIONS. Beginning in 1981, a research program was initiated on Martha's Vineyard which to date has included: 1) the excavation of two coastal middens (Frisby-Butler and Hornblower II) dating from the Late Archaic to Late Woodland; 2) the testing of an interior Middle to Late Archaic site (Witchbrook); and 3) the evaluation of informants' collections. The presence of a few Paleoindian and Early Archaic points point to an early occupation of this land mass, with intensive occupation beginning in the Middle Archaic. The preliminary results of these investigations are placed within the context of the changing post-Pleistocene terrestrial and marine environments. (4)

Richardson, James B. III (see Moseley, Michael) (44)

Riley, C. L. (Southern Illinois, Carbondale) AN OVERVIEW OF THE GREATER SOUTHWEST IN THE PROTOHISTORIC PERIOD. Beginning around AD 1400 the greater Southwest, recovering from a period of decline and areal contraction, established a series of trade links with the High Plains, the Pacific littoral and especially with western Mesoamerica. The trade network helped stimulate a Southwestern renaissance which saw material goods and new ideas spread throughout the region. Both the renaissance and its debt to Mesoamerica can be documented in the archaeology of protohistoric sites and in the writings of 16th century Spanish explorers. The greater Southwestern frontier of Mesoamerica was eventually destroyed by introduced European epidemics and by actual Spanish conquest. (45)

Rindos, David (Illinois, Urbana) FITNESS AND ADAPTATION IN EVOLUTIONARY THEORY. Fitness and adaptation are central concepts in natural selection theory. Divergent interpretation of these concepts are examined, especially as they relate to the explanation of evolutionary change. Consideration is given the use of these concepts by major anthropological schools (including cultural evolutionism, cultural ecology, sociobiology and cultural selectionism). It is concluded that adaptation, *per se*, is a poor indicator for understanding cultural change and that a positive correlation is unlikely between genetic and cultural measures of fitness. (48)

Ringle, W. M. and E. W. Andrews, V (Tulane) FORMATIVE RESIDENCES AT KOMCHEN. In 1980, a large portion of the Middle to Late Formative Maya site of Komchen, Yucatan, was mapped and test excavated. Thin soil cover facilitated nearly total location of nonperishable structures, and Komchen was revealed as a densely settled town with some of the earliest monumental architecture in the lowlands. Data are limited almost wholly to architecture and ceramics, with few elite or trade goods. Household platforms range greatly in size, however, and seem to indicate disparities in wealth and social status. Problems include defining and delimiting households, estimating household populations, differentiating household and ceremonial architecture and interpreting changes in residential patterns through time. (7)

Riordan, Robert V. (Wright State) PROBLEMS AND PERSPECTIVES OF ENCLOSED OHIO HILLTOPS. Traditional archaeological interpretations of Ohio hilltop enclosures have viewed them as edifices built for defensive and/or ceremonial purposes by Hopewell populations. Recent research at the Pollock Works in Greene County, Ohio, is cited to illustrate suggestions that: 1) the origin of enclosures may lie in late Adena times; 2) the primary motivation for their construction was not originally defensive; and 3) excavation programs seeking to elicit function must examine both site-specific data and the local archaeological context. Construction details at Pollock are then contrasted with findings from other enclosure sites. (33)

Robbins, Carole J. (Pittsburgh) MAXIMIZING SPATIAL INFORMATION IN SAMPLES. Computer simulation of sampling strategies does not support the hypothesis that excavation schemes involving group excavation units (e.g., transects), provide better spatial data than a simple random sample. Using SIMULA, a site was "created" and then "excavated" repeatedly for each sampling strategy. Computer-generated distribution maps of the site were produced. Simple random

sampling consistently produced a clearer picture of the spatial structure of the site in addition to more accurate predictions of the contents of the site. The effectiveness of trend surface analysis in enhancing spatial information was also tested using the simulation results. (9)

Roberts, M. (Soil Systems) PUBLIC EDUCATION IN ARCHAEOLOGY: A MULTIDISCIPLINED APPROACH. Archaeologists have for years agreed that there is a real need to "let the public know what we're doing," but only in a few cases have such efforts met with resounding success. This paper explores the skills necessary for effectively communicating what we do to a wide range of audiences, through a wide range of media. Suggestions are made as to how archaeologists, through a wide range of media. Suggestions are made as to how archaeologists, audiences, through a wide range of media. Suggestions are made as to how archaeologists, audiences, through a wide range of media. Suggestions are made as to how archaeologists, audiences, through a wide range of media. (55)

Robinson, Ralph L. (Texas A&M) BIOSILICA ANALYSIS OF 40 NEW WORLD ARCHAEOLOGICAL SITES: A SUMMARY. The microscopic residues of silica accumulator biota, biosilica, have been separated from the sediments of 40 archaeological sites in the New World. Light and scanning electron microscopy was used in the analysis of the archaeological biosilica and an extensive comparative collection of modern analogues. An exotic "known" was added to samples during processing, allowing the calculation of the concentration of diagnostic biosilica types per gram and cubic centimeter of sediment. These relative frequencies were used to construct spectra and diagrams which allow comparison of biosilica assemblages, influx values and the reconstruction of environments. This paper summarizes the results of six years of research. (39)

Rogers, Anne Frazer (Western Carolina) GROUND, PECKED AND USE-MODIFIED STONE TOOLS AND LATE ARCHAIC RESOURCE UTILIZATION. Analysis of ground, pecked and use-modified stone artifacts recovered from 9PM205, a preceramic Late Archaic site, indicates selection of specific lithic materials for the manufacture of various categories of artifacts. Although some of these materials were available in the immediate area, others were procured from more distant sources. There is, however, no indication that any were obtained through trade. Results of this research support the hypothesis that the Late Archaic period was characterized by extensive knowledge of various types of resources available within a relatively restricted area and the concomitant intensive utilization of those resources. (43)

Root, Dolores (Massachusetts, Amherst) MATERIAL CULTURE AND STRATEGIES OF SOCIAL INEQUALITY IN NONSTRATIFIED SOCIETIES. Relations of inequality exist in all societies. However, there are different degrees, as well as different material and social forms of inequality. Social relations are embodied in material culture, and material culture creates, maintains, manipulates and transforms social relations. In order to expose these processes and some of the variation in the material dimensions of inequality in nonstratified societies, several axes of variation are defined and discussed. Evidence from the Late Archaic is then examined focusing on those aspects of material culture that lend insights on visibility and permanence of social identity, scale of social interactions and production of social surplus. (19)

Rosen, Arlene Miller (Chicago) PHYTOLITHS AND MARGINAL AGRICULTURE IN THE CHALCOLITHIC OF SOUTHERN ISRAEL. Phytoliths of domesticated grasses from two Chalcolithic village sites in the Israel Negev Desert indicate that intensive irrigation farming practices were probably used in this marginal agricultural environment. The phytoliths themselves come from crops which were grown in relatively moist fields. This is indirectly supported by the location of the sites on wadi terraces and by the presence of simple dams for trapping runoff water at at least one of the sites. (39)

Rosen, Steven A. (Israel Department of Antiquities) THE CULTURAL PERIPHERY: INTENSIVE ARCHAEOLOGICAL SURVEY IN THE NEGEV DESERT. Recent large-scale intensive survey of the Israeli Negev, incorporating more than 15,000 years of cultural evolution and variation, reveals a complex set of adaptations to the desert environment, including small group hunting-gathering, seminomadic pastoralism, sedentary hamlet/village farming and quasi-urbanism, based on trade and intensive runoff agriculture. The changes in subsistence, settlement and ethnic patterning were not unilinear. Neither did they stem from a single cause. The changes should be viewed as variables stemming from three main factors: 1) climatic and environmental variation; 2) technological innovation; and 3) the imposition of external social and cultural institutions. (17)

Rosenberg, R. H. (Marshall-Wythe School of Law) ARCHAEOLOGICAL RESOURCE PRESERVATION: THE ROLE OF STATE AND LOCAL GOVERNMENT. The subject of archaeological resource protection is discussed from the legal perspective and the development of public policy on both federal and state levels is traced. After examining the growth in federal statutory provisions, it is concluded that an integrated system of governmental protective efforts is needed to secure archaeological sites and artifacts. State law is analyzed to determine the scope of state involve-

ment in archaeological matters. An important role for state and local government is essential in archaeological preservation, and it is recommended that several desirable elements be adopted as state law. (28)

Rothschild, N. A. (Barnard) SPATIAL ORGANIZATION, ARCHITECTURE AND STATUS IN COLONIAL NEW YORK. Anthropologists assume that the use of space reflects social organization while archaeologists assume that house size and construction reflect wealth/status. Historical archaeologists are in a position to examine the validity of these assumptions, using documentary sources as well as archaeologically recovered materials. This paper examines these assumptions using data from colonial New Amsterdam/New York. It is hypothesized that the display of wealth in housing is related to stages in the development of the community. It is also hypothesized that spatial organization in the colony will be structured to allow the wealthy to control certain important resources. (19)

Rought, Barry (U.S. Army Corps of Engineers, Southwest Division) A MANAGEMENT PERSPECTIVE OF AN ARCHAEOLOGICAL PROGRAM IN THE CORPS OF ENGINEERS. This paper presents a synthesis of archaeological/historical activities and associated problems experienced by top management within the Southwestern Division over a 10-year period. The paper addresses the most critical concerns of management including: 1) the rationale and need for archaeological studies and preservation activities at different levels of project management; 2) budgeting for multiyear programs; and 3) contract administration, publication of findings, curation, vandalism and safety. In conclusion, it provides comments and suggestions for improvements within the Corps to assure a continuum of the needed integration of historic preservation activities with other Corps responsibilities and authority. (20)

Rouse, I. (Yale) and D. R. Watters (Carnegie Museum) ENVIRONMENTAL DIVERSITY AND MARITIME ADAPTATIONS IN THE CARIBBEAN AREA. The archaeological record indicates considerable variation occurred in the maritime elements of cultural adaptations along the mainland coasts of the Caribbean Sea, on the continental islands and on the contrasting oceanic islands of the Lesser Antilles, Greater Antilles and the Bahamas. The succession of peoples in this area, their origins and development and the processes by which they adapted to the diversity of water and land environments are reviewed. Seafaring ability and its effect upon population movements, settlement patterns, procurement strategies and exchange of local resources is emphasized. (44)

Rovner, Irwin (North Carolina State) PHYTOLITH STRATEGIES IN CULTURAL RESOURCE MANAGEMENT, SITE SURVEY, TESTING AND DETERMINATION OF SIGNIFICANCE. Many significant applications of phytolith analysis to archaeology need not wait for completion of its full potential development as a technique. Current low-level capabilities provide significant results especially when used in conjunction with complementary archeobotanical techniques. However, sampling strategies must conform to unique aspects of phytolith origin, deposition and taphonomy. Successes and shortcomings in current case studies suggest procedures in survey and testing, site evaluation and excavation. Results can contribute to assessment of site significance whether determining potential for problem-oriented projects or eligibility for National Register nominations and/or recommendations for site preservation or mitigation. (39)

Rovner, I. (see Rapp, G., Jr.) (51)

Rudolph, James L. (California, Santa Barbara) EARTHLODGES AND PLATFORM MOUNDS: CHANGING PUBLIC ARCHITECTURE IN THE SOUTHEASTERN PIEDMONT. Excavation of the 13th century Beaverdam Creek Mound (9Eb85) in the Savannah River Valley has revealed two types of ceremonial-civic architecture. The earliest public buildings at the site are two superimposed earthlodges. These were later replaced by a series of platform mounds built directly over the earthlodges. This sequence of events is repeated at various Savannah, Wilbanks and Pisgah phase centers in the Piedmont and Appalachian Summit regions. It is hypothesized that this change in public architecture is a consequence of a widespread shift toward increased sociopolitical complexity. (56)

Rue, D. J. (Penn State) AN ANALYSIS OF MICROFOSSILS FROM TEOTIHUACAN. The paper describes the palynological analysis of 16 soil samples from a residential compound at Teotihuacan (Tlajinga 33, S3W1). Most of the samples contained little in the way of statistically significant amounts of pollen, and instead contained a much higher frequency of fungal spores, wood fragments and other organic fragments. This outcome raises interesting questions concerning differential pollen preservation and frequency of deposition. One sample, which occurred within the context of a small burial vessel, contained an extremely high proportion of a thus far unidentified type of pollen which may belong to the Solanaceae family. (30)

Runnels, Curtis (Stanford) LITHICS IN COMPLEX SOCIETIES; STONE TOOL USE IN THE ANCIENT MEDITERRANEAN EMPIRES. It is often stated that the use of stone tools in the Old World declined with the introduction of metallurgy. The contrary is true. Flaked and ground stone tools were manufactured and used to modern times, but their use in ancient states has been ignored. Stone tools are key technological components in state-level societies and are linked with major economic and social changes. Examples from Egypt, the Near East, Greece and Rome and discussed, including: 1) trade in obsidian, chert and millstones; 2) the relegation of flaked stone to agriculture and to elite use; and 3) innovations in millstone technology. (11)

Rushing, M. (see Anthony, David W.) (34)

Russell, Glenn S. (California, Los Angeles) THE ORGANIZATION OF HUANCA LITHIC PRODUCTION DURING THE LATE INTERMEDIATE PERIOD AND LATE HORIZON IN THE CENTRAL HIGHLANDS OF PERU. An increase in specialization of lithic production is hypothesized as resulting from the incorporation of the Huanca cultural group into the Inca empire. Testing includes a comparative analysis of lithic production during pre-Inca and Inca periods on three sociocultural levels: 1) within households; 2) between households; and 3) between sites. Predicted indications of increasingly specialized lithic production include both change in the spatial distribution of stages in lithic reduction sequences and increased standardization of form for three lithic industries: 1) blade tools; 2) flake tools; and 3) hoes. (11)

Russell, Kenneth W. (Utah) THE UNITS OF SELECTION AND THE ARCHAEOLOGY OF COMPLEX SOCIETIES. The recent suggestion (Dunne 1980; Wenke 1981) that selection is most effective at the group rather than individual level in complex human societies is questioned. The identification of the individual as the principal unit of reproductive striving has been a major stimulus for recent advances in evolutionary theory. This emphasis would require the archaeologist to focus attention upon the relative reproductive benefits that accrue to individuals as members of complex societies in specific environments. The application of this approach is discussed by reference to empirical data on the rise of trading states from pastoral-nomadic societies in the ancient Near East. (48)

Russell, Nerissa (California, Berkeley) THE TREATMENT OF BONE AS A RAW MATERIAL IN NEOLITHIC SOUTHEAST EUROPE. Gordon Childe sees an increase in intersite diversity from early to late Neolithic in southeast Europe as reflected by ceramics, while a more recent study of bone tools argues for a decrease in economic diversity. This apparent contradiction can be resolved through an understanding of the different treatment accorded these two materials. An examination of the patterns of utilization in two sets of bone tools, one from early Neolithic Bulgaria, the other from middle-late Neolithic Serbia, helps to illuminate the economic distinction between the two periods. A comparison with stone tools reveals that economic change is not evenly reflected in different raw materials. (47)

Rust, W. (see Anthony, David W.) (34)

Sabo, G. and D. Waddell (Arkansas Archeological Survey) ADAPTATION TYPE MODELS AND SITE PREDICTION IN THE ARKANSAS OZARKS. In preparing a cultural resource overview for the Ozark-St. Francis National Forests in Arkansas, a predictive model of site locations was needed for an area where both natural environments and human adaptations have changed considerably during the past 12,000 years. Using a concept of "adaptation types" emphasizing the articulation of environmental potential and socioeconomic and technological organization, a series of models portraying successive patterns of settlement and land use in the Ozarks was defined. Cluster analysis of cultural and biophysical variables for known sites produced results supportive of the literature models, providing a basis for archaeological site prediction. (50)

Sackett, J. R. (California, Los Angeles) AN ALTERNATIVE APPROACH TO BURIN SYSTEMATICS. An attribute analysis of Upper Paleolithic industries from the open-air site of Solvieux presents interesting contrasts to conventional "Bordesian" artifact typology. This work has led to the design of a new system of burin classification which, in comparison to the established one, affords greater consistency in coding as well as enhanced flexibility in incorporating and evaluating aspects of formal variation that are conventionally ignored. Among other things, use of this system casts new light on the role played by mechanical contingencies in determining many of the common, if often deceptive, observations that are customarily made in comparing burin assemblages. (58)

Saitta, Dean J. (Massachusetts, Amherst) THEORIES OF "TRIBAL" SOCIAL PROCESS: PROBLEMS AND ALTERNATIVES. Archaeologists on both sides of the Atlantic have been struggling of late with several different theories of process and change in "tribal" social networks. Among these are two competing theories which treat societies as "adaptive systems" and "reproductive

totalities," respectively. This paper: 1) examines the kinds of knowledge produced by these different theories and their consequences for social science; 2) discusses the distinctive theoretical properties of an alternative approach to "tribal" social dynamics which takes as its conceptual starting point the extraction and distribution of social surpluses; and 3) spells out how this alternative approach might be applied archaeologically, using case material from the North American and European Neolithic to illustrate. (3)

Salmon, M. H. (Pittsburgh) THE PRINCIPLE OF EFFICIENCY. To reconstruct prehistoric behavior, archaeologists infer physical activity from material remains and then infer the meaning of the activity in terms of beliefs, attitudes and desires. The latter inference is often guided by a "principle of efficiency." The principle is vague and is itself open to a variety of interpretations—ranging from dubious to tautological. This paper examines critically the meaning, utility and legitimacy of that principle. (32)

Salmon, W. C. (Pittsburgh) THE FORMULATION OF WHY-QUESTIONS. Salmon and Salmon (*American Anthropologist* 1979) argue that the statistical-relevance model of scientific explanation has certain advantages over Hempel's deductive-nomological and inductive-statistical models. Cartmill (*American Anthropologist* 1980) raises fundamental objections to the S-R model—in particular, to its demand for maximal homogeneous reference classes. The problems concern pragmatic considerations relating to the formulations of why-questions which are meant to elicit explanations. This paper analyzes Cartmill's arguments in the light of a new theory of explanations as answers to why-questions recently advocated by van Fraassen (1980). (32)

Salo, L.V. (see Munsell, D.A.) (36)

Salomon, F. (Wisconsin) THE NORTH-ANDEAN MINDALA COMPLEX UNDER INCA RULE. Recently discovered ethnohistorical sources demonstrate that in the northern Andes (modern Ecuador and Colombia), the economic institutions supporting pre-Inca political elites included corps of status traders (*mindaláes*) resembling Aztec *pochteca* and circulation of wealth objects which in some respects functioned as currency. These institutions, seemingly contradictory of Inca norms, nonetheless persisted under Inca rule. Their manipulation by the Inca state affords clues to the process by which it absorbed formations qualitatively different from those of the Inca heartland. (5)

Samuelson, Alan (see Hicks, Ronald) (33)

Sanders, William T. (Penn State) SOCIAL CLASS AT COPAN, A QUANTITATIVE AND FUNCTIONAL ANALYSIS. On the basis of surface surveys of the Copan Pocket, some 3,400 residential structures grouped in 800 clusters have been located. Each cluster is assumed to be a household. On the basis of scale and quality of construction of residential buildings, four levels have been defined in the Copan social class system. In this paper, calculations are made of the number of clusters, the number of mounds and derivatively the size of the population per class level. An economic and political model is then offered to explain this distribution by level and their location in space in the Pocket. (52)

Sanger, D. (Maine) RECENT RESEARCH ON MARITIME ADAPTATIONS IN NORTHEASTERN NORTH AMERICA. In recent years several archaeologists have examined prehistoric cultural adaptations in the Northeast. Because of the explicit interest in adaptive strategies, there is a focus on issues related to subsistence and settlement, especially as revealed in shell midden archaeology. This paper reviews the research and the techniques employed to recover and interpret the prehistoric record. Northeast data have been employed to develop models of maritime adaptation. In a critical review of these models and hypotheses, it is concluded that many are flawed by inadequate environmental data, limited archaeological records and sweeping generalizations. (44)

Sanger, D. (see Doyle, R.A., Jr.) (4)

Sanley, Robert S. (New Mexico) and Janet M. Kerley (Tulane) OBSIDIAN WORKING, LONG-DISTANCE EXCHANGE AND THE POLITICOECONOMIC ORGANIZATION OF EARLY STATES IN CENTRAL MEXICO. Obsidian working was a primary economic element of urban centers in prehispanic Central Mexico. A substantial proportion of all output was destined for long-distance exchange; the politicoeconomy of obsidian working at Teotihuacan and Tula was dendritically structured. Analyses of obsidian assemblages from the Basin of Mexico, Tula Region, Valley of Oaxaca and Tuxtla Region indicate shifts in source utilization and trading strategies through time. Several distribution systems operated simultaneously, each producing complementary products. These data confirm the dendritic model and illustrate that significant variability existed among obsidian production/distribution systems and in the organization of ancient politicoeconomies. (11)

Savulis, E. R. (Massachusetts, Amherst) FROM DOMESTIC TO INDUSTRIAL PRODUCTION: A REEVALUATION OF WOMEN'S WORK, 1780-1830. Numerous interpretations exist of the cultural changes which occurred in the United States during the late 18th and early 19th centuries. Deetz treated this as a shift from a pre-Renaissance to a Renaissance "mindset." Others view this as a product of intensification and/or shift to capitalist economic relations. These approaches are inadequate because they fail to consider differential effects of culture change on men and women. This paper investigates some of the theoretical implications that a consideration of gender has for the study of inequality during this period. It suggests that changes in women's work are sensitive indicators of changing relations in a capitalist society and are likely to be visible within archaeological contexts. (19)

Scarborough, Vernon L. (Texas, El Paso) CIVIC AND RESIDENTIAL SETTLEMENT AT A LATE PRECLASSIC MAYA CENTER. The Formative community of Cerros is located on Lowry's Bight, northern Belize. The site is unique in representing a late Preclassic community unmixed by later Classic or Postclassic construction. The bulk of the architecture during the major construction phase manifests an overall plan to the community layout with the site spatially segregated into three zones, each reflecting levels of settlement compaction. The subject of this presentation is the growth and development of Cerros and the methodologies used to arrive at the data presented. (41)

Schavelzon, Daniel (Universidad Nacional Autonoma de Mexico) ARCHAEOLOGICAL CARTOGRAPHY OF MIDDLE AMERICA. This paper presents revisions in the catalogue of plans of archaeological Middle American sites compiled by the Universidad Nacional Autonoma de Mexico over the last few years. Results are submitted concerning the present state of archaeological cartography, the limit of present knowledge and the possibilities that these revisions suggest for Middle American archaeology on the basis of the 3,000 plans compiled. (41)

Schelberg, John D. (see Judge, W. James) (16)

Schiffer, M. B. (Arizona, Tucson) WHO NEEDS A PHILOSOPHY OF ARCHAEOLOGY? The need for a philosophy of archaeology has recently become a topic of some contention. It has been advocated recently (Schiffer, *American Antiquity* 48:899-908) that a philosophy of archaeology might develop through collaboration between archaeologists and philosophers of science. The present paper explores another viable option for which there is ample precedent: the philosophical analysis of archaeological problems by archaeologists. Current issues in the study of formation processes, amenable to philosophical analysis, illustrate this strategy for contributing to a philosophy of archaeology. The claim by some that archaeology does not need homegrown philosophers is shown to be both counterproductive and anti-intellectual. (32)

Schoeninger, Margaret J. (Johns Hopkins School of Medicine/California, Los Angeles), Michael J. DeNiro (California, Los Angeles) and Henrik Tauber (National Museum, Copenhagen) MARINE AND TERRESTRIAL COMPONENTS OF PREHISTORIC HUMAN DIET ESTIMATED BY $^{15}\text{N}/^{14}\text{N}$ RATIOS IN BONE COLLAGEN. The $\delta^{15}\text{N}$ ratios of marine organisms are generally more positive than those of terrestrial organisms. Average $\delta^{15}\text{N}$ values of bone collagen were found for: terrestrial mammals and birds (+ 6%; n=25), marine birds (+ 13%; n=11), marine fish (+ 14%; n=10) and marine mammals (+ 16%; n=41). The average $\delta^{15}\text{N}$ values of bone collagen in modern ethnographic humans are: Eskimo marine mammal hunters (+ 19%; n=20), Haida and Tlingit salmon fishers (+ 19%; n=8), whereas Zuni agriculturists have much lower values (\bar{x} = +8%; n = 11). Prehistoric humans have $\delta^{15}\text{N}$ values of bone collagen that reflect diets estimated by midden analysis. Coastal fishing people from southern California and Mesolithic period fisher-gatherers from Denmark have $\delta^{15}\text{N}$ values of (+ 16%; n=10) and (+ 14%; n=7). Agriculturists from Tehuacan in Mexico and from European Neolithic period sites have lower $\delta^{15}\text{N}$ values (\bar{x} = +9; n=11 and \bar{x} = +9; n = 6) which reflects their dependence on terrestrial foods. (57)

Schortman, E. M. and P. A. Urban (Kenyon) SURVEY ALONG INDIANFIELD RUN, KNOX COUNTY, OHIO. Knox County in central Ohio is little-touched archaeologically. What is known about areal prehistory focuses on the Kokosing River flood plain, where survey work is usually concentrated. Breaking with this trend, a four-week intensive foot survey of a small Kokosing tributary, Indianfield Run, reveals an unexpectedly large concentration of sites datable to the Paleoindian through Late Archaic periods. Lithic materials are principally from the nearby Nellie flint source, but some items are from the more distant Flint Ridge quarries. The apparently anomalous density of occupation recorded may be due to the area's proximity to the Nellie source, and the possible use of the Run as a corridor of movement to and from it. Future research along this and other local drainages will test such hypotheses about site location and questions of function as well. (33)

Schortman, E. M. (see Urban, P.A.) (41)

Schreiber, Katharina J. (Arizona State Museum) HUARI PROVINCIAL ADMINISTRATION: A PERSPECTIVE FROM THE CARAHUARAZO VALLEY. New data from southern Ayacucho shed light on the nature of provincial organization in both the Huari and Inca cases. Documentary and archaeological evidence of Inca administration are compared to the archaeological evidence of Huari administration in this valley in an effort to reconstruct the structure of Huari provincial organization. Areas of comparison include cultural configurations at the time of conquest, changes in local culture during and after periods of imperial domination, evidence for state administrative facilities and evidence of changes in local economic structure. The two cases differ to a greater degree than one might expect, suggesting that their respective systems of provincial administration may have been rather different in this area. (5)

Schroedl, Gerald F. (Tennessee, Knoxville) REFUSE-FILLED PITS RECONSIDERED. Refuse-filled pits are a common if not abundant feature at most archaeological sites. Few investigators, however, consider the reasons such pits were dug or categorically assume that refuse-filled pits were storage facilities. A production, use, reuse, discard model for refuse-filled pits is proposed, considering storage, processing and soil recovery needs in terms of soil characteristics, time (time needed, time to produce and duration of use), labor and technology. The model suggests that individual refuse-filled pits may have served multiple purposes and that morphological characteristics relating to their original use may not be self-evident in the archaeological record. (9)

Schuldenrein, Joseph and David G. Anderson (Commonwealth Associates, Inc.) HUMAN ECOLOGY AND PREHISTORY ALONG THE SAVANNAH RIVER: A GEOARCHAEOLOGICAL PERSPECTIVE. Geoarchaeological investigations conducted in the Richard B. Russell Reservoir on the Savannah River (Georgia-South Carolina) have elucidated patterned adaptive changes in the prehistoric record. Research (1980-82) has been geared toward: 1) reconstructing sedimentary sequences that chronicle the occupation of the flood plain; and 2) outlining patterns of land use. Archaeostratigraphic analyses show that changes in flood plain morphology help to explain intrasite distributions of cultural materials. Geochemical studies identified distinctive activity loci reflecting varied land-use strategies. The geoarchaeological investigations range from articulating general paleoenvironmental scenarios to disclosing small-scale functional centers and their spatial relations. Archaeostratigraphic sequences along the Savannah are compared with sequences across the Southeast to assess regional patterns of prehistoric and environmental change. (26)

Schuldenrein, Joseph (see Anderson, David G.) (56)

Schwartz, C. (University of London) and N. Efstratiou (Athens) AN ISLAND SITE IN THE NORTHERN SPORADES. Recent excavations show Early and Middle Neolithic occupations on the island of Aghios Petros based essentially on a sheep/goat economy, supplemented by mollusks and some fish. Preliminary underwater exploration has added to the site perimeters, showing change in local sea level since occupation. The site adds to the evidence for seafaring in the Early Neolithic. (47)

Scott, L. J. (see Gish, J. W.) (8)

Scott, Stuart (SUNY, Buffalo) ARCHAEOLOGICAL SCIENCE, PSEUDOSCIENCE AND THE PUBLIC. The reading public seems hyperreceptive to any solution of a "mystery" other than the traditional and basic research science approach. For a large segment of the population, the most outrageous reconstructions of the history of civilized man often strike a strong chord of acceptance. Archaeologists who feel obliged to present the scientific attitude of skepticism to the general reader must get their ideas past editors and into print. The spectrum of "fact-to-false relationships" holds no great appeal among trade and mass-market publishers. These and other problems of publication are discussed. (10)

Seeber, P. M. (Maine, Orono) LITHIC PROCUREMENT PATTERNS OF TWO CERAMIC PERIOD SITES AT MUNSUNGUN LAKE, NORTHERN MAINE. An intensive survey of the Munsungun Lake region has revealed: 1) extensive pit mine quarry loci along the mountain flanks on the north side of Munsungun Lake; and 2) more than 40 workshop/habitation sites along the north shore. Case study materials from two ceramic-producing sites are used to investigate the following dimensions of aboriginal lithic procurement: 1) the linkage between quarry sites and workshop sites is explored by using a hand-sample analytical method; 2) the manufacturing techniques used to create artifacts are reconstructed and contrasted with one another; and 3) the kinds of tools made for export and local use are discussed and contrasted. (40)

Segovia, A. V. (see Carbone, V. A.) (56)

Seme, Michele (Southern Illinois) AN ETHNOARCHAEOLOGICAL TEST OF A MODEL OF HUNTING SELECTIVITY. Hunting selectivity is predictable given certain parameters of human behavior and potential prey species behaviors. The behavioral considerations chosen to establish a predictive model of hunting selectivity include the facts that: 1) humans select prey items which can be easily located on the landscape; and 2) humans use known associations between animals and the landscape to compartmentalize their environment into productive and nonproductive "patches." Ethnographic data on the !Kung San Bushmen are used to test the model. (49)

Sempowski, Martha L. (Rochester, New York) SOME SOCIAL IMPLICATIONS OF MORTUARY BEHAVIOR AT TEOTIHUACAN, MEXICO. A comparison is made of mortuary data from previously excavated burials at three apartment compounds in Teotihuacan. Assuming a relationship between complexity of associated grave offerings and relative social status, some inferential conclusions are drawn concerning the significance of the age, sex and residence of the deceased as determinants of social status. These, in turn, provide insight into the nature of the social unit housed in an apartment compound, the degree of social differences between groups and the possibility of social and economic disjunctions toward the end of the city's existence. (30)

Shafer, Harry J. (see Hester, Thomas R.) (11)

Shaffer, Gary D. (SUNY, Binghamton) SOME INTERPRETATIONS OF NEOLITHIC BUILDING REMAINS FROM SOUTHERN ITALY. The remains of a series of wattle and daub buildings of the impressed ware Neolithic from Calabria, Italy, are reconstructed, using a methodology of potential interest to archaeologists faced with interpreting similar structures in other contexts. A detailed spatial analysis of excavated building rubble permits the characterization of structures on both the rough level of size and shape and on the finer level of timber framing and daub application practices. Assumptions behind proposed reconstructions are examined by experimentation, and specific Neolithic examples of architecture are compared building-to-building and between neighboring settlements. (47)

Sheehy, J. J. (Penn State) EXCAVATIONS IN CV-26: A LATE CLASSIC PATIO GROUP AT COPAN, HONDURAS. Excavations at CV-26 permitted the reconstruction of a seven-stage building sequence spanning the Late Classic period from Late Acbi up to and including a post-Coner occupation, signalled by the presence of Plumbate ceramics. The patio group reached its peak of importance during the latter part of the Coner period. This importance is symbolized by the construction of Str. 9M-195-B, a vaulted structure containing over 350 pieces of relief sculpture. Differentiation of architecture within the patio group also permits the tentative identification of different functions for individual buildings. (52)

Sheehan, M. C. (see Carbone, V. A.) (56)

Shelley, Phillip H. (Eastern New Mexico) LITHIC SPECIALIZATION AT SALMON RUIN, SAN JUAN COUNTY, NEW MEXICO. A comparative analysis of the evidence for specialization in the production and use of stone tools from the Chacoan and Mesa Verdean occupations at Salmon Ruin is presented. Results indicate that during the Chacoan occupation: 1) there may have been limited access to, or control of, specific lithic resources; 2) the relative degree of expertise exhibited in flaked stone reduction was greater; 3) metates were used by large task groups instead of by individual households, and metate maintenance seems to have been carried out by only a few individuals; and 4) Chacoan materials exhibit relatively less variation in flake core reduction and subsequent flake modification into projectile points. (11)

Shenkel, J. Richard (New Orleans) SERIATION, A QUESTION OF CHRONOLOGY OR DIFFERENCES IN SITE FUNCTION. Ceramic seriation of two components from Big Oak Island and another from Little Oak Island, Tchefuncte sites in southeastern Louisiana, suggest contemporaneity for the lower Big Oak and Little Oak components with the remaining Big Oak component being much later. Other analyses and radiocarbon dates suggest an alternative interpretation is more appropriate. The lower Big Oak component antedates the other two, which are contemporary, by 200 years. The similarities and differences in the relative proportions of ceramics are a reflection of differences in site function, not differences in time. (34)

Sherratt, A. (Oxford) THE SECONDARY PRODUCTS REVOLUTION AND THE INTERPRETATION OF SETTLEMENT PATTERNS IN EAST-CENTRAL EUROPE 4000-2000 BC. Dating evidence for the introduction of important subsistence-related innovations including the plough, dairying, wool and the horse is evaluated and discussed. Conclusions reached in earlier papers are modified and confirmed. The interpretation of settlement pattern changes in the Carpathian Basin and adjacent areas is considered in relation to these innovations, and their significance for social structures is discussed. (47)

Shimada, I. (Princeton) THE SICAN CULTURE: ITS CHARACTER AND EXTENSION. The Middle Sican culture centered at Batan Grande achieved considerable political power and economic wealth ca. AD 850-1100. Its textiles, ceramics and metal objects are found over much of the Peruvian coast. High status tombs—rich with gold artifacts and a religious-funerary precinct measuring at least 1600 m by 1000 m and defined by monumental pyramids—are in many ways without comparison in the Andes. Did the Sican religious polity represent a state? How did it achieve its extension? What were its relationships with the Cajamarca and Pachacamac polities? These issues are addressed. (5)

Shimada, Izumi (see Cleland, Kathryn M.) (46)

Shipman, Pat (Johns Hopkins School of Medicine) ASHES TO ASHES: EXPERIMENTAL STUDIES OF BURNT BONES AND TEETH. Three aspects (color, microscopic morphology, and shrinkage) of the effects of burning on modern bones and teeth are documented. Samples were heated to one of 12 temperatures between 185° and 940° C and were then compared to unheated controls. Color was recorded using Munsell color charts; microscopic morphology was established by scanning electron microscopy. Five different color and morphological stages are defined, but these do not occur at the same temperature thresholds. These distinct color and morphological stages can be used to deduce the heating temperature in archaeological specimens—an important result since the percentage of shrinkage is a nonlinear function of temperature. (57)

Siegel, Peter E. (SUNY, Binghamton) A QUANTITATIVE METHOD FOR DESCRIBING AND ANALYZING FEATURE MORPHOLOGY. A method using morphological measurements to describe and analyze archaeological feature forms is applied to a sample of features from a Late Woodland blufftop encampment located in the Central Mississippi Valley. Morphological measurements based upon a 360°, 24 polar coordinate system is used to describe the maximum length profile, the maximum width profile and the planview of each feature. The features are classified by a single linkage clustering algorithm. Based upon the classification of the feature shapes and an index of storageability computed for each of the features, storage facilities are distinguished from other types of pits. (9)

Sieracki, Stephen (see Bricker, Harvey M.) (43)

Simmons, Alan H. (Kansas) THE WESTERN DESERT EXPEDITION: A CASE STUDY OF A CULTURAL RESOURCE MANAGEMENT PERSPECTIVE IN THE UNITED EGYPTIAN REPUBLIC. Recent research in the Western Desert of the United Egyptian Republic has documented substantial prehistoric occurrences in an area previously thought to be devoid of extensive human utilization. The Western Desert Expedition was formulated with two objectives in mind: 1) to contribute further to the growing body of data relating to adaptive strategies in marginal environments; and 2) to conduct an archaeological survey using a cultural resource management perspective. It is becoming apparent that the cultural resources of many Third World countries would benefit from perspectives emphasizing not only research but also efficient management goals. This paper summarizes the results of the investigations. (17)

Simmons, Alan H. (Kansas) and William B. Gillespie (Chaco Center) PALEOECONOMY AND PALEOENVIRONMENTS OF THE CHACO CANYON REGION DURING THE ARCHAIC: THE CHACO SHELTERS PROJECT. Recent excavations at Archaic sites near Chaco Canyon revealed maize in dated contexts spanning the 2nd millennium BC. Since this represents some of the earliest documented use of maize in the Southwest, the Chaco Shelters Project was designed to investigate further the phenomenon of early horticulture in the region. Two primary goals structured the project: 1) to determine the presence of Archaic materials in two rockshelters and their surrounding areas near Chaco Canyon; and 2) to retrieve a body of paleoenvironmental data that could be used in environmental reconstruction. The results of this investigation are summarized. (53)

Simms, Steven R. (Utah) THE EVOLUTION OF HUNTER-GATHERER FORAGING STRATEGIES: A GREAT BASIN CASE. A diet breadth/patch choice optimization model is presented to help explain subsistence variability in the Great Basin of the western United States. The model is based on experimentally derived cost/benefit data. This study adds a needed empirical basis to archaeological optimization modeling and attempts to clarify the relationship between efficiency and abundance. The acceptance of optimization modeling as useful for archaeological cases is not dependent on whether the models work as borrowed but whether they can be made to work by anthropologists. This partnership with evolutionary ecology is illustrated with the applications described above. (48)

Simons, D. (Michigan Archaeological Society), M. Shott (Michigan) and H. T. Wright (Michigan) THE GAINEY SITE (1979-82): VARIABILITY IN A GREAT LAKES PALEOINDIAN ASSEMBLAGE. Four seasons of excavation have revealed two of at least four plow-dispersed concentrations of

late glacial stone tool debris within an area of 2 ha. Each concentration results from a discrete occupation of a protected location on a crest of a glacial moraine in the central part of what is now Michigan's Lower Peninsula. The predominant stone material is Upper Mercer chert from southeastern Ohio. Differences involving the preparation and recycling of tools between the Gainey assemblage and the similar (though perhaps slightly later) Barnes and Parkhill assemblages can be related to the distances over which chert was transported; other differences involving point size and fluting may be related to hafting. Study of the distribution of classes of items in each concentration documents variations in the organization of activities during different camping episodes. (54)

Skirboll, Esther (Pittsburgh) COSTA RICAN BURIAL TRIPODS AND SOCIAL COMPLEXITY IN THE HIGHLANDS. Ceramics from Curridabat and Concepcion, Transitional period sites in the Costa Rica highlands, are discussed. The burial tripods were seriated using multidimensional scaling. The following order resulted from the scaling of vessel legs and their motifs: solid legs, hollow legs, hollow legs with three distinct styles of iguana/alligator motifs. The earliest iguana/alligator style replaced other, earlier motifs. It has been suggested that iguana motifs are associated with a chieftainship level of social organization in Panama. If true, the appearance of a similar motif also may signal the development of complex political organization in the Costa Rican highlands. (46)

Skomal, Susan N. (California, Los Angeles) ARTIFACTUAL VS. SOCIOCULTURAL CHANGE: THE CARPATHIAN BASIN COPPER AGE. Although theories of social evolution provide a framework for the analysis of gross sociocultural changes in the archaeological record, they are of limited use for the study and comparison of individual societies which functioned at similar levels of complexity. The present research explores the cultural changes generally recognized for three artifactual assemblages during the Carpathian Basin Copper Age. The material remains suggest dramatic social differences, yet each cultural pattern corresponds to the tribal level of social complexity. Their internal patterns of social behaviors are therefore measured and compared. The results suggest possible causes of the Copper Age transformations. (3)

Skriver, R. (see Alexander, L. S.) (34)

Smiley, F. E. (see Leonard, Robert D.) (24)

Smith, C. E. (Alabama) WHY NOT THE LOWLANDS? The largest part of the South American continent can be called lowlands, yet the least amount of archaeological investigation has been done in the lowlands. Theoretically, the bases for the highland cultures have been in the lowlands—only the Peruvian desert valleys have had extensive excavation. The Parmana project (Roosevelt 1980) has amply proven that careful extraction will yield plant remains. The presumed areas in which South American crop plants originated should now be investigated carefully for evidence which will provide the facts of origin. Even more careful excavation should provide further evidence for the antiquity of cultivation and irrigation in South America. (31)

Smith, H. A. (Southern Methodist) ARCHAEOLOGICAL ASSESSMENT OF THE BAFFIN BAY REGION OF THE LOWER TEXAS COAST. Since 1979, surveys, testing and full-scale excavations have been conducted in this inland bay area. The region's first radiocarbon dates for the Early Archaic, Late Archaic and Late Prehistoric periods were obtained. Evidence for significant changes in settlement and subsistence patterns over a period of 4,500 years is cited. The role of faunal remains, especially fish otoliths, in the determination of site seasonality and subsistence modes is discussed. (1)

Smith, Michael E. (Loyola, Chicago) ECONOMIC REGIONS IN POSTCLASSIC CENTRAL MEXICO: A TRIAL FORMULATION. On the basis of published and unpublished data, Postclassic ceramic complexes and spheres are defined for the archaeologically known areas of the central Mexican highlands. The geographical and temporal distribution of these constructs is used to infer the nature and extent of economic regions in each of the Early, Middle and Late Postclassic periods. The resulting picture of changing configurations in ceramic production and exchange, while still preliminary, sheds light on such problems as the extent of the Toltec empire, the documentation of migrations in Postclassic Mexico, the origins of the "Aztec" ceramic style and the role of west Mexico in Postclassic Mesoamerican cultural dynamics. (41)

Snow, Dean (SUNY, Albany) COPING WITH NONSENSE: PSEUDOARCHAEOLOGY AND PROFESSIONAL RESPONSIBILITY. It is argued that professional archaeologists are obliged to take public stands with regard to the claims of pseudoarchaeology. Several points are worth discussion: 1) Antiquarian fads have come and will continue to come in cycles. They will not go away permanently if ignored. 2) It is elitist and consequently unethical to duck such issues. 3) Of those

laymen interested in archaeology, few understand scientific method and may regard caution as equivalent to weak indecision. 4) The press seeks out controversy and tries to reduce scientific debates to personal ones, usually involving one person on each "side" of an issue. 5) Professional archaeologists are often portrayed as dogmatists with vested interests to protect. (10)

Soffer, O. (Milwaukee) FAUNAL DEMOGRAPHICS AND MAMMOTH HUNTING STRATEGIES. Kornietz and Saunders, respectively, have proposed that the demographic composition of mammoths at some Upper Paleolithic sites of the Russian Plain and at some New World Paleolithic sites mirror natural elephant herds. They have argued that herd-taking strategies were employed in mammoth procurement. A recent discovery of Berelyoha, a "mammoth-bone cemetery" in Siberia, permits an independent test of these conclusions. Statistical tests comparing archaeological faunal assemblages to Berelyoha and to natural elephant herds indicate that, at present, equifinality prevents the deduction of specific hunting strategies from an analysis of mammoth demographics. (58)

Solecki, Ralph S. and Rose L. Solecki (Columbia) A REAPPRAISAL OF THE SHEMSIAN INDUSTRY OF YABROUD, SYRIA. The basin in front of Shelter IV, an early Middle Paleolithic/late Lower Paleolithic site at Yabroud, which Columbia University investigated in the 1960s, has yielded an interesting set of data as well as problems. The 10.5 m of water-laid deposits contain a non-Levalloisian flake industry which resembles the Tayacian. Also in the sediments are animal and probable human tracks. A new approach to the analysis of the flints emphasizing technology as well as typology has resulted in new insights into the Shemsian industry. (17)

Solecki, Rose L. (see Solecki, Ralph S.) (17)

Spence, Michael W. (Western Ontario, London) WORKSHOP DISTRIBUTION IN TEOTIHUACAN, MEXICO. Some 100 obsidian workshop sites have been identified in Teotihuacan, a Classic period metropolis in central Mexico. They are widely distributed throughout the city, occasionally as isolated sites but generally in clusters. The factors influencing their locations are examined, with particular attention paid to their spatial relationships to arteries of communication and transportation, public structures, sources of raw material and other specialized sites that used obsidian tools (e.g., wood workshops). Social constraints on access to residential/workshop space are also discussed and comparisons are drawn with other Mesoamerican workshop systems. (11)

Speth, John D. (Michigan) and Katherine A. Spielmann (Smithsonian) ANIMAL PHYSIOLOGY AND HUNTING STRATEGIES. Animal physiology or condition has long been recognized by archaeologists as an important factor affecting decisions by hunter-gatherers in determining which animals to hunt. Archaeologists, however, have tended to ignore the importance of condition in subsequent butchering and processing decisions. This paper presents both archaeological and ethnographic evidence showing that animal physiology, and particularly the level of body fat, was a major concern of hunter-gatherers in late winter and spring, and examines reasons why fat-depleted animals were frequently abandoned, even in situations where the hunters themselves were short of food. (57)

Spielmann, Katherine A. (see Speth, John D.) (57)

Spink, M. L. (Penn State) METATES AS SOCIOECONOMIC INDICATORS AT CLASSIC PERIOD COPAN, HONDURAS. Metate samples taken from each of the four residential types at Copan and samples from their possible sources have been subjected to trace element analyses by atomic absorption spectrophotometry and emission spectrometry. Samples were confined to the preferred material type, rhyolite. The outcome of this study yields information on the applicability of trace element sourcing for rhyolite artifacts, on the nature of intraregional procurement and trade of a basic utilitarian item and on the identification of a local economic sphere for Classic period Copan. The results may also be used to test the supposed status differentiations between the residential groups. (52)

Staley, P. S. (Illinois) MODES IN THE PATTERNING OF PLANFORM MORPHOLOGY AMONG HANDAXES AND CLEAVERS FROM ISIMILA, TANZANIA. Using multidimensional scaling to map variation in planform patterning, the objective of this paper is to isolate modes that reflect behavioral norms in the design and manufacture of Acheulean handaxes and cleavers from East Africa. The analysis demonstrates that while the four assemblages used in the data sample appear heterogeneous, there is a basic pattern to the variation that is common to each. The assemblages possess similar modes that intergrade into each other. This, in turn, may have ramifications for the "random walk" model used to describe Acheulean culture history in East Africa. (17)

Stark, B. L. (Arizona State) COASTAL ADAPTATIONS ON THE GULF AND CARIBBEAN COASTS OF Mesoamerica. Four aspects of the Gulf and Caribbean coastal environment are examined in relation to the prehistoric record: 1) subsistence resources; 2) exchange resources; 3) transport facility; and 4) spatial array. The nature of sociopolitical interrelations is stressed as a necessary concomitant to understanding sociocultural adaptations to and uses of the coastal zone. Examples are given from various periods in Mesoamerican prehistory. (44)

Starna, William A. (SUNY, Oneonta) PHYTOLITHS, ARCHAEOLOGY AND CAVEATS: A CASE STUDY FROM NEW YORK STATE. As a follow-up to research begun in 1978, a regional phytolith typology of native edible plants was initiated for the Upper Susquehanna Valley of New York State. The results of the typology are encouraging, despite a few minor problems in extraction. Several unsettling interpretive issues have arisen which require attention, including phytolith recovery from glacio-fluvial and riverine environments, phytolith redeposition, air-borne contamination and the relationships between cultural and noncultural phytolith deposition. (39)

Staski, E. (Arizona) GIVING THE TOURISTS MORE THAN A TOUR: REMARKS ON THE UTILITY OF ARCHAEOLOGY IN THE MODERN WORLD. Although most archaeologists would agree that an explicit concern for the public's interests is important, there is no consensus on how the public can best be served. Most archaeologists have been satisfied to limit such contributions to the description and interpretation of past events. A few archaeologists, however, have attempted to apply their knowledge and methods to the mitigation of human problems. This paper evaluates the successes and failures of such attempts. It is argued that archaeology's greatest value to society (and thus to the discipline) is found in how it improves the human condition. (55)

Stead, W. G. (New York City Transit Authority) and J. McMahon (Maine, Orono) PHYTOLITH ANALYSIS AT MUNSUNGUN LAKE, MAINE. Phytolith analysis of discrete soil levels is being performed for a number of profiles from Munsungun Lake archaeological sites. Stage 1 of the analysis is to determine if phytoliths: 1) exist in sufficient quantities and in a condition to permit a meaningful analysis of their morphology; and 2) demonstrate differences in percentage of total soil and distribution by state in successive soil horizons. If Stage 1 produces positive results, Stage 2 will include: 1) analysis of quantitative and shape distributions as a function of depth; and 2) evaluation of the significance of the results of the research program. (40)

Stech, Tamara (see Knapp, A. Bernard) (17)

Steele, D. G. (Texas A&M) UTILIZATION OF MARINE RESOURCES BY INHABITANTS OF THE TEXAS COAST. Inhabitants of the Texas coast harvested and preyed upon fauna which occupied prairie, woodland, riparian and estuarine habitats. The marine faunas, however, were particularly important, for they provided food as well as a source of raw material for tools. This paper documents the marine species utilized by these early coastal inhabitants and determines whether or not regional or temporal variations in the use of marine resources can be documented. The paper also discusses how, when and where species were taken and the ways in which they were utilized. (1)

Stenholm, N. A. (Washington) BOTANICAL RECOVERY AND ANALYSIS: A BEGINNING. Analysis of botanical remains from the Chief Joseph Dam project area is the first detailed study of floral remains in the Upper Columbia River region. The botanical materials from several sites span 4,000 years. The assemblage is examined to discuss more general methodological and theoretical issues in botanical analysis. Emphasis is placed on preservation factors, adequacy of collection procedures and comparability of data in site assemblages. (36)

Stephen, David V. M. and Donald East (Pima Community) MICROCOMPUTER APPLICATIONS IN FIELD ARCHAEOLOGY. The development of microcomputers and associated peripheral equipment offers the potential for enhancing traditional archaeological fieldwork and data collection. Applications have included the integration of surveying equipment (theodolite and electronic distance meter) through custom and third-party commercial software. This equipment allows mapping and other surveying activities over a 4,000 m range with a 1:5000 precision. The system provides the capability for printed or graphic plotter output and general field data base development. Other functions include computer-generated contour maps, coordinate conversion, digitizing, video interfacing and other related functions. (9)

Stephens, J. (see Müller, J.) (6)

Steponaitis, V. P. (SUNY, Binghamton) THE USES AND ABUSES OF CHRISTALLER'S CENTRAL PLACE THEORY. Christaller's Central Place Theory has been widely used, and sometimes abused by archaeologists. Although CPT is extremely valuable in analyzing settlement hierar-

chies based on market economies, it is often inappropriate for looking at political/administrative settlement hierarchies where markets (or market-like service centers) do not exist. The limitations of CPT stem from its underlying assumptions, which are generally not met in purely administrative settings. Analysis of settlement hierarchies in nonmarket contexts is usually best carried out with different models, based on more appropriate assumptions. Some alternative models, designed particularly for chiefdom-level societies, are presented. (14)

Stevenson, Katherine P. (see Gallagher, James P.) (33)

Stewart, R. M. (Berger and Associates) and J. F. Custer (Delaware) MARITIME ADAPTATIONS IN THE MIDDLE ATLANTIC REGION OF THE EASTERN UNITED STATES. Review of Middle Atlantic region coastal adaptations centers around three themes. First, only ephemeral use of coastal resources predates ca. 6000 BC due to effects of relatively rapid post-Pleistocene sea level rise on estuarine environments and the patterns of human subsistence activities. Second, by ca. 3000 BC intensive utilization of coastal resources began in a response to the effects of the mid-postglacial xerothermic climatic interval and stabilization of estuarine environments. In some locations, incipient ranked societies were supported by these intensive coastal adaptations. Third, horticulture supersedes intensive coastal resource utilization ca. AD 1000 in most areas and supported true ranked societies and complex tribal organizations. (44)

Stocker, T. (Illinois, Urbana) and B. Jackson (Missouri) THE GULF COAST SHELL AND THE HIGHLAND SWORD. The ruling class of highland Mesoamerican states controlled some portion of the lithic industry for at least two reasons. In the first place, constant incoming tribute required a military organization. The production, storage and distribution of military hardware were state concerns. For example, each *macuahuitl*, an obsidian-lined sword, required 10 obsidian blades. The second reason for state control of lithic resources is that status symbols were required by the elite. Seashells are one status item detected in the archaeological record. The half conch was worn by the high priest of the Quetzalcoatl cult. Some obsidian traded to the coast was to procure shell for the highland elite. (11)

Stone, David F. (California, Santa Barbara) CULTURAL RESOURCE MANAGEMENT AS SCIENCE: SPATIAL ANALYSIS AND PREDICTION OF PREHISTORIC ARCHAEOLOGICAL SITES IN SANTA BARBARA COUNTY, CALIFORNIA. A synthesis of cultural resource management studies in Santa Barbara County, California, has defined the spatial distribution of 240 prehistoric archaeological sites. Multivariate analysis and logit modeling statistical techniques are used to determine environmental variables of site location. Results of the analysis form the basis of a probabilistic predictive model of site location for the study area. Problems associated with the synthesis of cultural resource management data (e.g., sampling biases due to the nonrandom distribution of project location and inconsistency in archaeological site and survey records) are discussed. (35)

Stone, David (see Bamforth, Douglas) (35)

Stone, Glenn Davis (Arizona) MATERIAL CORRELATES OF THE DEVELOPMENTAL CYCLE OF THE HOUSEHOLD. Studies of prehistoric household size usually assume overly simple relationships between domestic architecture and the household. In particular, the archaeological variability produced by household developmental cycles is poorly understood. This paper examines ethnoarchaeological data from the Kofyar of Nigeria. Among the Kofyar are both intensive and extensive farmers, and these separate strategies have produced two distinct patterns of household growth. In both cases, the relationship between size of household and size of domestic compound becomes increasingly linear as households approach peak growth. Situations in which domestic architecture may reflect or may belie household size are discussed. (9)

Stone, G. D. (see Rathje, W. L.) (55)

Stone, Jane (Washington, St. Louis) THE FORMATION OF LONG-DISTANCE TRADE INFRASTRUCTURES IN COMPLEX SOCIETIES. Long-distance bulk trade in desirable but nonessential goods frequently correlates with the development of complex societies. The Huari Empire, in the Central Highlands of Peru, provides a model for the hypothesis that bulk trade in such goods (e.g., obsidian) is necessary to promote long-distance relationships by creating a stable, predictable and controllable trade infrastructure. Elaboration of trade in necessary, but often unpredictable bulk goods (e.g., crops) and administrative intervention, are facilitated by such a framework. The hypothesis is evaluated with respect to trade histories of complex societies from Mesoamerica and Mesopotamia. (11)

Storck, P. L. (Royal Ontario Museum) FLUTED POINT TECHNOLOGY AT THE FISHER SITE, ONTARIO, AND EARLY PALEOINDIAN CULTURAL RELATIONSHIPS. Fluted points from the Fisher

site located in the Georgian Bay region of Ontario exhibit a Folsom-like technique of final fluting. Detailed comparisons with Folsom and other fluted point technologies in North America are, at the present time, unreliable indicators of cultural relationships, in part because of a lack of well-documented comparative data from Clovis complexes. The identification of distinctive systems of point manufacture may ultimately prove to be more useful in determining cultural relationships than comparisons of single technological attributes, such as final fluting. (54)

Storey, Rebecca (Penn State) MORTALITY AND HEALTH AT TLAJINGA 33, TEOTIHUACAN. The paleodemographic study of an apartment compound in the Precolumbian urban center of Teotihuacan reveals that life expectancy was low and juvenile mortality very high. The demographic pattern is similar to that found in other preindustrial cities, but the Tlajinga 33 study is interesting in that it points to poor health conditions arising from a dense concentration of population in an arid highland environment in the New World. This is true even where the risks of epidemic disease were less than in the Old World. Tlajinga 33 documents the first demographic profile from a New World preindustrial city. (30)

Storey, Rebecca (see Hatch, James W.) (52)

Stoher, Karen E. (Texas, San Antonio) MARITIME ADAPTATIONS OF THE ECUADORIAN AREA, 10,000 BP TO PRESENT. Ecuadorian coastal climates range from wet tropical to semiarid. Coastal geomorphology is variable, and the available marine resources differ from north to south resulting in spatial variations in prehistoric and ethnographic maritime adaptations. One early (10,000-7000 BP), unspecialized hunting-gathering/incipient horticultural system harvested marine/estuarine resources, but this aspect did not dominate the system. Ceramic-stage peoples maintained a primary subsistence orientation toward the land but developed a specialized fishing technology and elaborate maritime trading patterns which persisted into the Historic period. (44)

Streck, Charles F. (Hawaii, Honolulu) PREHISTORIC COASTAL SETTLEMENT, MARINE SUBSISTENCE AND THE DEVELOPMENT OF COMPLEX SOCIETY IN EASTERN MICRONESIA. Development of prehistoric polities on Ponape in the Eastern Caroline Islands may have been strongly influenced through the presence of, access to and control over marine faunal and molluscan resources and lagoonal physiographic features. Archaeological and ethnoarchaeological research was performed to test for the presence of a polity in the southwestern portion of the island known from recorded oral history. Coastal settlement pattern and excavated midden remains strongly suggest that marine ecological variables may have influenced the development of this polity-Kepihleng and that it was at least partly contemporaneous with that polity exemplified by the megalithic site at Nan Madol. (2)

Struever, Stuart (Northwestern) A CASE HISTORY OF ARCHAEOLOGY AND THE PUBLIC: THE KAMPSVILLE EXPERIENCE AND WHERE WE GO FROM HERE. For 20 years, the Center for American Archeology (Foundation for Illinois Archeology) has attempted to build a diverse program of public involvement in archaeology as the basis for supporting a long-term regional research program. This paper summarizes the author's experience and specifically highlights what are believed to be current and future trends for shaping public involvement in North American archaeology. The viability of the archaeological research center as an institutional base is examined. (55)

Stucki, B. R. (Washington State) GEOARCHAEOLOGY AT THE HOKO RIVER ROCKSHELTER: THE ANATOMY OF A SHELL MIDDEN. Complex, stratified shell midden deposits at the Hoko River Rockshelter contain 2.3 m of humus, shell, bone, charcoal and gravel. Research has focused on understanding the process of site formation to test hypotheses of resource use and human activity within the site. Utilized techniques have included the recording of objects greater in size than 1 in (including orientation) and the "Harris matrix" to integrate strata into a temporal sequence. Ten layer types are established using 361 stratigraphic field descriptions. Eight "states" are defined on the basis of distribution and integration of layer types. Variations within "states," probably reflecting human activity areas, are then evaluated based on the concept of the cultural facies. (42)

Studenmund, S. J. (Washington) TRAIT TRANSMISSION, CULTURAL DRIFT AND ARCHAEOLOGICAL SERIATION. Archaeological seriation uses three empirical generalizations to order components according to their temporal relationships. The validity of these generalizations (the occurrence, frequency and similarity laws) rests on the intuitive notion that learning (cultural transmission) is responsible for the behavior of historic classes. To explore this notion in an evolutionary context, two models of cultural transmission (vertical and oblique transmission between generations and horizontal transmission within a generation) and a model of cultural drift based on transmission are reviewed to see if they can predict the patterns of changes in historic classes that form the basis of the generalizations of seriation. (48)

Styles, B. W., S. S. Crye and J. R. Purdue (Illinois State Museum) ANALYSIS OF FAUNAL REMAINS AND SUBSISTENCE AT THE RENCH SITE: 1980-1981. The Rench site (11P4) provides a rich archaeological record beginning in the Archaic and terminating during the Mississippian period. Identifiable faunal remains (over 10,000 fragments) have been recovered primarily from Weaver focus features, although terminal Woodland and Mississippian features also yielded fauna. The identified species indicate that the territory utilized aboriginally ranged from the Illinois River and its floodplain habitats to the forested uplands. The diversity of subsistence remains is remarkable. Preliminary analysis suggests primary reliance was based on fish (mainly suckers and catfish) and deer. (23)

Sussenbach, Tom (see Kann, Veronica M.) (41)

Sutro, L. D. and T. E. Downing (Arizona) RECENT ARCHITECTURAL RESPONSES TO POPULATION GROWTH IN RURAL OAXACA. Demographic, economic and architectural data collected in the mid-1960s and in 1981 in the peasant-Indian village of Diaz Ordaz, Mexico, are used to investigate the relationships between social units and residential structures. Despite the Zapotec preference for neolocal, nuclear family residence, house construction and household formation do not keep pace with population growth and marriage rates. However, the total roofed dwelling area of houses is increasing through the construction of contiguous rooms. This implies that in a tight economy, as household size increases the likelihood of the enlargement of extant structures is higher than the construction of new ones. (7)

Talalay, Lauren E. (Indiana, Bloomington) IMPLICATIONS OF AN EARLY CANON IN NEOLITHIC SCULPTURE. This paper argues that several stone figurines dating to the Greek Neolithic (ca. 6000-3000 BC, uncalibrated radiocarbon) exhibit a set of measurable proportions based on the ratios of the figure's height, the length of the arm-stretch and the width of the waist. These prehistoric canons anticipate those of the Classical period by nearly four millennia. The early existence of such a formula raises important questions regarding Neolithic production of stone figurines and possible communication among craftsmen. Several explanations are offered to account for the appearance of this canon at different sites throughout southern Greece and the Aegean. (25)

Tankersley, Kenneth B. (Indiana, Bloomington) THE CLOVIS POTENTIAL AND GEOARCHAEOLOGY OF BIG BONE LICK, KENTUCKY. This study describes Clovis lithic material from Big Bone Lick and vicinity and its relationship to complex Late Pleistocene and Holocene alluvial deposits. Geological maps, cross sections and fence diagrams of the alluvial deposits are used to predict potential Clovis site locations. The ancient marsh and spring environments attracted animals and humans as evidenced by Clovis cultural material and the remains of Pleistocene megafauna recovered from the site. The depositional environment of the spring area likely restricted the movement of the megafauna, thereby creating a natural trap from which Paleo-Indians could have ambushed them. (34)

Tarlock, A. Dan (Illinois Institute of Technology) STATE AND LOCAL LAND-USE REGULATION TO PRESERVE ARCHAEOLOGICAL RESOURCES. The historic purpose of local and state land-use regulation has not been to preserve archaeological resources. However, many local and state land-use regulations have the potential to be adapted to archaeological preservation. These include: 1) overlay zones to protect sensitive areas; 2) site planning procedures; 3) floodplain protection legislation; 4) open space preservation programs; and 5) state critical areas legislation. Archaeological legislation can never be the primary goal of these control techniques, but they can be part of a local preservation program. (28)

Tauber, Henrik (see Schoeninger, Margaret J.) (57)

Teltser, Patrice A. (Washington) EXTENDING FORT ANCIENT INTO PERIPHERAL AREAS: PROBLEMS AND PROSPECTS. Despite the solid foundation laid by Griffin in defining the Fort Ancient aspect, the identification and assignment of individual components and even entire phases to the larger aspect has become increasingly ambiguous. These problems are attributed to attempts to incorporate an ever-increasing body of data located peripheral to a "core" area. Materials from Blennerhassett Village (46-Wd-38), West Virginia, which show strong similarities to previously identified Feurt phase and Philo phase assemblages are used to illustrate this point. Even when these problems of identification and assignment are resolved, modifications may be necessary when addressing questions of Fort Ancient development. (33)

Theler, James L. (Wisconsin, Madison) WOODLAND SUBSISTENCE PATTERNS AND THE DIETARY IMPORTANCE OF FRESHWATER MUSSELS. Recent analysis of Woodland stage (ca. 100 BC-1200 AD) faunal assemblages in the Upper Mississippi River Valley indicates freshwater mussels were a seasonally important dietary resource. In addition to casual use, two patterns of

intensive shellfish harvesting are recognized: 1) procurement and processing at seasonal habitation areas; and 2) nonresidential processing stations strategically located adjacent to productive mussel beds. Field experiment and ethnographic data are employed to evaluate procurement, processing and dietary potential of freshwater mussels. Intensification of seasonal mussel exploitation through time and the possible importance of dried shellfish as a winter food source are discussed. (57)

Thompson, R. S. and P. L. Fall (Arizona) POLLEN ANALYSIS OF ALLUVIAL SEDIMENTS IN THE WESTERN UNITED STATES. Pollen diagrams from Nevada and Arizona indicate that changes in pollen frequencies may be correlated with variations in sediment texture in alluvial and colluvial sections. The changes in pollen representations in these records apparently do not reflect vegetation change, but rather appear to be the result of sorting during water transport or slope wash activity. Additional problems may be caused by the redeposition of pollen from older sediments in alluvial and colluvial contexts. Surface samples from northeastern Arizona provide evidence that the pollen content of alluvium may reflect upstream vegetational assemblages rather than the vegetation surrounding the sample site. (8)

Thorbahn, P. F. (Public Archaeology Lab, Inc.) SPATIAL ASPECTS OF ECONOMIC DIFFERENTIATION AMONG HUNTER-GATHERERS. A five-year research project on hunter-gatherer settlement systems in southern New England has produced results indicating that there were significant changes in the size of foraging territories and the spatial organization of economic activities during the last 4,000 years of the prehistoric period. These observations raise important questions about variation in access to key resources within nonstratified societies. When the logistics of resource extraction require increasingly complex decisions on the spatial and temporal allocation of labor, do social organizations also become more complex? (19)

Thunen, Robert L. (Northwestern) SOCIAL AND RITUAL CORRELATES OF CEREMONIAL CENTERS. The degree of energy invested in the ceremonial centers of the Ohio Hopewell presumes a level of social complexity that may be too great for the evidence from burials and settlements to sustain. This paper examines cross-culturally the connections among sedentary groups, between formalized community ritual space and dimensions of geographical placement, spatial design and physical elements. Social context and the associated facilities emerge as key variables affecting the formalization of ritual areas. Suggestions are presented for interpreting the ceremonial centers in terms of the level of intragroup participation and the specialization of such centers. (33)

Tiffany, Joseph A. (Iowa) MODELS OF MISSISSIPPIAN CULTURE HISTORY IN THE WESTERN PRAIRIES: A PERSPECTIVE FROM IOWA. Changing definitions of "Mississippian" have influenced how archaeologists have perceived cultural interaction in the western prairies during the Late Prehistoric period. This paper discusses various definitions and then addresses the nature of Mississippian contact and interaction with western prairie cultures by reviewing the kinds of Mississippian artifacts found in Iowa and their distribution. The second portion of this paper reviews the explanations for the Mississippian presence in the western prairies by looking at the formative processes which may account for the variability and complexity of Mississippian/non-Mississippian cultural interaction observed in the archaeological record. (6)

Tippitt, V. Ann and Albert C. Goodyear (Institute of Archeology and Anthropology, South Carolina) INTERASSEMBLAGE VARIATION AT A STRATIFIED SITE IN THE GEORGIA PIEDMONT. Excavations at the Gregg Shoals (9EB259) site on the Savannah River in northeast Georgia have revealed intact stratified cultural components extending to a depth of 3.20 m, ranging from Early Archaic to Mississippian. In general, the biface sequence is consistent with those known in nearby areas. Of additional interest are contrasts in lithic raw material, tool density and tool diversity between assemblages. The findings are summarized and consideration given to the interassemblage variability observed. The broader implications of raw material changes are discussed as related to the habitat scale of settlement in the Piedmont and adjoining provinces. (56)

Tixier, J. (U.R.A. 28 C.N.R.S. Paris) REFITTING: ITS PLACE IN PRESENT STUDIES OF PREHISTORIC MAN. Refitting tools, by-products and cores of lithic assemblages must not be considered as a puzzle but as part of research on human behavior. Refitting can be done in several different ways, taking into account petrographical or technological data. It must be done in order to increase knowledge about: 1) the methods used by prehistoric groups to collect raw material and to produce tools; 2) the structure of domestic area and territory; and 3) details of social organization. (15)

Todd, L. C. (New Mexico) REASSEMBLY OF BISON SKELETONS FROM THE HORNER SITE: A STUDY OF ANATOMICAL REFITTING. Recent reinvestigations of the Horner site (48PA29) have uncovered the remains of at least 65 bison in association with Paleoindian artifacts. Regression

equations based on studies of modern bison are used as a starting point in the identification of those skeletal elements within the bone bed that have the highest probability of having come from the same animal. Estimates of metric attributes of bones of individual bison, in conjunction with macroscopic analysis, are used as a tool to examine patterns of horizontal dispersal of elements. This "anatomical refitting" has utility in distinguishing natural decay/disarticulation patterns from those resulting from intentional human dismemberment. (15)

Torrence, Robin (Sheffield, United Kingdom) PREHISTORIC OBSIDIAN EXCHANGE IN GREECE: AN INSTRUCTIVE CAUTIONARY TALE. It is instructive to contrast the role of stone tools within complex societies in Mesoamerica and in Greece because obsidian blade technology was so similar. Documentary evidence from Greece shows that specialization in some crafts was organized by a palace bureaucracy, but lithic production and distribution was not controlled and did not benefit the state. Obsidian was largely obtained from the sources by consumers; if necessary, exchange took place in a casual, unsystematic manner. Archaeology must develop adequate methods for detecting such differences in economic systems by means of lithic analysis. Several operational suggestions are made in this paper. (11)

Tourtellot, G. (Harvard) THE GROWTH OF HOUSEHOLD UNITS AND FAMILY DEVELOPMENT CYCLES: SEIBAL AS A TEST CASE. Accounting for functional differentiation and identification of individual structures only partially reduces the variation seen in numbers of structures found in individual Classic Maya small structure units. Stages in the developmental trajectory of households is examined as an explanation for the residual structures. Eight implications of the hypothesis of generational expansion are tested against a sample of 41 excavated Late Classic units at Seibal. Perturbing factors to be considered are: nondomestic units, family organization and dwelling allocation, inheritance patterns, brideservice, land rights, duration, permanence, architectural expansion via subdivision or accretion vs. replication, and a particular chronological problem. (7)

Tringham, Ruth (California, Berkeley) THE DEVELOPMENT OF THE HOUSEHOLD AS THE PRIMARY UNIT OF PRODUCTION IN NEOLITHIC AND ENEOLITHIC SOUTHEAST EUROPE. This paper discusses the construction, occupation and destruction of houses in southeast European Neolithic and Eneolithic cultures. The data are used to test the hypothesis that, as production intensified and sedentism increased during this period, the household unit became most important in the organization of labor and production. These data are taken from experimental and analytical studies of material from a number of recent Vinča culture excavations in Yugoslavia, including Selevac, Gomolava and Vinča itself. (3)

Trinkaus, K. M. (Peabody Museum) NONTYPOLGICAL APPROACHES TO ARTIFACT VARIABILITY. Some studies of artifact variability demonstrate poor fit between types of tools and types of tool-using behaviors, questioning the assumption that ranges of tool types in archaeological units indicate ranges of behaviors carried out there. Since tool selection is related to task-specific attributes which may not cluster into task-specific types, studies of patterns of attribute variation are needed to quantify the spectrum of behaviors indicated by an assemblage. Analysis of shifts in two artifact samples (one ceramic, one lithic) demonstrate the differing behavioral implications of broad vs. narrow ranges of attribute variation for strategies of resource procurement and artifact production. (9)

Turnbaugh, William A. (Rhode Island) PROBABLE ASSOCIATION OF MAN AND *BISON* SP. FROM NARRAGANSETT BAY, RHODE ISLAND. Several faunal elements, together with a chert biface recovered from upper Narragansett Bay by a Rhode Island shell fisherman, support the first association of prehistoric humans and *Bison* in New England. The bones consist of an ilium from a large but unidentified avian species and the distal shaft section and detached epiphysis from the left femur of an immature bovid, provisionally identified as *Bison* sp. The biface, a lanceolate projectile with basal thinning and smoothing, had penetrated the femur just above the metaphysis. Geochronological and typological evidence suggest a minimum age of about 5,000 years for the find. Independent chronometric dates are expected to corroborate this estimate. (4)

Turner, Margaret H. (Rochester) THE LAPIDARY INDUSTRY OF TEOTIHUACAN, MEXICO. Lapidary production is identified as a component of Teotihuacan's urban economy through recent laboratory research. Fine stone materials from surface survey and excavations conducted by personnel of the Teotihuacan Mapping Project are described. Discrete areas of lapidary workshops are located and related to known distributions of other Teotihuacan industries. Procurement of lapidary materials through local, regional and long-distance exchange networks is examined. The study of Teotihuacan's lapidary industry aids in understanding the role of the state in the administration of an urban economy. (30)

Turner, William B. (see Klippel, Walter E.) (26)

Ueki, Takeshi (Brown) and Ross Cordy THE DEVELOPMENT OF COMPLEX SOCIETIES ON KOSRAE. At European contact (AD 1824), Kosrae Island was a unified society with 6,000-7,000 people and a four-strata hierarchical organization. A small urban center (Leluh, with ca. 1,500 people) was the governing and sacred center with massive architecture. Cordy's work (1978-1981) indicates four-strata organization arose in the AD 1400s, based on Leluh's growth, residential labor expenditure analyses and oral traditions. Competing three-strata societies are hypothesized to predate immediately rapid unification by Leluh. Work conducted in 1982-1983 is locating and dating potential three-strata society ruling centers (Bath and Ueki) and reconstructing population dynamics (Ueki and Cordy) to correlate with hierarchical changes. (2)

Ulana Klymyshyn, Alexandra M. (see Mackey, Carol J.) (5)

Upham, S. (New Mexico State) IMPERIALISTS, ISOLATIONISTS, WORLD SYSTEMS AND POLITICAL REALITIES: PERSPECTIVES ON MESOAMERICAN-SOUTHWESTERN INTERACTION. This paper focuses on recent theoretical positions offered as explanations for structural similarities and parallel development trajectories between some Mesoamerican and Southwestern groups. Each position is examined in relation to what is known archaeologically about so-called "donor" and "recipient" groups. In addition, the concept of commodity exchange as a necessary concomitant of Mesoamerican-Southwestern interaction is examined. Data from the 14th century plateau Southwest are presented to evaluate the proposition that commodity exchange was a crucial factor in structuring interactive relationships between these two areas. (45)

Upton, Dell (Case Western Reserve) BLACK AND WHITE LANDSCAPES IN 18TH CENTURY VIRGINIA. In 18th century eastern Virginia, the public landscape—the churches, the courthouses and the great plantations, together with their grounds and the network of roads and paths that connected them—symbolized in artifactual form the values of white upper-class society. This landscape was meant to be an articulated entity which made an argument for social structure and gentry dominance. However, common white planters and slaves perceived the landscape in different ways that circumvented and subverted this hegemonic display. This paper examines the evidence for the existence of these two kinds of conceptual landscape. (27)

Urban, P. A. and E. M. Schortman (Kenyon) A STUDY OF CERAMICS FROM EL NISPERO AND MARIPOSA, DEPARTMENT OF SANTA BARBARA, WEST-CENTRAL HONDURAS. Recent salvage excavation at Nispero and testing at Mariposa provide ample ceramic collections, preponderately from good contexts at Nispero. A type-variety analysis has produced results both expected and unexpected. The seven-structure Nispero site shows a predictable Late Classic domestic assemblage, while the larger Mariposa site is principally Late Classic, with an earlier Preclassic component. Unanticipated for Nispero are high percentages of Babylonia polychromes and Copador. Results suggest: 1) a center for manufacture of Babylonia polychromes was located near these sites; 2) there was sufficient prehistoric Santa Barbara-Copan interaction to provide even small sites with Copador; 3) the striking reality elsewhere of Yojoa-area types (e.g., Masica Incised); and 4) a regional time depth comparable to other parts of Honduras. (41)

Valdez, Fred, Jr. (Harvard) and Victor A. Carbone (National Park Service) HOLOCENE CLIMATE AND THE CARIBBEAN CULTURE CHRONOLOGY. The Caribbean lies to the south of the Bermuda High which is the key factor in Circum-Caribbean and Atlantic climate. Correlations between cultural periods and climatic intervals in the Caribbean prove interesting when compared to phenomena observed on the north "side" of the cell in the United States. Puerto Rico, in particular, shows a strong tendency for cultures of contrasting adaptive stance to appear in adjacent temporal phases. Such strong contrasts appear to be caused by the location of the Bermuda High under variable global energy budget conditions. (37)

Van Waarden, Catrien (SUNY, Binghamton) TOWARD DETECTING INTRASITE TRAFFIC PATTERNS: A CASE STUDY FROM BOTSWANA. Various methods for within-site spatial analysis have been used. Most of these are directed toward the detection of clusters (presumably representing activity areas) by analyzing densities among particular artifact classes. Less attention has been paid to the degree of fragmentation of the material, but this may be equally revealing of spatial organization. The proposed approach involves a simple fragmentation index that indicates the intensity of general intrasite traffic patterns. An example from Botswana is used as an illustration, and it is shown how this can be used in combination with density analysis. Further potentials are outlined. (9)

Veakis, E. (see Weigand, P. C.) (45)

Vento, Frank J. (Slippery Rock) THE GEOLOGY AND GEOMORPHOLOGY OF THE RENCH SITE, PEORIA COUNTY, ILLINOIS. The Rench site is located within the Bloomington Ridge Plains subdivision of the Till Plains subsection of the Central Lowlands physiographic province. Sediments

at the site derive from two primary depositional sources: 1) the downslope movement of sediments by sheetwash from the upland bluff surface; and 2) flooding of Dickison Run Creek. Examination of mean size, standard deviation (sorting), skewness and kurtosis values for five sediment columns documents changes in sedimentation and rates of accumulation through time. Carbonate analysis of the sediment pile was conducted to assess intensity of aboriginal occupation, climatic changes, individual flooding episodes and colluvial deposition from the bluff. (23)

Verrey, Robert A. (Catholic) PALEOINDIAN AND EARLY ARCHAIC BIFACIAL STONE TOOL MANUFACTURING AT THE THUNDERBIRD SITE, VIRGINIA. Analysis of artifacts from a stratified Paleoindian through Early Archaic tool manufacturing area of the Thunderbird site (44WR11) in northwest Virginia indicates the almost exclusive manufacturing of bifacial tools typical of a curated lithic technology. Examination of bifaces broken or rejected during manufacture and of waste flakes from discrete, single event, flintknapping sessions reveals continuity in manufacturing processes but changes in biface form for the Clovis through Early Archaic (corner/side-notched point) phases. (34)

Vickery, Kent D. (Cincinnati) HARNESS AND MOUND CITY: A FLINT RAW MATERIAL COMPARISON. Two classic Hopewell sites in south-central Ohio are compared with respect to varieties of flint from excavated and surface contexts. Contributing to these supplies were locally acquired pebbles, outcrop material obtained a short distance away as well as both single-episode and sustained long-distance transport of raw materials and artifacts. The dominant varieties for blade production were Flint Ridge (Ohio) at Harness, and Harrison County (Indiana) at Mound City. Harness was "locally oriented" with respect to most flint varieties transported to it while the presence of flint from Kentucky and Tennessee at Mound City suggests an orientation to the Midsouth and Southeast. (33)

Villa, Paola (California, Berkeley) HOUSEKEEPING IN THE STONE AGE. This is a work-in-progress report on a project designed to study the antiquity of food storage and trash disposal in the Old World and to explore their significance as indicators of settlement permanence. Materials from ongoing excavations at an Early Holocene cave in southern France provide evidence of patterned trash disposal behavior in shallow depressions at the back of the cave. Refitting of pottery sherds and bones of the same animal is used to study the purpose and use-life of such features. Late Pleistocene evidence of similar behavior is discussed. The project has taken an unexpected turn, due to the discovery of butchered (and conjoinable) human bones in a trash disposal area. Cutmarks and deliberate fractures are clear indications of cannibalism, a practice as yet unknown among French early farmers. (15)

Volkman, Phillip (see Marks, Anthony E.) (15)

Voorhies, Barbara (California, Santa Barbara) COSTEÑOS DEL PACIFICO: LIFEWAYS OF THE ANCIENT INHABITANTS OF THE PACIFIC LOWLANDS OF MESOAMERICA. Variation in specific regional factors and inadequate archaeological research on the Pacific coast of Mesoamerica at present severely restrict the possibility of generating a clear and reliable picture of prehistoric maritime adaptations within this region. This paper identifies specific regional factors that may have been significant for West Coast Mesoamerican inhabitants and reviews what is now known about continuity and change in maritime adaptations. (44)

Voytek, Barbara (California, Berkeley) THE DOMESTIC MODE OF PRODUCTION IN NEOLITHIC SOUTHEAST EUROPE. The concept of the Domestic Mode of Production (DMP) is useful to the study of Neolithic societies. The hypothesis is that the DMP is not a static pattern maintained throughout this period. Rather, changes in the nature of production and consumption units produced variation in labor supply and demand, and affected impetus for social change in later periods. Early and Middle Neolithic cultures of the Danube Basin are compared and contrasted with those of the Aegean/South Bulgarian region in terms of production modes, especially as these concern lithic resources. The dynamics and conflicts within domestic production may be seen as the bases for socioeconomic change during the Neolithic. (3)

Waddell, D. B. (Arkansas Archeological Survey) AN ANALYSIS OF THE SELECTION OF ATTRIBUTES FOR PREDICTIVE MODELING OF SITE LOCATION. Predictive modeling of prehistoric site patterning does not require the development of bridging arguments between data and theory for selection of attributes. One needs only to assume that there exists a hierarchical preference set and that geologic processes through time have resulted in uniform transformations within subsets of the biophysical environment. However, the shift from analysis of settlement patterning to the analysis of settlement and subsistence systems does require the development of bridging arguments that incorporate the structure of the prehistoric environment, the structure of the cognitive, hierarchically partitioned environment and the degree of coherence between these two. (50)

Waddell, D. (see Sabo, G.) (50)

Walsh, Vicky A. (Minnesota, Minneapolis) HOUSE SITE SELECTION AT NICHORIA IN SOUTHWEST GREECE. A computer simulation of the selection of criteria for house sites provides a useful analytical tool for studying the placement of buildings on the Bronze Age site of Nichoria in southwest Greece. Variables such as ground configuration, proximity to resources and need for outdoor space are manipulated to produce various distributions of houses in the village. These distributions are then evaluated in light of the excavated remains. (17)

Wandsnider, L. (New Mexico) CULTURE CHANGE AND THE MYTH OF POPULATION REGULATION. Neo-Malthusian and Boserupian, as well as multiple feedback hybrid arguments for the relationship between culture change and population growth have been made. Usually implicit in these arguments is some notion of population regulation. Reviewed here is evidence consistent with the idea that populations do not regulate their growth but that people, as individuals, manage their own reproduction. While the concept of population, an aggregate of individuals, may be analytically useful, it should not be confused with the concept of systemic behavior of individuals. Explanations for culture change are reexamined in this light. (22)

Warner, Laurie E. (Navajo Nation Cultural Resource Management Program) THE CARRIZO FLATS SURVEY: SETTLEMENT AND SUBSISTENCE IN THE RED ROCK VALLEY DURING THE BASKETMAKER III PERIOD. Archaeologists with the Navajo Nation Cultural Resource Management Program have performed a survey of 3,500 acres in the Red Rock Valley area of northeastern Arizona. This project represents the first intensive study of the prehistory of the area since the investigation of Basketmaker caves in the Prayer Rock District by Earl and Elizabeth Morris. Seventy-eight prehistoric components have been recorded by this survey project. Nearly 44% of these date to the Basketmaker III period. Interpretations are drawn based on the comparison of these sites to others of the Red Rock Valley area, particularly those of the Prayer Rock District. (53)

Warren, Claude N. (see Lyneis, Margaret M.) (13)

Watson, P. J. (Washington, St. Louis) and M. A. Wylie (Calgary) THE PROSPECTS FOR PHILOSOPHICAL ANALYSIS IN ARCHAEOLOGY. Two recent publications by archaeologists (Flannery, *American Anthropologist* 84:267-278; Schiffer, *American Antiquity* 46:899-908) have established partially conflicting positions about the desirability of applying philosophical analysis to archaeological concerns. To Schiffer, philosophers of science are invited to learn more from archaeologists so that better philosophy and, in particular, a philosophy of archaeology (on the model of philosophy of biology or history) will result. Flannery, on the other hand admonishes archaeologists to stick to their trowels and leave philosophy alone because the effects of philosophy on archaeology have been deleterious. Clarke (*Antiquity* 44:238) has argued that overt attention to the philosophical aspects of archaeological practice is essential. This paper presents evidence in support of Clarke's position. (32)

Watters, D. R. (see Rouse, I.) (44)

Webb, R. E. (London) AN OLD WORLD APPROACH TO PALEOINDIAN PROBLEMS. From a reanalysis of the earliest Paleoindian sites known in eastern North America, alternative possible models for the subsistence and settlement systems practiced by initial colonizing populations are presented. These hypotheses are compared for clarification with current knowledge of earliest Australasian settlement patterns. Tentative predictions are made for research strategies which might prove more productive in the future than have some past approaches. (54)

Webster, David L. (Penn State) RURAL SETTLEMENT SURVEY IN THE COPAN VALLEY. A major objective of the current Copan Archaeological Project is the survey of rural areas of the Copan drainage outside the main pocket where the site of Copan itself is located. Earlier surveys have located 3,400 structures in the latter area; at present, 30%-40% of the rest of the drainage is being sampled to complete the settlement survey. The survey methodology is a modified version of that used in the Basin of Mexico, with heavy reliance on large-scale aerial photography to define survey units. Ecological and ethnographic information—particularly focused on modern land use—is also being collected. A program of test pitting will provide chronological control. Over 70 km² already have been surveyed. Rural areas of the Copan drainage appear to have much lower population densities and a much simpler settlement hierarchy than does the main pocket. (52)

Weeks, J. M. (Harvard) DEFINITION OF PREHISTORIC MAYA HOUSEHOLD GROUPS AT MAYAPAN, YUCATAN, MEXICO. Analysis of the spatial structure of Mayapan (AD 1275-1450) in northern Yucatan is used to define a series of residential units ranging from isolated platforms to high-density household groups. Variation is evaluated against hypotheses regarding early colonial period Maya household size and composition derived from census records. Results sug-

gest that some fundamental archaeological assumptions regarding Maya household organization may require reformulation. (7)

Weigand, Phil C. (SUNY, Stony Brook) THE CHARACTER OF CLASSIC PERIOD CIVILIZATION IN WESTERN MEXICO. A non-Olmec, non-Teotihuacan architectural settlement and mortuary complex has been defined for the Formative and Classic periods in western Mexico. The center of development was the Etzatlán-Teuchitlán-Tequila area of Jalisco and adjoining Nayarit. Compounds composed of concentric circles characterize the Teuchitlán tradition. Each compound consists of a circular pyramid surrounded by elevated circular patios which, in turn, are surrounded by circular banquettes/platforms. Atop the platforms are between eight and 16 rectangular platforms. The minimal principles of geometry applied to designing these complex circles are discussed. Possible ceremonial implications of the concentric circles are explored. (41)

Weigand, P. C. (SUNY, Stony Brook), E. Veakis (Brookhaven), R. Bishop (Brookhaven) and G. Harbottle (Brookhaven) ECONOMIC IMPORTANCE OF TURQUOISE MINING IN NORTHWEST MESOAMERICA. Mining for turquoise during the pre-contact period was performed on a far greater scale in northwest Mesoamerica than the current literature suggests. The scale of acquisition (mining, transport) and associated artisanry requires a reinterpretation of southwestern archaeological economies. The Braudel model of "trade structure" will be discussed. Long-distance exchange for turquoise was regular and systematic. This exchange is being quantified by a joint project between Brookhaven National Laboratory and SUNY, Stony Brook. Results of the neutron activation source/artifact analysis are discussed. (45)

Wells, Peter S. (Harvard) IRON, TRADE AND THE GROWTH OF TOWNS IN EARLY IRON AGE SLOVENIA. Large, fortified settlements were first established in Slovenia (northwest Yugoslavia) in the 8th century BC. These settlements, such as Slična, Magdalenska gora and Vače grew rapidly into substantial towns much larger than any earlier communities in the area and became centers of commerce and metal working. The sudden appearance of these commercial towns can be explained by local development of iron metallurgy and trade systems to bring iron to Italy and other regions. (3)

Wepler, William R. (see Hicks, Ronald) (33)

Whalen, Michael E. (Tulsa) RECONSTRUCTION OF A PUEBLO PERIOD EXCHANGE SYSTEM IN SOUTHERN NEW MEXICO. An early Pueblo site in south-central New Mexico is notable for its nonlocal Mimbres ceramic assemblage and for the thousands of stone beads collected there. The site is interpreted to be what economic geographers term a "gateway community" in a dendritic (branching) network focusing on the Mimbres area of southwestern New Mexico. It is shown that the site lies astride a major trade network extending out of the Mimbres area. Dendritic exchange networks and gateway communities are found in many primitive economic systems, and it is argued that such a structure is best suited to the Pueblo period's demographic configuration and general level of complexity. (53)

Wheeler, Jane C. (Florida State Museum, Gainesville) and Elias Mujica (INDEA, Lima) PREHISTORIC PASTORALISM IN THE LAKE TITICACA BASIN, PERU. This study examines the role which camelid pastoralism played in the development and economic organization of both the early urban center at Pucará and the Pukara culture. It is based on the study of: 1) the faunal and cultural materials recovered from the site of Pucará during excavations conducted by Mujica and Nakandakari for the National Institute of Culture, Peru, from 1975-1978; 2) the distribution of Pukara sites; and 3) the geocological factors which affect agricultural production in the Basin. (46)

White, Randall (New York) TOWARD REGIONAL STUDIES IN THE EUROPEAN PALEOLITHIC: THE COMPLEX CASE OF THE PERIGORD. Historically, European Paleolithic archaeology has focused on research at the local or site level to the practical exclusion of settlement or land-use studies. The potential rewards of broader regional studies are stated. Primary field research in the Perigord is used to emphasize these knowledge gaps especially as they concern formation, alteration and visibility of the archaeological record. The Perigord data base provides excellent ammunition for the argument that future research must give priority to a detailed understanding of natural (e.g., geological), cultural (e.g., reforestation) and archaeological (e.g., sampling) forces which flavor current perceptions of the regional record. (58)

Whitecotton, J. W. and R. A. Pailes (Oklahoma) NEW WORLD PRECOLUMBIAN WORLD SYSTEMS. Since the publication of *Capitalist Agriculture and the Origins of the European World Economy in the Sixteenth Century* by Emanuel Wallerstein in 1974, several scholars, including the authors, have attempted to apply world-system concepts to archaeological problems. Other scholars have been critical of such attempts on the grounds that a model based on the modern in-

dustrial world is inappropriate for prehistoric and precapitalistic societies. These criticisms are refuted, and the archaeological literature on world systems and the difficulties of obtaining relevant data from research that has been oriented by culture area and ethnic concept is reviewed. (45)

Whitehead, D. R. (see Carbone, V. A.) (56)

Whittaker, John C. (Arizona) and Kathryn A. Kamp (Grinnell) THE ETHNOARCHAEOLOGICAL STUDY OF STONE TOOLS. The uses of ethnoarchaeology for studying stone tools are discussed. There are few places today where stone tools are part of a functioning culture, but early reports and collections provide a useful resource. Experimental studies are better for interpreting a wider range of tool uses and manufacturing techniques, but ethnoarchaeology can make other contributions: 1) joining experiment with ethnography strengthens both; 2) the few surviving lithic industries must be studied now; 3) most of these survivors are reduced to a few tool types produced by specialists—a situation worth studying; and 4) some aspects of the social place of specialized crafts and of stone tool production in general are most approachable through study of the early records and surviving industries. (43)

Widmer, Randolph J. (Penn State) CRAFT SPECIALIZATION AT TLAJINGA 33, TEOTIHUACAN. Recent extensive, fine-scaled excavations in a Teotihuacan apartment compound, Tlajinga 33:S1W3, have documented two temporally distinct craft specializations spanning the period 300–700 AD. These activities are lapidary and ceramic production. The techniques and evidence utilized to identify these specializations are discussed. Lapidary production is not specialized in material or specific item, but focuses instead on the production of a variety of artifacts in a number of media, including shell, malachite, serpentine, jadeite, travertine and slate. Ceramic production is confined to the last phase of the occupation and is focused on the production of San Martin Orange for the market. (30)

Wigen, R. (Victoria) HOKO RIVER ROCKSHELTER FAUNAL RESOURCES. The fauna from the Hoko River Rockshelter indicates that the resource collection was heavily marine oriented. Fish were the major faunal resource (exclusive of shellfish); over 90% of the identified bones (ca. 20,000) are fish remains. The main species are rocky bottom fishes and salmon, with locally abundant rocky bottom fishes predominating. Sea mammals are the most commonly recovered mammals, and the northern fur seal is the single most "important" species in this group. Fur seals are rarely found in the Strait of Juan de Fuca today. Vertical variations in the faunal assemblage appear to correlate with variations in layer types. (42)

Wilcox, David R. (Arizona State Museum) THE TEPIMAN CONNECTION. The closest and most specific cultural connections linking the American Southwest and Mesoamerica have been documented between the Hohokam and Chalchihuites cultures. A model is proposed to explicate the emergence and changing structure of this relationship. The differential adoption of sedentism and pottery from Durango to the Southwest ca. AD 200 may have restructured communication networks among indigenous hunter-gatherers, partitioning the Tepiman dialect chain from the rest of Uto-Aztecan. Maintenance of the continuity of communication along this Tepiman corridor presumably persisted until the advance of coastal Sinaloan culture (see at Guasave) led to a restructuring of Southwest-Mesoamerican relations. (45)

Wilk, R. R. (California, Santa Cruz) HOUSES AS ARTIFACTS. As with other artifacts, houses both reflect and take part in social systems. Also, like pot sherds or jade carvings, the distribution and frequency of house remains is affected by the processes which form the archaeological record and modify it after deposition. Houses can be discarded, curated, reused or scavenged. What one observes is not a simple reflection of the dwellings in use at a single time. This paper discusses systematic biases in the archaeological record of housing and the ways these biases have affected models of Maya population and social structure. Remedies are proposed. (7)

Wilkie, Duncan C. (Southeast Missouri State) A SHALL GORGET IN A SMALL VILLAGE CONTEXT. Examination of *in situ* artifacts from a small Mississippian village suggests that a shell gorget may have been used in a wider context than as a burial offering. There appears to be a social/utilitarian component as well as the more obvious religious/ceremonial function to the gorget. The archaeological context has offered an opportunity to reexamine the simplistic notion of "ceremonial objects" which is often used in archaeological reconstructions. (38)

Wing, E. S. and I. R. Quitmyer (Florida State Museum) RECOVERY OF ANIMAL REMAINS FROM ARCHAEOLOGICAL CONTEXTS. An experiment was designed to demonstrate the effects of different recovery methods on the composition of an archaeological faunal sample. Comparison of the animal remains recovered using 1/4-in screen with those using a series of screened gauges varying from 1/4-in to 1/16-in from an estuarine site at King's Bay, southeastern Georgia, revealed

what would appear to be two quite different faunal assemblages. Conclusions about animal exploitation and hunting and fishing techniques can be greatly modified by the inclusion of this smaller component of the fauna that results from the more complete recovery method. (1)

Wood, W. Dean (Southeastern Wildlife Services) and Dan T. Elliott (U.S. Forest Service) A FUNCTIONAL INTERPRETATION OF TWO LATE ARCHAIC SITES ON THE UPPER SAVANNAH RIVER. Two extensively excavated Savannah River phase sites on the Upper Savannah River in Georgia and South Carolina are compared and contrasted. Both sites exhibit numerous activity areas in undisturbed midden contexts. The analysis of activity areas, material culture and the availability of natural resources at each site leads to the conclusion that one site, 38AN29, functioned as a specialized hunting and gathering station while the other, 9EB21, probably represents a multitask basecamp. The analysis of the two sites is a step toward understanding the settlement and subsistence system of the Late Archaic period in the Southeastern Piedmont. (56)

Woodman, Craig F. (California, Santa Barbara/HDR Sciences) ORGANIZATION AND BEHAVIOR AT A BASKETMAKER III HAMLET, YELLOW JACKET, COLORADO. Complete excavation of the Gilliland site uncovered a stockaded, multicomponent hamlet and a complex array of features and artifacts. Substantive results include identification of the following: 1) a sequence of pit house construction, occupation and abandonment; 2) demographic change through time; 3) functionally, possibly seasonally, specific use areas; 4) patterns of space and time efficiency in use area design; and 5) correlations between demographic change and site structure. New methods: 1) determine functional relationships between disparate feature types through behavioral chain and ethnographic data analysis; and 2) quantify plow disturbance and date pit houses and postholes that are undatable with traditional methods. (53)

Woods, William I. (see Denny, Sidney G.) (6)

Woods, W. I. (see Hargrave, M.) (33)

Woodsley, Anne I. (Southern Methodist) PREHISTORIC AGRICULTURE IN THE NORTHERN RIO GRANDE. Excavation and survey in the greater Taos Valley disclosed evidence for an extensive high altitude agricultural system. Remains of the water control technology include contour terraces, check dams, and bordered plots as well as possible irrigation ditches occurring in the valley floor at 7,000 ft. Further, terraces and plots commonly reach elevations of 8,000 ft. or the upper limits of farming capability. Apparently, the northern Rio Grande Anasazi had adapted crop plants to these conditions by at least AD 950. Evidence for the organizational system that supported a dense agricultural population developing into the 13th century is now emerging. (29)

Workman, W. B. (see Clark, D. W.) (44)

Wyckoff, Don G. (Oklahoma/Oklahoma Archeological Survey) REFITTING AND KNAPPING BEHAVIOR: THE LOWRANCE EXAMPLE. The Lowrance site (34Mr-10), a Protohistoric (ca. AD 1500) camp in Murray County, Oklahoma, yielded several caches of chipped stone materials. One such cache, Special Collection 2, contained 146 flakes and 10 chipped stone tools. Color, texture, cortex and light transmission differences allowed these 156 pieces to be sorted and attributed to 30 different cobbles. By refitting flakes and tools, it was possible to discern knapping strategies and practices that most likely are attributable to a single individual. (15)

Wylie, M. A. (Calgary) THE DILEMMA OF INTERPRETATION: INUIT ETHNOGRAPHY AND THE ARCHAEOLOGICAL RECORD. The philosophical tensions inherent in contemporary archaeology are nowhere clearer than in its ambivalence about the relevance of ethnographic research to archaeological interpretation; ethnoarchaeology is a booming industry yet the disagreement escalates about how or even whether its results can be effectively employed in interpretation. The history of developing and changing interest in Inuit ethnography among archaeologists is examined as a case where clearcut methodological intuitions have emerged about how such data might be applied to interpretive problems, but where systematic formulation has been compromised by programmatic commitment to a positivist epistemology. (32)

Wylie, M. A. (see Watson, P. J.) (32)

Yarnell, R. A. (North Carolina) PREHISTORIC PLANT FOODS AND HUSBANDRY IN EASTERN NORTH AMERICA. This paper attempts to outline the history and scope of the analysis of archaeological plant remains in eastern North America as it bears upon the search for and determination of patterns of prehistoric food utilization and cultigen prehistory. It considers the adequacy of the data to support some of the claims and hypotheses based upon the available

evidence and the extent of the spatial and temporal gaps in the data which most obviously interfere with attempts to derive ecological patterns and evolutionary sequences. (31)

Yerkes, Richard W. (Wisconsin, Madison) **MISSISSIPPIAN CRAFT SPECIALIZATION ON THE AMERICAN BOTTOM: A FUNCTIONAL STUDY OF THE SHELL-WORKING INDUSTRY AT SELECTED SITES IN THE CAHOKIA SETTLEMENT SYSTEM.** Microwear analysis of chert microdrills from several localities at the Cahokia site indicated these tools were almost exclusively used to drill shell material. Many archaeologists believe the Cahokia microdrills were used to produce the numerous shell disc beads that are found at Mississippian burial and habitation sites in the American Bottom region. Bead production may have been the work of: 1) fulltime craft specialists at workshops on the larger sites; 2) parttime artisans at small Mississippian sites who were part of an incipient cottage industry. New data from sites excavated by the FAI-270 Project have been used to study the shell-working industry and to examine the nature of craft specialization on the American Bottom. (6)

Yesner, D. R. (Southern Maine) and N. D. Hamilton (Pittsburgh) **EARLY HOLOCENE LACUSTRINE ADAPTATIONS IN SOUTHWESTERN MAINE: MIDDLE ARCHAIC ASSEMBLAGES FROM SEBAGO LAKE.** Middle Archaic remains have been recovered from six sites on Sebago Lake, southwestern Maine, located at outlets and other areas that would have maximized harvesting of anadromous fish. The sample includes a number of projectile points of both "Stark" and "Neville" types as defined by Dincauze. Discriminant analysis is used to assess the assignment of points to these typological categories as well as to assess the integrity and meaning of the categories themselves. These data are used to reconstruct early Holocene lacustrine adaptations in southwestern Maine and are compared to related materials from elsewhere in the Northeast. (4)

Yesner, D. R. (see Hamilton, N. D.) (4)

Yi, Seonbok (Arizona State) and G. A. Clark **ON THE "DYUKTAI CULTURE" AND NEW WORLD ORIGINS.** The chronology and affinities of the "Dyuktai Culture," an Upper Paleolithic assemblage from northeast Siberia are discussed, and Mochanov's (1969, 1973, 1978) hypotheses on the peopling of the Americas are reassessed. Examination of geoarchaeological and chronometric data suggests that Dyuktai assemblages are not older than mid-Lower Sartan Glacial (ca. 18,000 BP) and are substantially younger than reported in the Russian literature. Since Dyuktai assemblages are often linked to the Paleo-Arctic tradition, the reassessment affects ideas about New World human origins. An origin in north China is indicated by comparison of Dyuktai assemblages with those from the Chinese sites of Hutouliang, Xiachuan and Shiyu. The possibility of the existence of pre-Sartan assemblages in northeast Siberia is suggested. (58)

Young, D. E. (Edmonton) and R. Bonnichsen (Maine, Orono) **THE ROLE OF STONE TOOL REPLICATION EXPERIMENTS IN THE MUNSUNGUN LAKE ARCHAEOLOGICAL RESEARCH PROJECT.** Stone tool production systems are frequently reconstructed through the use of uncontrolled inferential analogues (e.g., historical accounts) and by imitative behavioral analogues (e.g., a flintknapper's experience). Recent cognitive research indicates that the individual craftsman links cognition and behavior into production codes (units plus rules) for creating material products. An archaeological application of this approach illustrates how a reference collection of flake scars in which the linkage between behavior and attribute combinations is known can be used to reconstruct technological systems. (40)

Zier, Christian J. (Metcalf-Zier Archaeologists, Inc.) **IMPLICATIONS FOR GROWTH AND DEVELOPMENT OF CLASSIC MAYA COMMUNITIES IN WESTERN EL SALVADOR.** Studies in the Zapotitan Valley indicate accelerated population growth following an initial occupational hiatus resulting from the ca. 3rd century AD eruption of Ilopango volcano. Population growth is associated with increasing nucleation of settlements by the Late Classic period. Analyses of site function and locational characteristics suggest pan-valley political cohesion, possibly coexistent with localized semiautonomy among larger settlements. Hypothesized arable land shortages and related developments of land tenure patterns are believed to account in part for localized political power within the overall valley system. (41)

FROM THAMES AND HUDSON...

In Pursuit of the Past

Decoding the Archaeological Record

By LEWIS R. BINFORD. The founding father and principal exponent of the "New Archaeology" in the United States, Professor Lewis Binford is perhaps the greatest archaeological theoretician alive today. This popular new book—illustrated with Binford's own drawings and photographs, and written in an engaging, accessible style—provides a long-needed introduction to Binford's challenging and provocative theories. With 150 illustrations. \$18.50



New Aspects of Antiquity Series

An internationally acclaimed series in which the world's leading archaeologists present their own latest discoveries—discoveries that in many cases have revolutionized our knowledge of man's early history. Illustrated. \$29.95 each volume.

Currently available...

Forthcoming...

The Mimbres People

By STEVEN A. LEBLANC

Tula

By RICHARD A. DIEHL

Thera

By CHRISTOS G. DOUMAS

Newgrange

By MICHAEL J. O'KELLY



Ancient Peoples and Places Series

The following titles in this renowned series are available from Thames and Hudson:

THE CELTS by T.G.E. Powell (\$9.95 paper) • EARLY CHRISTIAN IRELAND by Maire and Liam de Paor (\$8.95 paper) • THE ESKIMOES AND ALEUTS by Don E. Dumond (\$19.95) • ARCHAEOLOGICAL SITES IN THEIR SETTING by Claudio Vita-Finzi (\$19.95) • THE CATACOMBS by J. Stevenson (\$19.95) • THE CAVE ARTISTS by Ann Sieveking (\$19.95) • BABYLON by Joan Oates (\$17.95) • THE MAYA, Revised and Enlarged Edition, by Michael D. Coe (\$9.95 paper) • THE BEAKER FOLK by R.J. Harrison (\$19.95) • THE THRACIANS by R.R. Hodinott (\$19.95) • A SHORT HISTORY OF ARCHAEOLOGY by Glyn Daniel (\$17.95) • MEXICO by Michael D. Coe (\$9.95 paper) • CYPRUS by Vassos Karageorghis (\$19.95) • THE MYCENAEANS, Revised Edition, by Lord William Taylour (\$19.95)



Thames and Hudson Inc.
500 Fifth Avenue, New York, N.Y. 10110